



WHITE PAPER

Assessing the Real China Critical-Minerals Threat

The Origin of Chinese Minerals Dominance and
Implications for U.S. Policy

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Introduction

Critical minerals have become one of the rare subjects of bipartisan agreement in Washington. Anxiety over America's dependence on raw materials with concentrated and potentially fragile supply chains has driven a wave of actions by the Trump administration and a flurry of proposed legislation with support from both parties in Congress. The responses run the gamut, from modest, low-cost fixes like permitting reform to sweeping interventions such as price floors, subsidies, and large stockpiles meant to jump-start American mining and refining and insulate mineral-dependent industries from disruption. The key worry animating much of this activity is that China controls the supply chains for many of the minerals that modern economies, advanced technologies, and defense systems depend on, and could turn that control into a weapon against U.S. economic and security interests.



There is no question that Chinese dominance is real. China is the leading source of mined ore for many critical minerals and, more importantly, the dominant processor and refiner for a large number of them. It is also an authoritarian state with a history of human rights abuses and a track record of asserting itself forcefully on the world stage to advance its national interests. And in recent trade disputes with the U.S., Beijing has shown a willingness to use critical minerals as a bargaining chip. This is a genuine national security concern that may warrant a government response.

The harder question is what that response should be, and answering it requires assessing how large the threat actually is. That threat is routinely cast in deliberate terms. China's dominance is portrayed as the product of a premeditated strategy to seize control of key chokepoints, flood global markets to drive out competitors, and wield the resulting leverage to coerce the West. Read this way, the threat is severe, and it justifies an aggressive and expansive policy response.

But the story rests on thin evidence, and the real picture is harder to see. A handful of undisputed facts, such as state support for its minerals industry and the government intervention typical of a command-and-control economy, are treated as proof of ill intent. Chinese actions are consistently read in the most hostile light, with little credence given to the alternative motivations behind China's industrial policy and its efforts to control minerals production and exports. And the more specific accusations, such as the charge that China floods markets to crush foreign competition, rely on evidence that falls short of what claims of predatory pricing and manipulation should have to clear.

Properly assessing the threat China poses, and therefore identifying a measured policy response, requires understanding why the concentration in China developed in the first place and whether China has actually demonstrated a pattern of coercive or predatory behavior. A careful reading of the history suggests a more nuanced picture than the premeditated weaponization narrative allows. China's dominance is largely the predictable outcome of comparative advantage and specialization, reinforced by industrial policies China pursued for domestic reasons and hastened by a Western retreat driven by rising environmental costs. Those same domestic priorities still shape China's decisions today, and they often conflict. Cheap, abundant minerals benefit the downstream manufacturers that depend on them, while the mining and refining that supply them impose severe environmental costs.

This is a genuine national security concern that may warrant a government response. The harder question is what that response should be, and answering it requires assessing how large the threat actually is.



Recognizing the role of these competing priorities matters for how the threat is understood. If China's leverage is largely a byproduct of an industry built for economic reasons, then wielding it as a weapon is costly, because doing so forfeits the benefits the industry was built to deliver, and that cost likely limits how far China will go. It also means that where China's economic and environmental priorities align with Western interests, there may be room for diplomatic engagement rather than a forced economic decoupling.

The best response will have to thread a needle, preserving access to cheap minerals for American consumers and manufacturers while addressing legitimate national security concerns. Balancing those interests requires acknowledging two caveats. The first is that the concern over China has to stay fixed on the real risk, a disruption to supply, rather than sliding into a broader anxiety about economic competition or the impact of Chinese state subsidies. So long as access remains open, subsidized Chinese minerals are a benefit to the United States, acting in effect as a wealth transfer from Chinese citizens to the rest of the world. The prospect that the supply chain concentration this creates leaves supply chains fragile is a valid reason to ask whether a response is deserved. The mere fact that China subsidizes its industry is not, and it makes a poor basis for reciprocal subsidies or protectionism of our own.

The second is that China's controls have come overwhelmingly in response to trade restrictions imposed by the United States and its allies, not as unprovoked aggression. The cost of Chinese restrictions, and the cost of policies meant to guard against them, have to be weighed within the broader trade-offs of a U.S. strategy that is already wielding its own leverage and aggressively pursuing decoupling. Whether that broader strategy is wise is a separate question, and one beyond the scope of this paper. But the case for a robust critical minerals policy cannot be made in isolation. It has to weigh the costs and benefits of the wider suite of U.S. actions.

Most important, it requires a realistic evaluation of China's motivations and of the threat its dominance actually poses, one that recognizes China will act in its own interest, but that its interests are not automatically hostile to the United States and are likely guided as much by domestic concerns as by any pursuit of geopolitical leverage. Understanding the scope of the critical minerals problem, in the end, requires understanding why Chinese dominance emerged in the first place.

China's Control over Critical Minerals Supply Chains

Critical minerals are increasingly described as the new oil, and China's dominance over them as a new Organization of the Petroleum Exporting Countries (OPEC).¹ Minerals' role as a key economic input, especially in an energy transition, together with fears of volatile prices and overdependence on foreign sources and hostile regimes, makes the analogy an easy one to reach for. But the comparison ultimately falls short. Unlike oil, which is burned and then gone, minerals are built into durable goods that last for years, blunting the urgency of a supply disruption.² A minerals disruption is not costless, but its impacts are felt differently, often through longer-term channels that leave more room for adaptation through reduced use, substitution, and recycling while alternative sources are developed.

In one respect, though, the analogy is apt: both oil and critical minerals have drawn intense focus to the control of key supply chain segments by potentially adversarial nations, and to the economic and national-security consequences that could follow. Since the Arab oil embargoes of the 1970s, outsized concern has attached to the ability of hostile producers to exert leverage over the U.S. economy by turning off the "oil spigot."³ Much the same anxiety now surrounds critical minerals, where attention has fixed on the chokepoints in the supply chains for many key minerals controlled by China. Concentration exists elsewhere for other minerals, such as rhodium and the platinum-group metals in South Africa, niobium in Brazil, or cobalt in the Democratic Republic of the Congo (DRC), though it typically receives less concern from a geopolitical lens.

The U.S. is heavily reliant on imports for a large number of critical minerals, with China a lead source for many of them.⁴ But import reliance on China understates the extent of its control. China is a leading source of mined ores for many critical minerals, and more importantly, it has established itself as the world's largest processor and refiner for a large number of them.

Figure 1 shows China's dominance in the mining of a subset of critical minerals.⁵ The rare earths appear here as a single category, but they comprise seventeen elements. Counted individually, China holds a majority of global mining for sixteen critical minerals, and a substantial share of many more.

THE 17 RARE EARTHS

21 Sc Scandium	39 Y Yttrium	57 La Lanthanum
58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium
61 Pm Promethium	62 Sm Samarium	63 Eu Europium
64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium
67 Ho Holmium	68 Er Erbium	69 Tm Thulium
70 Yb Ytterbium	71 Lu Lutetium	

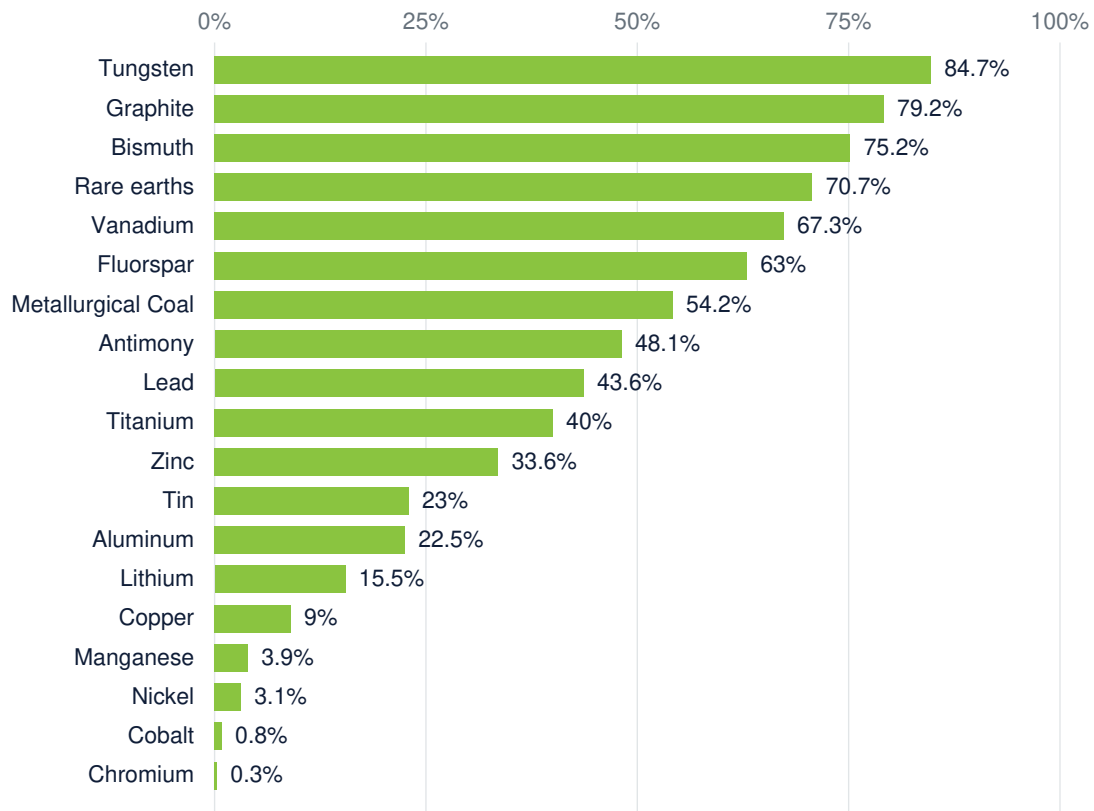
Scandium, yttrium and the lanthanides.

Source: U.S. Geological Survey.



FIGURE 1**China's share of global mining production**

Share of global mining production



Source: USGS and EU RMIS; David Kemp.

Most recent available year varies by mineral. Byproduct-only entries have no mining share and are omitted.

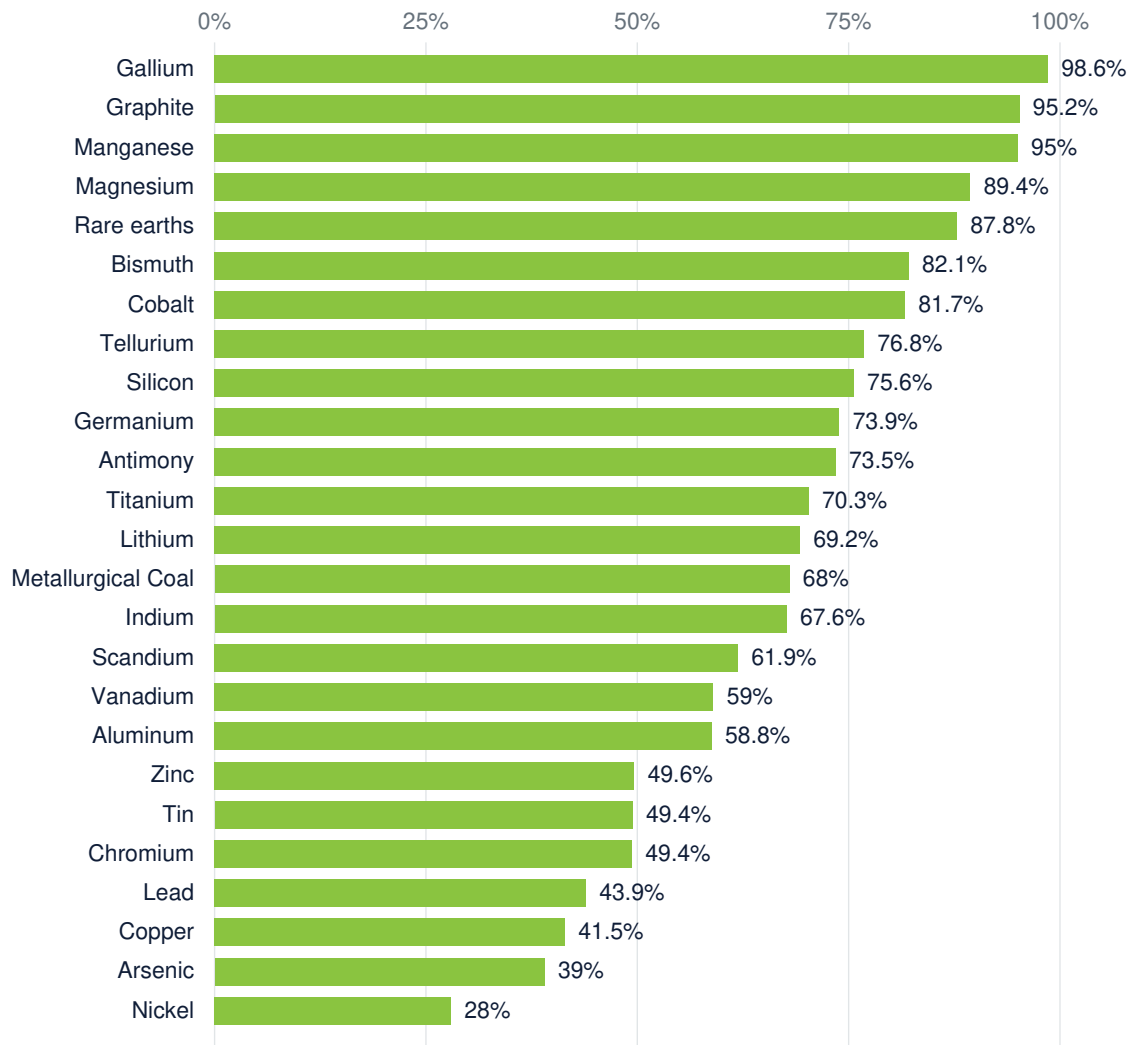
As striking as this is, China's real advantage lies in processing. Figure 2 shows its refining share, including for many of the metals in Figure 1 and for an additional set of materials: metals like gallium and germanium, which are byproducts of refining and so have no notable mining share of their own, and magnesium and silicon, where mining is harder to track because the ores are abundant and the key production stage is refining.⁶ All told, of the minerals for which reliable refining data are available, China refines more than 50 percent of global production for 32 of them, counting each rare earth element individually.⁷ It also controls a smaller but still substantial share of refining for an additional handful of minerals.

The bottom line is that China's dominance in mining and refining is undisputed, and many of the minerals deemed critical are largely under Chinese control. Even minerals the U.S. typically sources from elsewhere remain exposed to that control, because a disruption to Chinese production reduces global supply and pushes prices up everywhere.

FIGURE 2

China's share of global refining

Share of global refining



Sources: USGS; European Commission, RMIS; IEA, Global Critical Minerals Outlook 2025.

Most recent available year varies by mineral; unavailable entries are omitted. Graphite refers to battery-grade graphite; manganese refers to high-purity manganese sulfate. See endnote 6.

Evaluating the threat of Chinese control

Understandably, given China's control of many key chokepoints, much of the concern over supply chain risk has focused on China and its use of export controls for economic or geopolitical ends. China has in fact limited production and exports of critical minerals in the past, and, amid the escalating trade war with the United States, has begun restricting exports of some minerals as a bargaining chip and coercive tool.

The risk associated with much of the critical minerals supply chain therefore depends on the ongoing threat of economic and geopolitical weaponization by China. Evaluating the full scope of that risk requires examining how and why China's dominance developed in the first place, and assessing the allegations that China has used its control to extract monopoly rents, to manipulate prices and undercut foreign competitors, or to coerce other states through supply chain leverage.

The Source of Chinese Primacy

China's dominance has often been framed in nefarious terms, as a deliberate policy to drive out competitors, capture the supply chains for crucial minerals, and wield that control as geopolitical leverage.⁸ The framing is captured in a frequently cited quote, reportedly said by Chinese leader Deng Xiaoping in the early 1990s, that "the Middle East has oil, China has rare earths."⁹ The comparison has been taken as proof that China's rare earths control was part of a premeditated geopolitical strategy, but this reading has been challenged. An alternative interpretation suggests that the statement, set against the backdrop of the Gulf War, was a defensive caution about the vulnerabilities of controlling a strategic resource.¹⁰

The problem with painting China's control as a deliberate geopolitical goal is that it implies the strategic use of critical minerals concentration automatically outweighs any other considerations. China's minerals dominance does provide it with a degree of leverage. But the claim that this power was engineered as a weapon from the outset presupposes that



China will be quick to utilize it. If, on the other hand, China's leverage is largely a byproduct of an industry built for economic reasons, then wielding that leverage requires China to undermine those economic benefits and sacrifice other domestic policy interests.

The narrative of a China deliberately building its mining and refining capacity to control chokepoints is attractive to advocates of a more robust U.S. policy response, because it implies a larger threat. But recognizing that other factors govern China's decisions to weaponize minerals—factors that may outweigh their geopolitical usefulness—implies a lower threat, and points toward ways to reduce supply-chain risk that do not treat China as automatically adversarial. It suggests, for instance, that a broad decoupling from China may reinforce China's willingness to use its minerals dominance for leverage by preemptively destroying the economic value China derives from trading minerals and the downstream goods that rely on them, thereby lowering the cost of weaponization. And acknowledging that China has its separate domestic policy interests, some of which are aligned with ours, including environmental protection and access to inexpensive inputs, implies there are opportunities for diplomacy to ensure reliable supply chains and achieve those mutual interests.

In fact, a less hostile reading of the history suggests that the concentration of critical minerals production in China should be viewed as an economically rational outcome, reflecting market forces shaped by policy choices, rather than the product of geopolitical design.

Comparative advantage and specialization

Specialization is precisely what standard trade theory predicts. Countries specialize in production where their relative costs are lowest. Those cost advantages can arise from a number of sources, including natural resource endowments, lower labor costs, established infrastructure, or the accumulated knowledge of an experienced workforce. The concentration of an industry in a single country is not an anomaly requiring explanation but the ordinary outcome of comparative advantage and is a principal source of the large welfare gains from trade.¹¹

China is a resource-rich nation, and it does have some natural advantages. It possesses several of the world's largest known mineral deposits and, according to the USGS, holds the largest global reserves of twelve mineral commodities. Seven of these are critical minerals (counting the seventeen rare earth elements as a single group): antimony, barite, fluorspar, natural graphite, tantalum, tungsten, and rare earth elements.¹² Notably, China is home to Bayan Obo in Inner Mongolia, the largest rare earths deposit in the world and a major source of light rare earths.¹³ It also holds the large ionic clay deposits of southern China, currently the world's most important source of the more valuable heavy rare earths.¹⁴

This resource base, however, does not amount to a monopoly on the underlying minerals. Despite the name, rare earths are not actually rare; they are relatively abundant in the earth's crust, and the real challenge lies in finding them in concentrations dense enough to mine economically. Such deposits exist well beyond China. Even the prized ionic clay formations can be found around the world, including in Australia, Argentina, Brazil, and, to a lesser extent, the United States.¹⁵

Reserve figures, moreover, overstate China's geological advantage. Reserves measure the portion of known resources that can be economically extracted at current prices.¹⁶ They are therefore a dynamic number, which declines when resources are extracted and grows when new deposits are discovered, but

also changes depending on the costs of extraction, technological advances, and prices. In other words, reserves are a function of several shifting variables, and it is no surprise that they run higher in China, where there are large investments in exploration and relative costs are lower. Reserves elsewhere would likely expand if there were increased exploration, declining relative costs, or rising global prices.

So although China is in fact endowed with large deposits, that endowment is not necessarily the main driver of its comparative advantage, and other countries can develop their own resources to compete.¹⁷ China's real edge lies in its dominance of processing and refining, also predicted by trade theory, which recognizes that specialization can emerge even where a country holds no natural advantage.¹⁸ As an industry expands within a country, it can lower its costs through increasing returns to scale and the accumulation of specialized expertise. And these advantages become self-reinforcing, as a first mover grows more efficient as it grows larger, further entrenching its position. China's dominance in processing and refining reflects this dynamic, resting not on any resource endowment but on accumulated scale and technical capability. But because that capability is learned, it can be replicated, though closing the gap takes time.

China's industrial policy

Though the concentration of minerals mining and refining in China represents market forces, it has also been shaped by policy choices. China's minerals industries, like much of its economy, operate within a state-led system in which large state-owned enterprises draw support from both central and local governments. That support takes many forms, including direct subsidies, low-cost government loans, discounted land and energy, and public investment in research and development and exploration.¹⁹ These measures reinforce China's cost advantage, letting mining and processing firms operate at lower relative cost than geology, labor, or economies of scale alone would permit.

The state also regulates these industries through production quotas, licensing requirements, environmental standards, strategic reserves, and government-led consolidation. But these interventions are better understood as serving several overlapping domestic objectives than as a single, linear plan to achieve mineral primacy. Beijing has had to balance competing goals, including environmental protection, support for upstream miners and processors, and the provision of cheap and reliable inputs to downstream manufacturers.²⁰

The development of China's rare earths industry illustrates these objectives and the evolution of Chinese policy over time. For decades before China's primacy developed, the rare earths industry was dominated by the United States. The Mountain Pass mine in California, opened in 1952, was the world's leading rare earths source from the mid-1960s through the early 1980s.²¹ But the U.S. position eroded in the 1980s and 1990s as environmental and regulatory costs rose. Environmental problems at Mountain Pass, including radioactive wastewater leaks, contributed to the closure of its separation plant in the late 1990s and mining operations in 2002. By then, rare earth mining and processing had become cheaper to conduct in China.²²

China's rare earth industry dates to the early years of the People's Republic, when it developed in part through cooperation with the Soviet Union and in connection with China's nuclear and weapons programs.²³ The industry started to take off in the mid-1970s, as production costs were rising in the West

and foreign firms were looking for cheaper places to manufacture. China offered lower labor costs, weaker environmental enforcement, and export-oriented incentives, including the 1985 export tax rebate, which helped Chinese output double by 1990.²⁴

That rapid growth created problems from Beijing's perspective. The industry was fragmented, with many small firms competing aggressively and pushing prices down to what Chinese sources called "cabbage prices."²⁵ Illegal mining was widespread, resources were overexploited, and environmental controls were weak. The same lax regulatory environment that helped attract foreign production also produced severe pollution in mining and processing regions, especially in Inner Mongolia and southern China.²⁶

China also recognized the value of rare earths, particularly for its emerging technology industries. In 1990, Beijing classified them as a protected and strategic mineral, barring foreign firms from mining and restricting their participation in smelting and separation except through joint ventures with Chinese firms. The designation was less about geopolitics, however, and more about recognition of rare earths' economic importance. As Jost Wübbeke, expert on China's industrial policy and raw materials, explains,

The Chinese central government considers rare earth elements and semifinished applications as 'new emerging strategic industries.' 'Strategic' in the Chinese sense does not refer to military relevance but economic importance. The Chinese government believes that strategic industries will be key pillars of the future economy. It pays close attention to and grants strong support to these industries.²⁷

At the time, the primary concerns were perceived disorder in the industry and the loss of downstream value to foreign firms.

As production expanded through the 1990s and the disorder became harder to manage, China shifted from export promotion toward consolidation and control. Production quotas, mining licenses, resource taxes, and environmental standards were introduced to curb illegal mining, reduce overextraction, and force producers to internalize some of the costs of pollution. Beijing also promoted the consolidation of smaller firms into larger, more controllable enterprises, culminating in a sector dominated by a small number of state-backed groups.²⁸

On top of these domestic controls, China imposed export restrictions designed to capture more value downstream. It introduced rare earth export quotas in 1999, tightened them through the 2000s, and used export taxes and licensing rules to discourage exports of raw and lightly processed materials while encouraging the export of higher-value products.²⁹ By raising foreign prices while keeping domestic input prices lower, these measures operated as an implicit subsidy to Chinese downstream manufacturers, giving them access to rare earths on terms their foreign competitors could not match.

This is the logic of resource nationalism, which uses control of upstream resources to prevent foreign firms from capturing most of the value and to encourage higher-value domestic production further down the supply chain.³⁰ The strategy clearly favored Chinese firms at the expense of foreign competitors, but it is not unique to China. Between 2009 and 2020, export restrictions on critical raw materials rose sharply around the world.³¹ Indonesia's bans on raw nickel exports, the Democratic Republic of the Congo's taxes on cobalt and copper exports, and Zimbabwe's ban on unprocessed lithium ore all reflect versions of the same basic logic of using control over upstream resources to push more processing and manufacturing into the domestic economy.³²

Although much attention is paid to China's role as a producer and processor of critical minerals, China is also, by a wide margin, the leading consumer of many of them. For example, China consumes about 60 percent of global copper, compared with roughly 6 percent for the United States, the second-largest consumer.³³ It is also the dominant consumer of many other critical minerals and materials, including rare earths, nickel, cobalt, gallium, germanium, lithium chemicals used in batteries, and graphite anode materials.³⁴

Seen in this light, China's minerals policy, both at home and abroad, is not simply about building a robust minerals industry as an end in itself. It also reflects the enormous resource requirements of Chinese downstream manufacturing and the state's interest in securing those inputs as cheaply and reliably as possible. China has invested heavily in minerals extraction around the globe, particularly in minerals where it lacks a geological advantage, including copper, cobalt, lithium, and nickel. One dataset tracks nearly \$57 billion in Chinese official financing for transition-mineral extraction and processing across 19 countries between 2000 and 2021.³⁵ Chinese firms have taken ownership stakes in several of the world's largest mines, including copper and cobalt mines in the Democratic Republic of the Congo and Peru, nickel mines in Indonesia, and lithium mines in Zimbabwe and South America, securing the raw ore that feeds its refining and processing capacity.

The same industrial policies that provide Chinese firms with an advantage at home also benefit their ability to invest abroad. Subsidized credit is especially important, with the ten largest listed Chinese mining companies paying roughly half the effective interest rate of their largest foreign competitors.³⁶ Backed by these preferential loans and the political support of the CCP, Chinese state-owned mining companies can build capacity at home and overseas on terms foreign competitors cannot match, particularly in countries where political, regulatory, or security risks would otherwise deter investment.

China's export restrictions were eventually challenged at the World Trade Organization. In 2012, the United States, European Union, and Japan brought a case against China's export duties, quotas, and licensing restrictions on rare



earths, tungsten, and molybdenum. China defended the measures as necessary for resource conservation and environmental protection; the complainants argued that they instead handed Chinese manufacturers an artificial cost advantage by lowering domestic input prices.³⁷ The WTO sided with the complainants, finding that the export controls violated China's obligations and were not justified by the environmental and conservation exceptions it invoked.³⁸ Beijing subsequently removed the export controls, but continued to manage the sector through domestic production quotas, licensing rules, consolidation, and other regulatory tools.

Environmental protection and resource nationalism are the overt, openly acknowledged justifications for China's minerals policies. A less overt motivation may be the pursuit of monopoly pricing power. A producer that supplies most of a market can influence the price by choosing how much to sell, since selling more pushes prices down and selling less pushes them up. This market power lets a dominant producer mark up prices above its marginal cost of production by restricting output, capturing more value for what it does sell at the expense of consumers who pay above competitive prices.

Production and export quotas are, mechanically, the policies a profit-maximizing monopolist could choose to restrict supply and increase prices.³⁹ The production quotas restrict the quantity supplied in general, while export quotas restrict only the quantity leaving China, allowing a monopolist to wall off the export market to keep inputs cheap at home while raising the international price and to capture surplus from foreign buyers.

The difficulty is that quotas intended to support downstream industry or conserve resources are hard to distinguish from those intended to create monopoly profits, because all three produce the same observable outcome of less output and higher prices. Nor does a price above the marginal cost of Chinese firms establish monopoly pricing on its own. Such a markup is equally consistent with a low-cost producer earning a higher marginal return because of its cost advantage, with the world price set by the next, higher-cost competitor rather than dictated by China. And even if the quotas were intended to mark up prices, their effectiveness would depend on the state's ability to restrain illegal mining and smuggling, which has historically proven difficult.

The economic research has found mixed evidence of monopoly pricing. Two studies that estimate China's rare earths market power directly by attempting to measure the markup of prices over marginal cost generally find it to be real but limited, heterogeneous across destination markets, and weaker than its dominant supply share would suggest.⁴⁰ Other work that examines how Chinese price changes pass through to export markets finds no pattern of price behavior consistent with deliberate manipulation of foreign buyers, and concludes that China's prices have historically been low, driven by internal competition among Chinese producers and persistent illegal production rather than by strategic design.⁴¹ Taken together, the literature suggests some evidence of a markup, but cannot establish that it reflects monopoly pricing rather than ordinary cost advantage.

Environmental protection, resource nationalism, and monopolistic pricing are all plausible motives for China's policies toward its minerals industries. China has suffered real ecological damage caused by early lax environmental controls and illegal mining; its position as the dominant consumer of minerals gives it an interest in keeping inputs cheap; and its position as the dominant producer could create at least an opportunity for monopoly pricing. Yet each explanation also faces potential objections. Environmental protection is a familiar cover for protectionism, and the WTO did not accept that export controls, which

limit what is shipped abroad without limiting what is extracted, were plausibly environmental tools. China does consume a large share of global minerals, but those minerals make up a small portion of the final value of downstream goods, which limits how much an industrial policy aimed at cheap inputs could really benefit downstream producers.⁴² And while quotas are textbook monopoly behavior, the Chinese state is not necessarily a profit-maximizer and may weigh other goals, such as full employment and growth.

What makes these motives difficult to evaluate directly is that they also pull against one another.⁴³ Restricting extraction serves both conservation and upstream monopoly pricing, but it raises the input costs that the downstream-subsidy strategy depends on. Export restrictions can partly reconcile these goals, but the lower domestic prices that benefit downstream industry come at the expense of Chinese miners and processors.

These same tensions constrain any attempt to use China's primacy as a coercive tool. Flooding the market to drive out foreign competition could incur the very environmental costs the conservation rationale seeks to avoid, while full export bans or punitive controls forgo the export revenue and producer surplus that supply restriction was meant to capture. Aggressive weaponization would also threaten the downstream advantage it is meant to protect, since retaliation and decoupling would close off the foreign markets that Chinese finished goods depend on. Each of these moves would sacrifice the domestic benefits that China's minerals policies were built to secure, which gives reason to doubt that those policies were ever primarily geopolitical in design. The leverage that the weaponization narrative emphasizes undermines the domestic interests that have driven China's minerals strategy all along.

Crucially, none of this, on its own, requires a U.S. domestic policy response. China's environmental protections are a legitimate response to pollution, and they raise Chinese costs relative to American mining and refining rather than lowering them. China's industrial policy is more often invoked as a reason to prop up U.S. industry, but the policy is itself a structural weakness. Industrial policy is generally an expensive and ineffective way to build domestic industries. There is reason to doubt the effectiveness of China's policies, and an American version would be unlikely to perform any better.⁴⁴ The environmental damage the industry produced likewise reflects a government failure, with subsidies and regulatory tolerance letting firms externalize costs that should have been priced from the start.

The costs of all this fall mostly on Chinese citizens. Workers and nearby communities bear the burden of pollution, taxpayers are on the hook for subsidized credit, and the economy absorbs the broader cost of the misallocation that subsidies and export controls create. Chinese state support for the critical minerals industry is, in effect, a wealth transfer from Chinese citizens to the rest of the world.⁴⁵ So long as the Chinese government is willing to subsidize cheap minerals and goods for American manufacturers and consumers, the appropriate response is to take the gift.

Is China's Pricing Behavior Predatory or Competitive?

Without recoupment, there is no predation, just low prices.

One area where Chinese behavior could warrant a policy response is if China is using its primacy to undercut foreign competition through predatory pricing. A dominant producer with excess capacity can flood the market, driving prices below the cost of extraction and refining, forcing rivals out and deterring new entrants. The strategy pays off only if the firm can later recoup those losses by restricting output and raising prices once rivals have exited.

But predation only succeeds if there are durable barriers to entry. A dominant firm can raise prices once rivals exit, but if entry is easy, those higher prices simply attract new competitors who contest them away. The threat of entry alone is enough to discipline prices, and where there is a credible prospect of competition a rational producer will not incur the losses of predation in the first place.

For this reason, the existence of a monopoly is not enough to warrant a policy response on its own. If China is willing and able to satisfy most of the world's demand for rare earths at the lowest possible price, there is little to complain about. And since rare earth deposits can be mined and refined elsewhere, China's dominant position is, to some extent, contestable.⁴⁶

The problem is that some notable barriers to entry do exist. Building mining and processing capacity takes years with large upfront capital costs. Some of this is inherent to the long exploration and discovery phases of the minerals industry; other parts, like lengthy permitting timelines and stringent environmental regulations, are policy choices. Together these frictions could give China some room to push prices above what its natural cost advantage alone would allow, sustaining monopoly prices and timing bouts of market flooding to whenever new entrants threaten.

Well beyond critical minerals, this kind of predatory pricing is frequently invoked to justify policy interventions, especially tariffs meant to hold up price floors and protect domestic industry. In practice, however, predation is exceedingly rare because it typically does not make sense for the dominant producer for a variety of reasons, including that its losses are immediate and certain while the monopoly profits are speculative and distant, rivals can raise capital to outlast the price war, and any future price increase invites the new entry, substitution, and innovation that undermine its prospective benefits. Most episodes labeled predation turn out to be much more mundane, often a genuine cost advantage or ordinary price competition.⁴⁷

Any accusation of predatory pricing, and the policy recommendations that follow from it, should therefore meet a high evidentiary bar. Two things must be shown. First, a clear pattern of selling below the dominant producer's own cost to drive out rivals, not merely below the cost of its competitors.⁴⁸ Importantly, occasional below-cost pricing is not alone proof of predatory intent because a rational firm will sometimes sell below its own costs of production.⁴⁹ For example, shutting down and later reopening a mine or processing plant may itself be costly, so a producer may rationally keep operating at a loss

through a temporary downturn rather than absorb the expense. Political pressures, especially in a state-led economy, may additionally encourage producers to operate at a loss to preserve employment and tax revenues.

Second, there must be a demonstrated recoupment phase, in which the producer raises prices once rivals exit to recover what the price war cost it. Without recoupment, there is no predation, just low prices. The observed pattern for predation would be generally high prices, punctuated by occasional sharp declines timed to moments when new entrants threaten to appear.⁵⁰

Frequent claims that China uses predatory pricing to defend its position in minerals markets do not clear this bar and often conflate deliberate predation with what is more plausibly ordinary supply and demand. A prominent recent example is a report published by the House Select Committee on Strategic Competition between the United States and the Chinese Communist Party titled *Predatory Pricing: How the Chinese Communist Party Manipulates Global Minerals Prices to Maintain Its Dominance*.⁵¹ The report alleges that China has dominated critical minerals supply chains partly by moving to “flood the market to artificially depress the price and make the new venture economically unviable.” To demonstrate, it points to two examples, rare earths and lithium carbonate prices in 2022, as evidence of manipulation.

A similar frequently cited example is a 2023 decision by Australian company Jervois Mining to halt construction on a cobalt mine in Idaho shortly before it was scheduled to open after global cobalt prices declined. CMOC, a Chinese state-owned mining company, has been accused by U.S. officials of flooding the cobalt market in order to undercut the new mine.⁵²

Both examples serve as useful case studies for examining whether the behavior of the Chinese minerals industry, across its domestic mining and refining capacity as well as its foreign mine investments, demonstrates a pattern of predatory pricing. A full examination would require additional cases and more rigorous analysis, but at a surface level neither offers compelling evidence of predation.

The 2022 rare earth and lithium price spikes

The Select Committee report makes three broad allegations of Chinese manipulation: first, that China's dominance in minerals production reflects a deliberate, government-led effort rather than market forces; second, that the CCP has used legal measures and the acquisition of price-reporting agencies and metals exchanges to control public price information; and third, that the government has used its dominance to depress prices and deter Western firms from entering the market.

The first claim reflects China's industrial policy, the subsidies and low-cost government loans that have supported the development of its minerals sector. There is no question that such policies have given Chinese firms an advantage, allowing them to operate at lower cost and on thinner margins than competitors. But as long as those cost advantages are largely passed through to global consumers, it is important to ask whether they by themselves justify a U.S. policy response.

The second claim points to a legal framework that, the report argues, lets Beijing influence prices indirectly. China's 1998 Pricing Law makes it illegal to “fabricate and spread information about price hikes” or to make “exorbitant profits in violation of the provisions of laws and regulations,” provisions the report reads as exerting structural downward pressure because the government can invoke them against

producers who price above its preferred levels.⁵³ The 1998 law does give the CCP the ability to dictate prices to stop undesirable practices, such as price gouging or predatory pricing.⁵⁴ That a state-led economy gives its government broad authority over prices is unsurprising, but there is no evidence that the CCP actually sets minerals prices, and the law applies only within China. Beijing cannot set global prices except through the ordinary exercise of market power.

The report additionally notes that some global metals benchmarks, including the London Metal Exchange, are now owned by a Hong Kong exchange operator. But it offers only circumstantial evidence of manipulation. The underlying complaint is that Chinese prices are not transparent and may not reflect true market conditions for many minerals. There is legitimacy to this: the markets for many of these minerals are small and thin, often traded through state-affiliated channels, so direct, reliable price information is genuinely hard to come by. But most of the divergence between Chinese domestic and international prices, especially over the past several years, reflects export controls creating exactly the wedge in prices one would expect.⁵⁵

FIGURE 3

Neodymium-praseodymium oxide prices

2008-2026 · combined NdPr oxide



Source: MacroMicro.me.

Approximate redraw of the original chart; prices and dates are approximate.

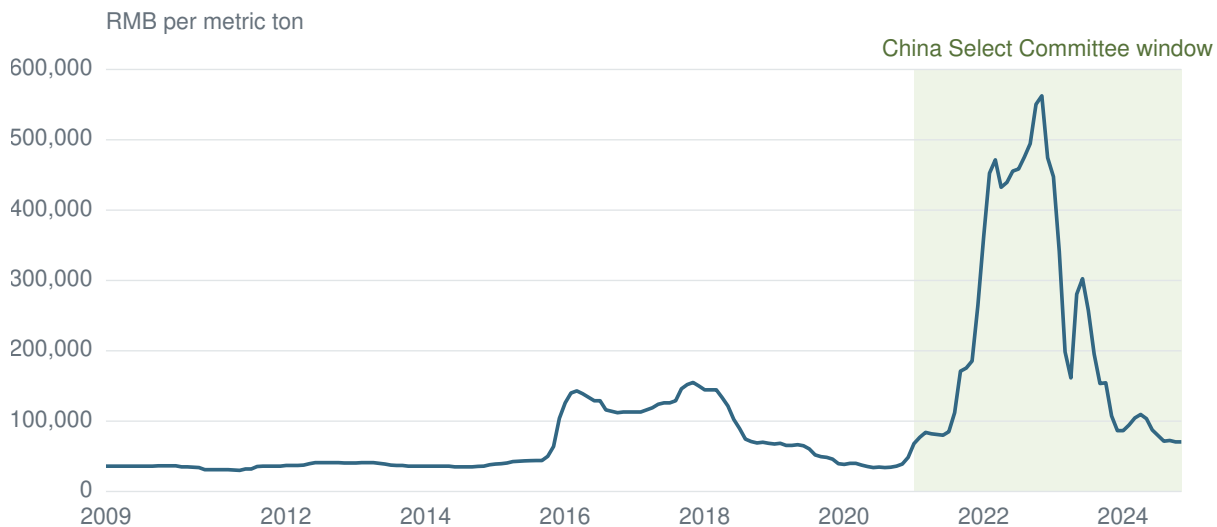
Finally, the report points to the rare earth and lithium markets as its principal evidence of predatory pricing. It charts prices over a narrow window showing a sharp increase from late 2021 to early 2022 and a subsequent decline, which it correlates with official government meetings with industry representatives. On that basis, it alleges that Beijing directed Chinese companies to manipulate prices downward. As the shaded periods in Figures 3 and 4 show, the prices of neodymium-praseodymium oxide, a rare earth compound used in magnets, and lithium carbonate, used in batteries, did spike during this period. But the increase was the product of supply and demand: a surge in clean-energy and electric-vehicle demand along with

constrained lithium and rare earths supply, compounded by a broader commodities price spike caused by the after-effects of the COVID-19 pandemic and the start of the Russia-Ukraine War.⁵⁶ The window and the evidence the report cites fall short of demonstrating manipulation.

FIGURE 4**Lithium carbonate spot price**

2009-06 to 2024-11 · China spot market

— Lithium carbonate



Source: Investing.com; David Kemp.

Lithium carbonate, 99% minimum, China spot. Shaded window matches the original comparison period.

The meetings it cites, while illustrating the CCP's interventionist economic strategy, do not demonstrate any intent to lower prices to undercut competitors. If anything, they reveal the tension between China's support for upstream minerals production and its support for downstream manufacturing. Officials are recorded cautioning against "market speculation and hoarding" and instructing companies not to deviate from "cost pricing."⁵⁷ In other words, warning against price gouging. Attempts to stop firms from raising prices during legitimate shortages are misguided, but they are hardly unique to China and should be familiar to anyone acquainted with U.S. politics.⁵⁸

More importantly, whatever Beijing's desire to tame a price shock, the path prices actually followed is the one ordinary supply and demand predicts. As prices rise, producers ramp up output, consumers substitute toward alternatives or economize, and the high prices spur investment in new capacity and recycling. Frictions and higher costs may leave a somewhat higher equilibrium, but over the long run prices would be expected to drift back toward their prior level.

That is precisely what the full price series for both neodymium-praseodymium oxide and lithium carbonate shows. The 2022 spike was large in both, but prices fell back relatively quickly. Importantly, there is no evidence that China ever sold below its cost, nor any indication of a subsequent recoupment phase in which prices were pushed above competitive levels. Instead, the full time series suggests the opposite: low long-run prices punctuated by occasional spikes driven by broader economic cycles and shocks. At a surface level, this is not a pattern that suggests predation.

Idaho Cobalt Operations

The decision to halt construction on the Jervois cobalt mine in Idaho is set against the same global commodity price backdrop. As shown in Figure 5, cobalt prices rose rapidly through this period, peaking in the spring of 2022. Jervois, which had acquired the partially completed mine in 2019, decided to proceed and began construction in October 2022. But as prices crashed in the spring of 2023, the company stopped work before the mine officially opened.⁵⁹

China is often blamed for this crash, because the ramp-up of CMOC's Kisanfu mine in the DRC coincided with both the collapse in cobalt prices and Jervois's decision to halt the Idaho project. For several reasons, though, the blame is misplaced.

Like rare earths and lithium over the same window, the price of cobalt does not appear to show predation. Cobalt prices spiked sharply and then reverted, the behavior supply and demand would predict, not evidence of a campaign to drive prices below cost. Higher prices prompted producers in both Idaho and the DRC to expand output, even as demand began to ease and prices fell.⁶⁰ Importantly, there is no evidence that cobalt prices ever fell below CMOC's cost of production. On the contrary, cost estimates put Kisanfu's cash costs at roughly a third of those at the Jervois project, so even once the Idaho economics no longer worked, Kisanfu could keep operating profitably.⁶¹

The framing of Jervois as a victim of Chinese flooding leaves out a crucial feature of the market. The Idaho project is a primary cobalt mine, but cobalt is overwhelmingly a byproduct, recovered alongside copper at Kisanfu and

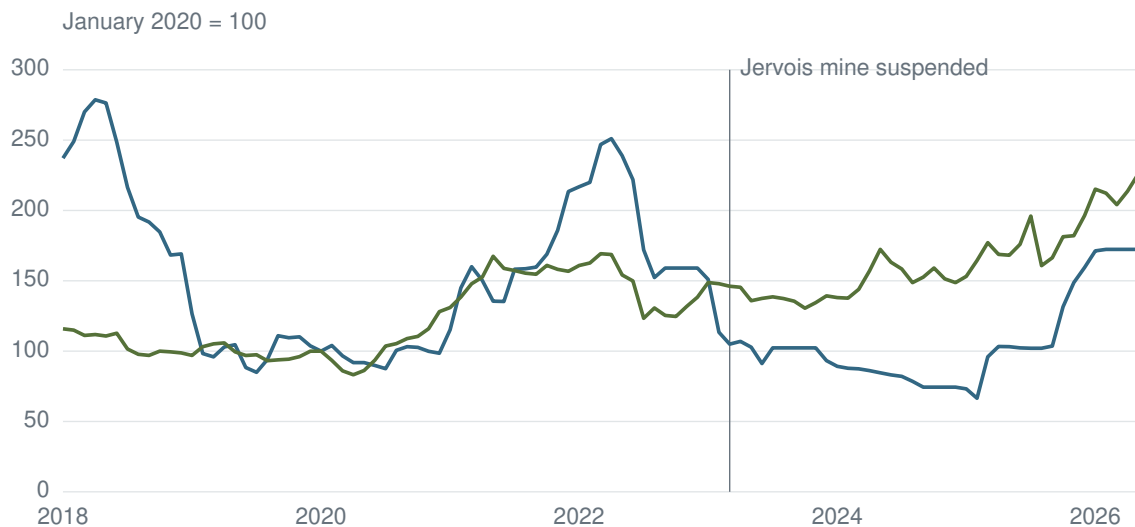


alongside nickel elsewhere. Its supply is therefore governed largely by the economics of those primary metals, not by the cobalt price. This is why a dedicated cobalt mine in Idaho faces far higher per-unit costs than cobalt pulled from a copper mine like Kisanfu, and why DRC output kept flowing even as cobalt prices fell. The cobalt was coming out of the ground regardless, as a byproduct of copper that remained profitable to mine.

FIGURE 5**Copper and cobalt prices**

2018-01 to 2026-05 · monthly indices

— Cobalt — Copper



Source: Trading Economics.
Monthly averages; January 2020 = 100.

As Figure 5 shows, copper prices saw a similar 2022 spike and decline but recovered quickly and rose steadily through 2023. A producer expanding a copper mine brings cobalt to market almost regardless of the cobalt price, and cannot easily withhold it later to engineer the recoupment that predation requires. This makes cobalt an especially implausible candidate for a predatory-pricing strategy.

Importantly, Jervois's Idaho mine is not a total loss. It is currently mothballed, and if cobalt prices recover above its operating costs, it can resume production. That itself weighs against the predation story. A partially built mine that can restart whenever prices rise is a standing, credible threat of entry, exactly the condition that would deter any attempt by China to raise cobalt prices to monopoly levels and defeat the recoupment on which predation depends.

Broader commodities cycles

These case studies illustrate that the most prominent recent examples of alleged predation do not come close to fitting its technical definition. Undercutting higher-cost rivals is not predation; it is how competition works and how markets generate efficiency.

However, many critical-minerals markets lack public, transparent price data, which makes a rigorous analysis difficult. And these minerals have different characteristics, including differences in market size, the degree of Chinese control, and their geology and economics. It is therefore possible that China can exercise market power to manipulate some of these markets even if it does not in others, and predation could in principle operate at a more granular level than an aggregated, long-run price series would reveal.

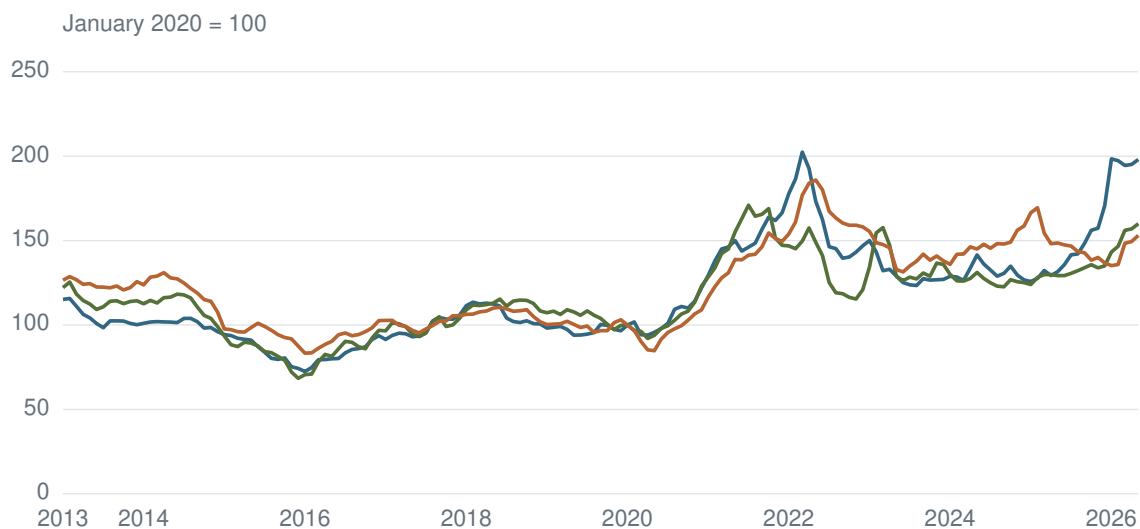
Even with these limitations, the burden of proof should lie with those alleging predatory pricing—and using it to justify policies that would push mineral prices above their long-run lows. The available evidence, at least on a cursory view, casts considerable doubt on the predation claim as it is usually made.

FIGURE 6

Critical minerals and commodity price cycles

2013-01 to 2026-05 · monthly indices

— Critical minerals — Industrial metals (non-critical) — All other commodities



Source: Trading Economics.

Author-defined commodity baskets; January 2020 = 100.

That doubt extends well beyond the three case studies. Figure 6 indexes prices for 15 minerals and metals that USGS classifies as critical back to 2013, and compares their average against averages for other industrial and metal commodities and for a broader basket of 46 commodities spanning energy, agricultural, and other markets.⁶² Though the different groups occasionally have individual spikes, such as

the recent increase in critical minerals prices caused by China's export controls, the overall pattern is that critical minerals, far from systematically behaving differently from other commodities, have on average tracked the same market trends and commodity cycles.⁶³

Figure 7 demonstrates a similar pattern with a fuller dataset in more recent years. It indexes 12 critical minerals "dominated" by China (i.e., those where China controls at least 50 percent of global mining or refining) against 10 critical minerals that are not.⁶⁴ Here too, both groups have moved in step with the broader commodity cycle in recent years.

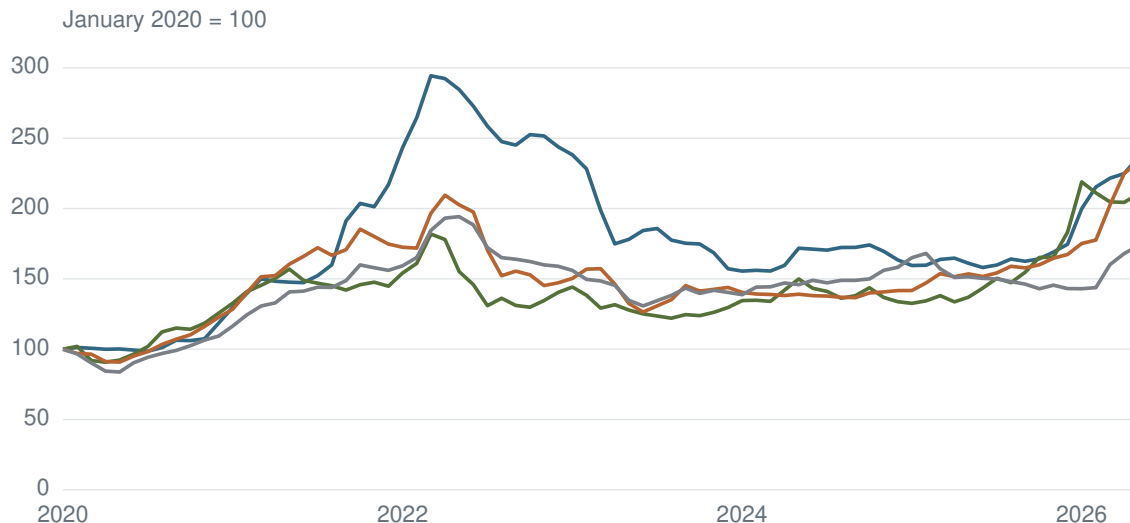
An important caveat is that the informative comparison in Figure 7 is whether the China-dominated minerals track the broader commodity trend, which they do. The apparent gap between the China-dominated series and other commodities is less meaningful, because the index aggregates a relatively small number of minerals. The choice of base year can shift the relative position of the series, and any single mineral can swing the divergence on its own. In this case lithium, with its outsized 2022 spike, drives most of the gap. Figure A1 shows the series with lithium removed. Tellingly, even with lithium included, the China-dominated group rises higher in the spike and falls less far in the decline than other commodities, the opposite of what flooding by Chinese suppliers would produce.

FIGURE 7

China-dominated minerals and other commodities

2020-01 to 2026-05 · monthly indices

— China-dominated critical minerals — Other critical minerals — Industrial metals (non-critical)
— All other commodities



Source: Trading Economics.

Author-defined commodity baskets; January 2020 = 100.

Price movements and the manipulation narrative

The significance of this co-movement is not that China's policies never influence prices. Most of the movements cited as evidence of manipulation reflect ordinary commodity cycles. China's policy choices may shape those cycles at the margin, but so do the policies of other governments, including U.S. and EU efforts to diversify critical minerals supply chains and support their own domestic industries. What the evidence does not support is the stronger claim of systematic manipulation.

What is telling, though, is how readily manipulation is read into evidence that does not support it. No matter what China does, or how markets respond, the resulting price movement is interpreted as Chinese aggression. The narrative persists not because the facts support it, but because it converts ordinary price volatility into a case for policy intervention.

A recent *Wall Street Journal* account of China's rare-earth monopoly, tracing the rise of the Chinese industry and the decline of U.S. competition, including Molycorp's 2012 restart of the Mountain Pass mine and its subsequent bankruptcy, is illustrative:

In 2012, the Obama administration, alongside the European Union and Japan, launched a suit against China at the World Trade Organization, accusing it of improperly using export quotas to restrict rare-earth supplies abroad. China argued that its restrictions were intended to keep mining at sustainable levels and protect the environment.

In 2014, the WTO ruled against China, concluding its export quotas were unfair. China abandoned them, and sales to the U.S. surged.

Molycorp went bankrupt as American rare-earth prices collapsed. For the second time in a little over a decade, cheap Chinese prices had contributed to shutting down America's only rare-earth mine.⁶⁵

Whether prices rose or fell, the movement has been read as evidence of Chinese manipulation, even when the fall followed a policy reversal made in direct compliance with the preceding complaint.⁶⁶ China's policy choices may well harm the rest of the world. But the claim that each one reflects a conscious rigging of global markets finds little support, in either the specific case studies or the broader long-run price record. Concerns about Chinese manipulation and predation appear driven less by the evidence than by Western industries, upstream and downstream, seeking policy support, and by general geopolitical and strategic anxieties about China.

Critical Minerals as Geopolitical Leverage

China's track record, however, suggests it may be less willing to use critical minerals as a bargaining chip or coercive tool than the common narrative indicates.

Though Chinese policies toward its minerals industry are plausibly motivated by domestic concerns, and there is no immediate evidence of predation for economic benefit, ultimately China's true intentions can never be known. Part of China's relative cost advantage in mining and refining is the result of decades-long subsidies, low-cost credit, and other state support, and these measures may be motivated, at least partially, by a recognition of the importance of these minerals and the strategic value of controlling chokepoints in their supply chains.

China has in fact used its minerals as leverage, most notably in response to trade restrictions imposed by the U.S. and other Western countries over the past few years. There is now an impression that China aggressively uses trade restrictions as tools of economic coercion to achieve strategic goals and to deter countries from publicly disagreeing with it.⁶⁷

China's track record, however, suggests it may be less willing to use critical minerals as a bargaining chip or coercive tool than the common narrative indicates. While its past use cannot be questioned, the majority of those instances came directly in response to trade barriers and export controls, usually imposed by the U.S. Uses of critical minerals as coercive tools have been rare outside the recent trade disputes.

An important question, then, is whether China will continue to lean on critical minerals if the U.S.-China trade dispute escalates, and whether it would relent if tensions eased. China's use of economic coercion before and after the recent trade war may provide some clues to its future behavior.

China's use of sanctions and informal coercion

As China's growth has helped cement its place as a global power, the CCP has shown an increasing willingness to use trade restrictions as tools of economic coercion. Importantly, this behavior is not uniquely Chinese. Economic sanctions, which include measures such as import and export bans, asset freezes, financial and banking restrictions, travel bans, and arms embargoes, are a recognized instrument of statecraft, intended to coerce a country into changing its policies or to punish it for violating international norms. Global accountings of sanctions find that the United States and European nations are, by far, the most frequent users.⁶⁸ Since the end of the Cold War, China has become the third most active user, though it remains well behind the United States and the EU.⁶⁹

U.S. sanctions are likely more palatable to an American audience, often imposed on authoritarian regimes for security or human-rights reasons, such as financial sanctions on Iran over its nuclear program, an oil and trade embargo on Venezuela targeting the Maduro government, and sweeping financial and export restrictions on Russia following its invasion of Ukraine.⁷⁰ Many of the most prominent Chinese sanctions, by contrast, have advanced foreign policy priorities that Western audiences view less sympathetically, including maritime and island disputes, pressure over Taiwan, and retaliation against foreign involvement in what Beijing considers its internal affairs.⁷¹ An American may judge China's sanctions as less legitimate than those of the U.S., but that is largely a subjective judgment about goals. The instrument itself is no more legitimate in American hands than in Chinese ones. Notably, the United States has been the most common target of Chinese sanctions, a pattern that reflects trade disputes between the two countries.⁷²

China's sanctions have differed from those of the U.S. or EU in that they have historically been informal. This partly serves to create plausible deniability. Encouraging consumer boycotts, discreetly instructing officials to delay or block imports and exports under various pretexts, or invoking domestic regulations allows the regime to avoid formal WTO complaints over explicit restrictions.⁷³ These informal measures also let Beijing build domestic legitimacy and signal resolve to a nationalist audience.⁷⁴ Ultimately, the same informality makes it difficult to distinguish genuine state-directed coercion from bottom-up public responses to international disputes, which is why several widely cited examples remain disputed.⁷⁵

Like the sanctions imposed by other countries, however, China's attempts at economic coercion do not appear especially successful. Research on economic sanctions more broadly concludes that they achieve their policy goals only about a third of the time, and China's track record appears to be similar or worse.⁷⁶ This may stem from the informal nature of its restrictions and the difficulty of sustaining bottom-up cooperation, since local officials and consumers participate unevenly depending on their political sympathies and economic ties to the target country.⁷⁷

It also may reflect the fact that China has historically emphasized symbolic restrictions over measures with real economic consequences.⁷⁸ For example, after the Norwegian Nobel Committee awarded the 2010 Peace Prize to imprisoned Chinese dissident Liu Xiaobo, Beijing froze diplomatic ties and slowed Norwegian salmon imports through tougher inspections. But while targeting Norway's salmon industry was symbolic, overall Norwegian exports to China rose during the dispute. Likewise, after Australia called for an independent investigation into the origins of COVID-19 in 2020, China imposed tariffs on barley and wine, and informal import restrictions on several other goods. But it did not impose restrictions on iron ore, a key import from Australia that China relies on for its steel industry. The net loss to Australian exports was small, while the overall value of Australian exports to China actually increased over the following year.

In these and similar cases, China targeted symbolic industries while sparing the manufacturing and export sectors its own economy depends on. Traditionally, it has been cautious in its use of economic coercion, deploying it only when the value of demonstrating resolve outweighs the economic costs and the risk of geopolitical backlash.⁷⁹

The Senkaku Islands dispute

The key historic case of Chinese coercion using critical minerals occurred in 2010 when a Chinese fishing trawler collided with a Japanese coast guard vessel near the Senkaku Islands, a disputed chain claimed by China, Taiwan, and Japan. Japan detained the crew and arrested the captain, signaling its intention to

prosecute him. In response, China froze diplomatic contact, cut tourism to Japan, tightened inspections of Japanese imports, and detained four Japanese nationals in China.⁸⁰ China also reportedly halted exports of rare earths to Japan, prompting Japanese companies to report supply disruptions and a spike in rare earth prices.

This incident is widely regarded as the opening salvo of a "mineral war," the moment China supposedly revealed a grand plan to control key mineral supply chains and the West awoke to its vulnerability.⁸¹ The difficulty is that the rare earth restrictions are far murkier than this reading allows. It is not clear that there was ever an official policy to withhold shipments, and Chinese officials explicitly denied one. That denial is consistent with the generally informal nature of Chinese economic coercion during this period, and Japanese firms did report disruptions. But the incident also coincided with a steep cut in rare earth export quotas that China had announced several months earlier, which may be the real explanation for any perceived decline in exports.

Analyses of trade data have found no clear evidence that Chinese rare earth exports to Japan were significantly reduced during this period.⁸² It is possible, however, that this reflects a limitation of the available data, which is not granular enough to distinguish among different rare earth elements and may therefore obscure a targeted restriction on specific minerals.⁸³ Anecdotally, some evidence suggests some withholding did occur, but was driven by local officials and port workers in one port, rather than directed by the central government, which in fact attempted to persuade officials and workers to restart shipments when they became aware of it.⁸⁴

The captain was released, a concession by Japan that looks like a tactical success for China. But the dispute did not change the status quo around the islands, and Japan's response to the rare earths restrictions, whether real or perceived, was to diversify away from China through government- and market-led efforts to increase recycling, invest in substitution and greater resource efficiency, and support the development of alternative sources.⁸⁵ These efforts helped drive a substantial decline in Japan's reliance on China, from roughly 90 percent of its rare earth imports in 2010 to under 60 percent within a decade.⁸⁶ Tellingly, when the Senkaku dispute flared far more seriously in 2012, after Japan purchased the islands from their private owner, amid widespread anti-Japanese protests, boycotts of Japanese goods, cancelled tour groups, and other economic measures, there were no comparable reports of a rare earths embargo.⁸⁷ Whether because the 2010 measure proved costly or ineffective, because it was never a deliberate central policy in the first place, or for some other reason, Beijing did not reach for the same lever again.

In fact, this is the only time in the first two to three decades of Chinese dominance in rare earths and other minerals, until 2023, that China is said to have used that control as geopolitical leverage. It came in response to a relatively minor incident, it cannot be established with much confidence that it happened at all, and it does not seem to have worked in the long run. The Senkaku episode is a weak foundation for the narrative that Chinese primacy is premeditated. Though it created real panic at the time, in hindsight it is an unconvincing example of China aggressively using critical minerals for economic coercion.

Explicit mineral controls and the U.S.-China trade war

Since then, however, China has increasingly turned to more explicit, formal sanctions in response to the growing use of trade restrictions against it by the U.S. These restrictions, which began mounting during the U.S.-China trade war of 2018 to 2020, prompted China to build a framework for imposing formal sanctions in direct retaliation against foreign measures.⁸⁸

Beginning in 2023, China imposed a series of escalating export controls on critical minerals under this framework. The restrictions are justified as a national security restriction on “dual-use” goods, items with both civilian and military applications. The first measures, beginning with gallium and germanium in July 2023 and extending to graphite, antimony, and rare-earth processing technology over the following year, required exporters to obtain case-by-case licenses from the Ministry of Commerce. In December 2024, China escalated from licensing to outright prohibition, banning exports of gallium, germanium, antimony, and superhard materials to the United States specifically. Over 2025 it widened the net further, adding tungsten, tellurium, and several heavy rare earths.

Importantly, however, these restrictions did not occur in a vacuum. At each step, the measures closely tracked trade restrictions imposed by the U.S. and other nations. The escalating dispute began under the first Trump administration in 2018, when Washington imposed sweeping Section 301 tariffs on Chinese goods over allegations of intellectual property theft and forced technology transfer, and it continued under the Biden administration.⁸⁹ The more immediate catalyst was the decision by the Bureau of Industry and Security (BIS), the U.S. Commerce Department agency that administers export controls, to restrict exports of advanced semiconductors and chipmaking equipment to China in October 2022, in part by barring named Chinese firms from receiving U.S. technology through its Entity List, a roster of companies subject to license requirements. This decision was reinforced by parallel measures from Japan and the Netherlands, home to key chipmaking-equipment producers, in the spring of 2023.⁹⁰ Beijing’s first mineral controls, though not explicitly framed that way, were widely understood as a direct response.

FIGURE 8

U.S. and Chinese trade restrictions

2022–2026

DATE	ACTOR	MEASURE
2022-23 Oct-Jun	U.S. + allies	U.S., Japan, and the Netherlands roll out advanced chip and tool controls.
2023 Jul 3	China	China implements export licenses on gallium and germanium.
Oct 17-18	U.S. + allies	U.S. tightens chip and equipment rules; EU announces anti-subsidy probe into EV imports from China.
Oct 20	China	China extends license requirements to graphite exports.
Dec 21	China	China bans rare earth and magnet technology exports.
2024 May-Sep	U.S. + allies	Biden announces and finalizes tariffs on chips, EVs, solar panels, and steel.
Aug 15	China	China adds export licenses to antimony and superhard materials.
Dec 2	U.S. + allies	U.S. adds 140 firms to Entity List and expands chip controls.
Dec 3	China	China bans gallium, germanium, and antimony exports to the U.S.
2025 Jan 13	U.S. + allies	U.S. limits AI chip access through third countries.
Feb-Apr	U.S. + allies	U.S. successively increases tariffs on Chinese goods, up to 54%.
Feb 4	China	China adds license requirements to tungsten and four other metals.
Apr 4	China	China expands export licenses to seven heavy rare earths.
Sep 29	U.S. + allies	U.S. extends Entity List to majority-owned subsidiaries.
Oct 9	China	China implements licenses on more rare earths, magnets, and batteries, with extraterritorial provisions.
Nov 9	Joint	China and U.S. reach a truce; China suspends export bans and extraterritorial enforcement for one year.
2026 Jan 1	China	China adds license requirements for samarium, gadolinium, lutetium, and silver.
Jan 6	China	China restricts dual-use exports to Japan over Taiwan comments.

Source: David Kemp.



As shown in Figure 8, this set the pattern for Chinese restrictions. When the U.S., Japan, and Netherlands restricted semiconductors, China imposed licensing requirements on gallium and germanium, the minerals needed to make those same chips.⁹¹ In October 2023, as the U.S. tightened controls on the broader chip supply chain, and as the EU moved against Chinese electric vehicles, Beijing extended the license requirements to graphite, a key material for EV batteries, and banned the export of technologies needed to process rare earths.⁹² And, in the summer of 2024, when the Biden administration finalized Section 301 tariff increases on a wide range of Chinese goods, including EVs and steel, China added controls for antimony, a mineral used as a flame-retardant, in automotive lead-acid batteries, and as a steel-hardening alloy.⁹³ The Biden administration also imposed 25 percent tariffs on several critical minerals imported from China, including graphite, tungsten, and indium, as well as on permanent magnets.⁹⁴ There is a contradiction between complaining about Chinese actions to cut off access to minerals while simultaneously imposing our own restrictions on our access to them.

In early December 2024, BIS announced its third and most sweeping round of semiconductor controls, adding 140 entities to the Entity List, restricting high-bandwidth memory chips essential to advanced AI, and extending U.S. jurisdiction over foreign-made goods produced with American technology.⁹⁵ One day later, China converted its existing licensing regime into an outright ban on exports of gallium, germanium, and antimony to the United States.⁹⁶

After President Trump's second inauguration, as the United States imposed further tariffs and export restrictions on China, Beijing responded with reciprocal tariffs and licensing requirements on additional critical minerals, including tungsten and tellurium in February 2025 and seven medium and heavy rare earths in April 2025.⁹⁷ On October 9, 2025, China announced an expansion covering five more rare earth elements and, for the first time, extraterritorial provisions requiring an export license for any product made anywhere in the world that contained even trace amounts of Chinese-origin rare earths, a mechanism mirroring the foreign direct product rules the United States had used against Chinese semiconductors.⁹⁸

The escalating dispute culminated in a meeting between President Trump and Xi Jinping at the end of October 2025 where the two sides agreed to a one-year truce, since extended to January 2027.⁹⁹ China suspended the October 9 expansion and restored gallium, germanium, antimony, and graphite to its standard licensing framework, while the United States rolled back some tariffs and suspended some of the rules expanding its export controls on semiconductors. However, the truce left the underlying architecture intact. The April 2025 licensing regime was never suspended, and the October measures were delayed rather than rescinded, leaving Beijing free to reimpose them when the suspension expires.

Seen in full, it is hard to square the portrayal of Chinese trade behavior as uniquely aggressive or coercive with the actual sequence of events. China's use of critical minerals as leverage has come mostly in response to trade restrictions imposed on it, not as the opening move of a premeditated strategy. In fact, while China has adopted more explicit and formal tools, the bulk of its recent measures have been countersanctions, reactive responses to foreign restrictions, rather than primary sanctions initiated to advance its own aims.¹⁰⁰ Before the U.S. adopts costly policies to protect against Chinese trade disruptions, some introspection about the usefulness of its own restrictions is warranted.

This is not to say those restrictions are unjustified. U.S. export controls on semiconductors, and sanctions tied to China's conduct toward Taiwan, Hong Kong, the Uyghurs, and disputed maritime claims, may be justified on national security or human-rights grounds. Weighing their full costs and benefits is beyond the scope of this paper. But viewing Chinese disruptions to critical mineral supply chains in isolation misses the point. Those disruptions are not free-standing acts of economic aggression; they are the predictable reciprocal cost of U.S. measures. Any losses they impose should be evaluated as part of the overall case for the original American export controls, sanctions, and trade restrictions. Within a broader strategy of decoupling from China, critical mineral disruptions are not a separate threat but instead are one cost among the many costs that decoupling will create.

Importantly, if these policies, and decoupling more broadly, are judged worthwhile, it is not obvious that any additional intervention is needed to prop up domestic or allied critical minerals industries. Decoupling will be expensive, in part because it raises short-term prices on key inputs like minerals. But those higher prices are precisely the signal that motivates the market to adapt, to develop substitutes, reopen mines, and build refining capacity outside China. If decoupling is worth its costs, the most efficient way to achieve it is to let it proceed and let prices do the work, rather than layering on policies that could impose additional distortions, such as subsidies, price floors, or stockpiling mandates.

The first step, though, is to ask whether the broader costs are worth bearing and, if not, pursue unfettered access to China's inexpensive minerals. If critical minerals are truly “critical,” the place to start is not with new programs to offset the disruptions but with the policies that are directly causing them. Reopening access to low-cost minerals through diplomacy and a de-escalation of trade tensions is likely the cheapest supply-chain policy available.

This does not mean the risks of supply concentration should be dismissed entirely. In early January 2026, China banned exports of dual-use items, including rare earths and magnets, to Japanese military end-users, explicitly in response to Prime Minister Sanae Takaichi's November 2025 statement that an attack on Taiwan would pose an existential threat to Japan.¹⁰¹ This is notable because, given the ambiguities surrounding the 2010 Senkaku dispute and the reciprocal, trade-driven restrictions of recent years, it may be the clearest instance yet of China using its mineral primacy for an explicitly geopolitical aim.

Whether this marks the start of a new trend or proves an anomaly remains an open question. Perhaps, with the precedent set by the trade war, the decision to weaponize mineral controls has grown easier. Or perhaps, as tariffs and other restrictions accumulate against China, the economic and geopolitical costs of using that leverage have simply fallen relative to the perceived gains. Either way, the episode shows there is an inherent risk in China's mineral dominance, even if it is a small risk and one that U.S. policy can temper by keeping trade open.

Conclusion

Recognizing that risks exist is not, in itself, a case for a broad policy response.

Recognizing that risks exist is not, in itself, a case for a broad policy response. The response has to be measured, and guarded against a wider panic that mistakes China's dominance for a consciously engineered weapon trained on the United States. The more mundane account, of Chinese primacy in mining and processing as the product of market forces and domestic policy priorities, points toward more mundane remedies, meant to reduce the U.S. security risk at the margins and chip away at China's ability to exert leverage in the first place.

The place to start is with the cheap and market-friendly moves. Legitimate national security concerns should be identified and addressed with targeted measures, like robust, but defense focused, stockpiling. The U.S. and allied governments should reform policies to make China's dominance more contestable, chiefly through removing onerous permitting processes and reducing regulatory burdens. Narrow support for the development of innovative technologies and alternative sources could also open up new ways to compete with China's entrenched and experienced minerals industry. The goal is to limit market distortions and avoid creating undue costs.

Sweeping proposals, by contrast, should have to clear a high bar. Because of the danger of overcorrecting and imposing costs larger than the disruption they are meant to prevent, clear evidence should show the necessity and cost-effectiveness of price floors, subsidies, or large stockpiles before they are adopted. By default, policymakers should place more faith in the market's ability to adapt than in the government's ability to anticipate and forestall a disruption that may never come.

None of this suggests we should be indifferent to the critical minerals problem or naïve to the threat China poses. It is a warning against overestimating that threat, and against the real possibility that in guarding against it we do ourselves more harm than China ever could. The risks of Chinese dominance and supply chain concentration deserve a serious response. But a policy grounded in a realistic account of why China came to dominate these industries, and of what it stands to lose by turning that dominance into a weapon, will protect American interests at far lower cost than one built on the assumption that every Chinese action is undertaken with hostile intent toward America.



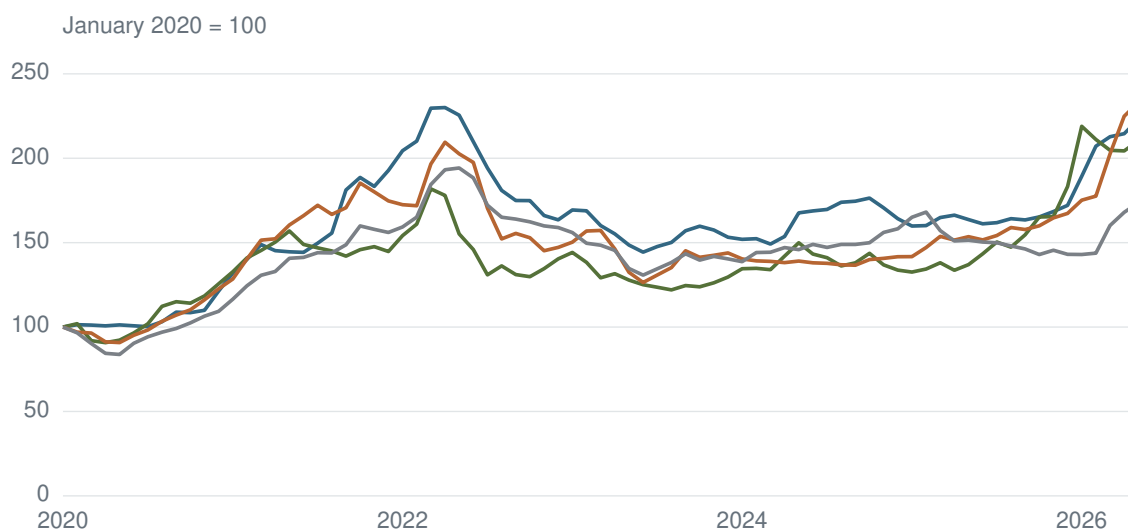
Appendix

FIGURE A1

Mineral prices with lithium excluded

2020-01 to 2026-05 · monthly indices

— China-dominated (excl. lithium) — Other critical minerals — Industrial metals (non-critical)
— All other commodities



Source: Trading Economics.

Lithium excluded from the China-dominated basket; January 2020 = 100.

Notes

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