

# China, Mineral Coercion, and US National Security Risks

Cullen S. Hendrix  
Peterson Institute for International Economics

This memo addresses two interrelated subjects: 1) the potential for China to (further) leverage dominance of critical mineral supply chains against the United States, and 2) challenges in achieving necessary scale for ex-China critical mineral supply chains.

## Mineral Coercion and Escalatory Options for the PRC

Chinese mineral coercion is not some hypothetical – it is already here. There are currently export controls on 17 critical minerals, including 7 medium and heavy rare earth elements (HREEs) and related products. These controls originated in the more limited US-China tech war but were expanded significantly in retaliation for US tariffs announced in April 2025 (table 1).

Category	Minerals	Control Type
<b>REEs</b>	Samarium, Gadolinium, Terbium, Dysprosium, Lutetium, Scandium, Yttrium	Export licensing required
<b>Strategic Metals</b>	<i>Gallium, Germanium, Antimony</i> , Graphite, Tungsten, Tellurium, Bismuth, Indium, Molybdenum, Titanium	Export licensing or <i>bans</i>

Export controls and licensing agreements are not a nuclear option, and in the past had relatively limited effects for US imports of graphite and downstream products made with gallium and germanium.<sup>1</sup> China’s subsequent outright ban on antimony oxides exports – China supplied an average of 63% of total US imports from January 2024 to November 2024 – has caused China’s share of US imports to plummet though not zero out: 6% of imports on average still came from China from December 2024 to March 2025.<sup>2</sup> Overall, US import volumes have effectively doubled in dollar terms, though much of the increase is due to price effects, which operate both through supply constriction and the animal spirits of market participants.

This posture provides the PRC with wide latitude for further coercive measures, ranked in rough order of strategic vulnerability:

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<sup>1</sup> See <https://www.piie.com/blogs/realtime-economics/2024/chinas-export-controls-critical-minerals-arent-starving-united-states>.

<sup>2</sup> Author’s calculations based on US Census Trade data.

1. *Using diplomatic leverage and enhanced oversight to discourage third-party exports to the US market.* China can apply diplomatic or commercial pressure on mineral-exporting countries—particularly in Africa and Southeast Asia—to limit U.S.-bound exports or favor Chinese buyers. Coupled with enhanced oversight of overseas Chinese firms, this approach could extend China's coercive reach beyond its borders. The legal basis for this is China's 2020 Export Control Law, which is presently being enforced unevenly. More even enforcement could create significant pain points, not just around the national security-centric suite of minerals but also around more widely traded and used critical minerals like nickel (Indonesia) and cobalt (DRC).
2. *Industrial sabotage targeting critical mineral startups.* The CHIPS, Inflation Reduction, and Infrastructure and Jobs Acts have created a significant startup ecosystem around critical minerals in the United States. Like most startups, these organizations are lean compared to their more established, larger counterparts. It is reasonable to assume their cybersecurity and IP protection protocols are not as advanced. The potential for sabotage, data corruption, and emerging IP theft are real and could undermine not just the projects themselves but belief in the ability of US producers to meet US needs.
3. *Using critical minerals as a wedge to prevent US-EU collaboration.* The previous US administration sought to work with “friendly and likeminded” countries to secure critical mineral supply chains, with NATO allies and Australia clearly top of mind. The Trump administration has taken a much more adversarial approach to these allies on trade issues while pursuing a more mixed strategy in the security domain. The EU and its NATO member-states have less of an appetite for hard decoupling from China. Should Chinese firms offer them sweetheart deals on critical minerals and refining/processing technology, the US will have a much harder time keeping these allies onside and achieving the market scale necessary for US firms to be competitive.
4. *Strategic loosening/constriction of export restrictions/bans.* Flipping export controls/bans on and off would allow the PRC to manipulate markets to dissuade investors and/or bait the US into investing in soon-to-shutter assets. Many would argue this is already policy.
5. *Expanding restrictions and licensing/bans to new minerals and refined products.* Beijing may extend controls to cover a broader array of minerals—such as hafnium, niobium, or REE magnet alloys—or refined inputs critical to clean tech and defense. This would put immense pressure on US stockpiles and signal the emergence of an expansive game of Periodic Table Whack-a-Mole.
6. *Moving from export restrictions and licensing arrangements to blanket bans.* China could shift from quasi-discretionary export licensing to outright bans on the export of select minerals and eliminate loopholes and exceptions. This would roil markets further, create supply disruption and signal escalation to both U.S. policymakers and global suppliers. The costs to China would be economic and deprive them of a tool (end-use monitoring) that provides the PRC with useful intelligence about the structure of the US economy. This would be the most significant were it to occur, but

it would also be the most obvious escalation strategy, and therefore the one US policymakers are already gaming out.

7. *Restricting mobility for Chinese metallurgists and mineral/materials engineers.*

Already in use in the AI and semiconductor sectors, the PRC could begin discouraging foreign travel either through direct (confiscating passports) or indirect means (extensive debriefings with security personnel after traveling abroad). Given China has control not just on the materials themselves but the technical know-how necessary to process them, this could impede US attempts at catch-up, especially over time.

### Additional challenges and effects for allies

These various strategies underscore a stark reality: the challenge is not just one of first-order supply risk, but also one of ex-China policy coordination and the economic viability of alternative, de-risked supply chains. Even without further escalation, the United States faces significant obstacles to building out credible, cost-effective, and resilient ex-China critical mineral supply chains.

The implied US critical mineral share of demand – about 1/10<sup>th</sup> of global – is larger than that for steel or aluminum, two import-competing sectors the United States has long sought to support through a combination of Section 232 tariffs, anti-dumping and countervailing duties, domestic sourcing requirements, and inbound foreign investment screening. But the *overall* demand for many of these materials is tiny. Final global demand for dysprosium and terbium – two mission-critical HREEs with national security applications – were on the order of 1,200 MT and 340 MT, respectively, in recent years. If margins are thin and scale is small, then specialization and ensuring adequate market size are paramount. Both will be challenging.

First, indemnifying the US economy against Chinese mineral coercion would require developing expertise and workforce to produce at least 50 and as many as 67 ores and alloys. The United States still has leading engineering know-how across many sectors, but mineral processing is not one of them. The US still offers some of the most advanced mining and mineral engineering education available anywhere, but the sector is not producing/attracting enough talent to replace anticipated retirements in the next decade, much less address these additional demands. The obvious solution would be to import that know-how via highly skilled immigrants, but other changes in US immigration policy and general orientation toward immigration will make that difficult.

Second, achieving adequate scale in light of US policy uncertainty will be challenging. US demand is significant and poised to grow rapidly (assuming continuation of the IRA) or more slowly in the coming decades. But US demand for critical minerals covered by

Chinese export controls is only 9.7% of Chinese exports.<sup>3</sup> If Chinese producers struggle with profitability at this scale due to market demand and CCP production guidance, US firms will face even greater challenges.

To achieve profitable scale, US producers will need markets for their products beyond their home market. US security partners in Asia, Europe, and beyond are also vulnerable to Chinese mineral coercion and could benefit from US producers entering the market. But that is only if they see the United States as a stable, dependable source of supply. Given the US administration's revealed willingness to act unilaterally on matters of trade and security (Section 232, IRA content requirements, etc.), European and Asian security partners could find themselves facing the prospect of mineral coercion from both China and the United States. This wouldn't be de-risking for US NATO allies – it would be trading known risk related to China for emerging risk related to the United States. Under these circumstances, the European Union – or at least its NATO members – might be more comfortable with self-insurance via their own protected market. And if that were the case, both the United States and its NATO allies would face strong headwinds in achieving the necessary market scale. NATO is an obvious vehicle for coordinated de-risking; whether it will be used as such remains to be seen.

## Final Thoughts

The binding constraints on an effective US counterstrategy are neither fiscal (at least not yet) nor a matter of political will (strong bipartisan support), nor even geological. They are ultimately a matter of anticipated policy stability and price environment. The Trump administration's actions suggest it views policy stability *eo ipso* as of little importance. Rather, it views broad latitude as the foundation for its more bilateral, transactional approach to trade and investment policy. Future administrations may embrace expanded executive authority, even if they do not share Trump's policy orientation.

But that latitude comes with costs, especially when it comes to critical mineral policy. Miners and processors both face large startup costs and comparatively low margins. Together, these factors are a recipe for long, sometimes multidecadal payback periods. If we add to these challenges the comparatively higher returns on investment in other sectors, US diversification strategy will only be possible if the policy environment provides a secure, long-term demand signal at a viable price. Historically, the US government would have been well positioned to provide both. Given the rapidity and questionable legality of recent, large changes in the policy environment, it is currently in a dubious position to provide either. And given its now more complicated relationship with major security partners – NATO allies in particular – it may be more difficult to secure their cooperation in derisking and the market scale that would come with it.

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<sup>3</sup> For the 12 months prior to February 28, 2025, and for products covered by restrictions to that point. <https://www.spglobal.com/market-intelligence/en/news-insights/research/mainland-china-critical-mineral-export-controls-expand>.