Center for Geopolitics | JPMorganChase

Helping Clients Navigate Global Challenges

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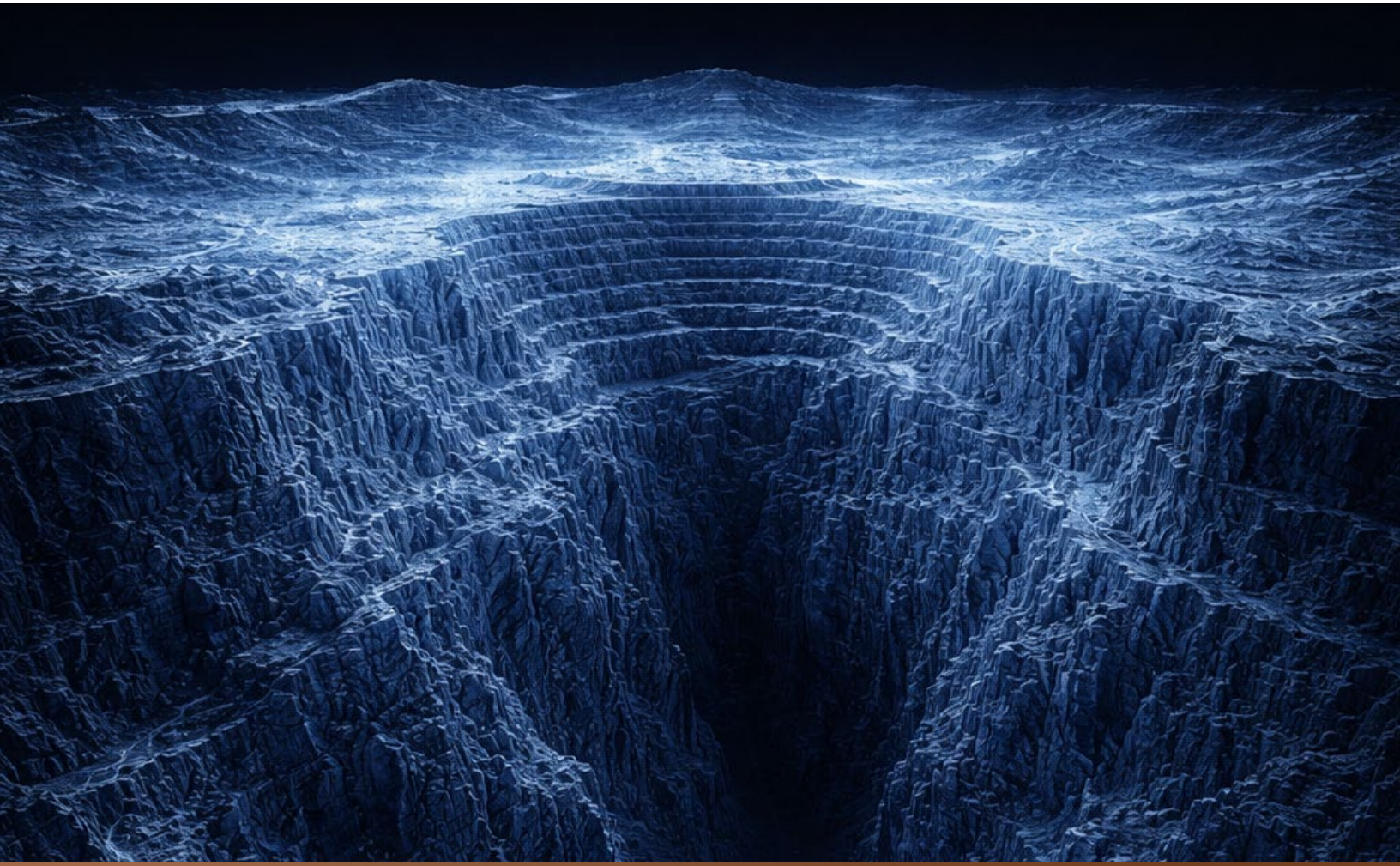
Breaking the critical minerals chokepoint

Global diversification has begun; what comes next is a shift from sourcing to shaping markets



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Executive summary

One year after China's export controls on medium and heavy rare earths highlighted the degree of concentration in global critical minerals markets, governments and industry have moved beyond diagnosis to action. The United States and a growing number of partners have deployed capital, industrial policy, trade tools, and new forms of international coordination to begin building greater resilience across key critical minerals supply chains. The direction of travel is clear: critical minerals are no longer being treated as a narrow industrial issue, but as a strategic economic and national security priority.

For global business, the key takeaway is that the challenge is evolving – and will get more difficult. The first phase of diversification focused on mobilizing individual projects. The next phase will be harder—and more consequential. **Success will depend less on announcing new projects than on whether new processing, refining, and recycling capacity can become economically viable at scale.**

All that is pushing policymakers toward a more interventionist toolkit, including coordinated procurement, stockpiling, and potentially common price-support mechanisms designed to encourage long-term investment and improve market resilience. The broader lesson extends beyond rare earths: similar dynamics—concentrated processing, weak market incentives for resilience, and growing state intervention—are already evident across other strategic supply chains. To help address these issues, JPMorganChase established the Security and Resiliency Initiative (SRI).

Key takeaways

- **Over the past year, the United States and other nations have taken unprecedented actions to stand-up alternatives to China's critical minerals supply chain.** A year on, these efforts show signs of promise, but underscore how much remains to be done.
- **We expect further action on midstream processing, maximizing use of coproducts and tailings, and recycling.** There are several promising technologies that could make critical minerals refining more efficient.
- **It will take several years before concentration risk in critical minerals is meaningfully reduced** – a reality that will shape the broader contours of the U.S. and other countries' approach toward Beijing.
- **Countries' experiences with critical minerals offer an important reminder that resilience does not require full self-sufficiency.** In some cases, partial but durable diversification may be enough to materially reduce risk and improve flexibility.
- **The lessons learned from critical minerals have implications well beyond this market.** As governments confront vulnerabilities in other strategic supply chains, the past year suggests they will increasingly turn to a similar mix of public-private partnership, targeted financing, trade tools, and international coordination.

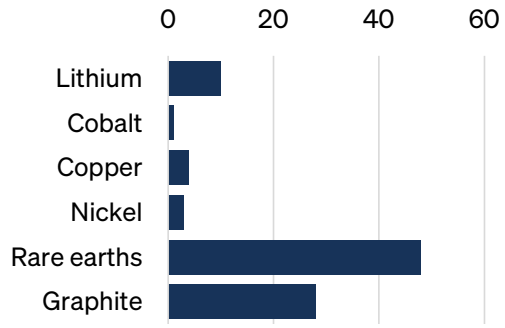
When China introduced export controls on medium and heavy rare earths last April, it highlighted how concentrated global critical minerals markets had become. Rare earths and their derivatives remain essential inputs across a wide range of commercial and defense applications, making supply disruptions economically and strategically significant.

After decades of expanding its role across mining, processing, and manufacturing, as the figure below illustrates, China had come to occupy a highly concentrated position in several strategically important critical minerals value chains. The episode reinforced how critical mineral supply can quickly shape broader policy choices, accelerating efforts in Washington and other capitals to diversify sourcing and build resilience. Beyond China, the U.S. from 2021–2024 was dependent on a single source for over 50 percent of its imports in nine other minerals. Over the past year, the United States and other nations have taken steps to expand alternatives across highly concentrated critical minerals supply chains. A year in, these efforts show signs of promise, but underscore how much remains to be done.

China's control of critical minerals increases at each stage of the value chain

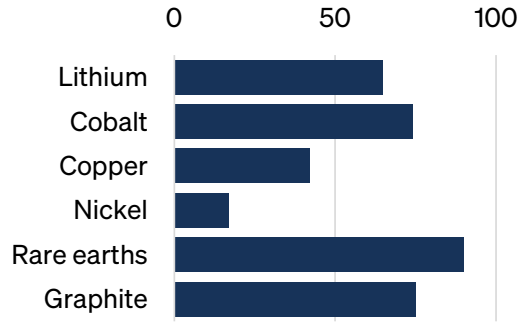
Reserves: are widely dispersed

China share of global reserves (%, 2025)[1]



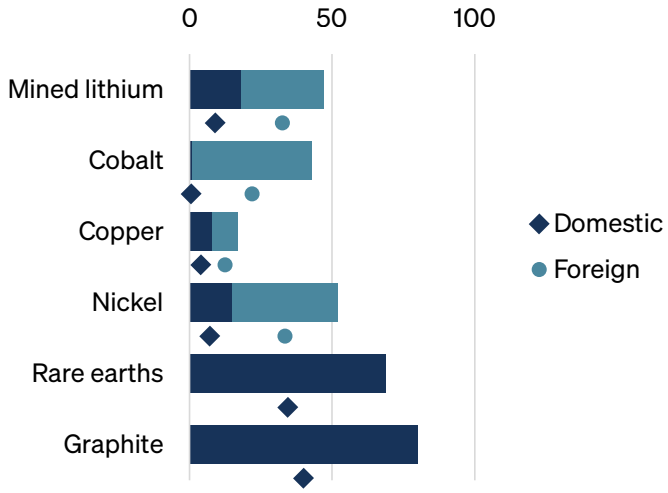
Processing: true source of China's dominance

Share of global processing (%, 2022)[3]



Mining: China has invested in mines abroad to further consolidate control

Share global supply in China's control (%)[2]



[1] USGS except for cobalt (Wilson Center)

[2] Chinese-controlled foreign supply calculated based on ownership of assets; Economist except for graphite and rare earths (USGS)

[3] International Energy Agency

The United States has taken a whole of government response

In 2025, Washington implemented a whole-of-government approach to bring new mining, processing, and refining production online. From the outset, the government prioritized shovel-ready projects through the FAST-41 Program (a process to improve federal agency coordination and timeliness for environmental reviews for infrastructure projects), targeting companies that had already acquired land and completed feasibility studies but still needed permit approvals.

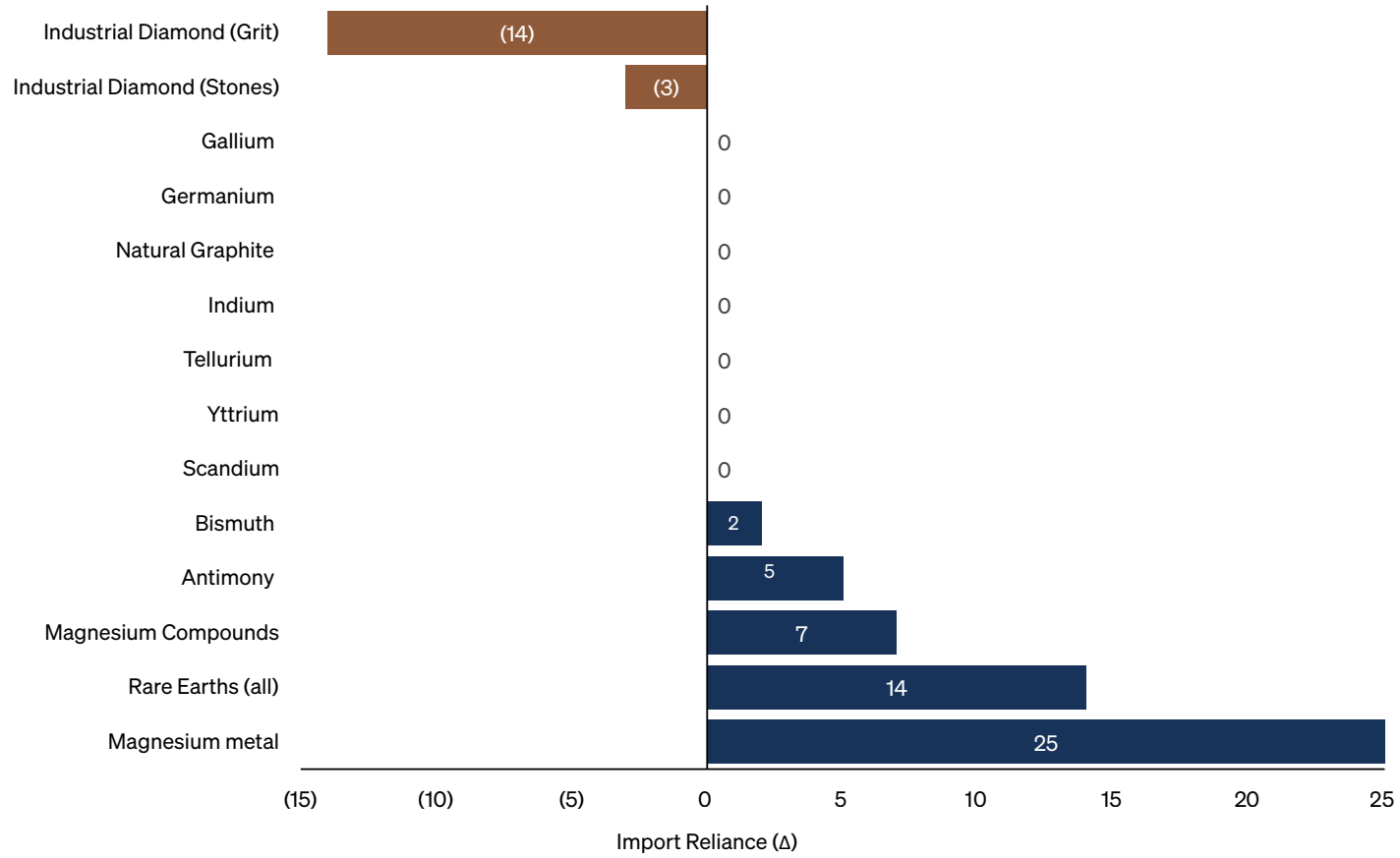
Where project economics were not supported by market forces alone, the government stepped in with incentives to mobilize private capital.

- According to the U.S. Geological Survey, the Pentagon injected approximately $1 billion in equity, loans, grants, and purchase agreements for critical minerals projects with defense applications in 2025.
- The Department of Energy provided over $2.2 billion in direct equity, loan, and grant programs with a particular focus on battery materials and rare earth minerals.
- The Department of Commerce provided $1.8 billion in loans, grants, and equity, primarily for rare earths refiners, and announced Section 232 tariff investigations into copper and other critical minerals which could incent diversification.
- Finally, the Development Finance Corporation (DFC), which was reauthorized in 2025 with double the capital, invested $600 million in the Orion Critical Mineral Consortium. In early 2026, the Export-Import Bank of the United States (EXIM) also lent $10 billion to establish Project Vault, a public-private mineral reserve. Some $700 million in financing was also provided for a tungsten mine in Kazakhstan and $565 million for a rare earth mine in Brazil.

For all its actions, progress will take time to materialize. New processing capacity typically takes two years to come online, while new mines require several years of lead time due to permitting and site preparation. **In 2025, of the 58 minerals the U.S. government designated as critical, the United States remained 100% net import reliant for 13 minerals and more than 50% net import reliant for an additional 20.** As the chart below shows, U.S. import reliance on key minerals once subject to Chinese export controls either remained unchanged or increased. Industrial diamonds were the only mineral under Chinese export controls that saw domestic production rise relative to U.S. demand, while in other cases, such as with antimony and rare earths, domestic production grew, but demand grew even faster.

Change in U.S. Import Reliance for Minerals Subject to Chinese Export Controls (2024–2025)

Percentage points



Source: U.S. Geological Survey

The good news is that investments made in 2025 will begin to bear fruit over the medium term, as new mines and production facilities come online. Late last year, the first U.S. antimony mine since 2001 began production in Montana and another mine in Idaho began construction. In rare earths, a mining and processing facility in California expanded its separation and processing capacity, a New Hampshire-based company increased its rare earth metal manufacturing capacity, and a Louisiana-based separation company made progress toward commercial-scale production.

While the United States has not yet formally articulated explicit targets for increasing domestic production, Washington recognizes that complete self-sufficiency is unrealistic. In public remarks, some government-affiliated experts express confidence that standing up non-China alternatives for as little as 30% of supply may be sufficient in some cases to reduce leverage over key supply chains.

Military critical minerals vulnerabilities grow only more acute after the Iran conflict

Even as critical minerals exports to industry have resumed, military end-users remain denied. The rapid drawdown in U.S. munitions and interceptors during the conflict with Iran reinforces the leverage China has over America's ability to rearm itself until alternative sources of supply come online. Even without access constraints on critical minerals, America's current industrial base will take years to replace many of the systems expended in just the initial hours of the Iran conflict. (See the Center for Geopolitics' latest report on the defense industrial base here.)

China remains the leading producer across several strategically important rare earth and specialty mineral segments, including neodymium and gallium, which are needed for motor magnets and radar chips, and critical metals, such as tungsten, used as penetrators.[1]

International cooperation is growing in importance

The U.S. approach to critical minerals is in the midst of a shift from a primarily domestic focus toward a more internationally-oriented strategy. This shift reflects a growing recognition that domestic supply alone is unlikely to deliver the scale or speed required to reduce dependence on China and is evident in both the expansion of diplomatic engagement and the evolving scope of cooperation.

Critical minerals are now central to many bilateral negotiations and over 50 countries participated in the inaugural Critical Minerals Forum hosted by the Department of State in February 2026. And whereas earlier initiatives tended to prioritize dialogue, standards alignment, and information sharing, more recent efforts are beginning to explore coordination on trade policy, investment, and pricing mechanisms that could directly influence market outcomes.

Taken together, two emerging layers of international cooperation illustrate both the trends and the key uncertainties that will shape whether these efforts translate into meaningful de-risking:

First, bilateral and multilateral agreements are evolving into policy testbeds. The more than 15 MOUs and joint action plans signed over the past year vary widely in substance, but a subset signal a meaningful shift toward enforceable coordination. The recent U.S.–Mexico Action Plan is the clearest example: it establishes binding timelines and a mandate to jointly develop tools such as coordinated trade policies and potential border-adjusted price floors. This moves beyond signaling into experimentation with concrete market interventions to be overseen on the U.S. side by the Office of the United States Trade Representative.

Not all agreements rise to this level, with many still early-stage and non-binding, but the overall direction is clear. Forthcoming arrangements, particularly with the EU and Japan, are expected to more closely resemble the Mexico model. Crucially, there is an emerging intent to consolidate these fragmented efforts into a broader multilateral framework, suggesting that today's bilateral deals are less endpoints than building blocks.

Second, the U.S. is attempting to scale these efforts into a unified demand-side architecture. The newly launched Forum on Resource Geostrategic Engagement (FORGE) is the clearest expression of this ambition. Envisioned as the successor to the Biden-era Minerals Security Partnership, FORGE aims to go beyond coordination and function as a preferential trade and investment zone for critical minerals. Its prospective tools—reference pricing, price floors, and coordinated procurement—would represent a significant step toward actively shaping global market dynamics.

If realized, this would mark a shift from focusing predominantly on supply-side diversification to more active focus on demand-side coordination: aggregating allied purchasing power to create stable, non-China-centric markets. However, the economic and political challenges of mechanisms like international price floors remain substantial, making FORGE a critical initiative to watch as a test of whether this model is viable.

The success of the U.S. critical minerals strategy will hinge less on the number of partnerships it announces and more on whether it can integrate these layers – bilateral experimentation, multilateral consolidation, and demand side coordination into a system that materially reshapes incentives in global markets.

A common price floor would mark a shift from transactional to systemic solutions

In an effort to create a secure supply chain that can incentivize and sustain long-term production and trade in critical minerals, the United States is attempting to negotiate common price floors via a plurilateral critical minerals trade agreement. The process to negotiate this type of agreement will be difficult. The Agreement on Trade in Critical Minerals (ATCM) is still in its early stages, but the main goal of the agreement is to phase-in and maintain mineral-specific price floors by regulating imports. This is to ensure that no matter how much of certain minerals flood the global market from countries not party to the ATCM, the price for minerals within the ATCM free trade zone would remain constant. In the past, the absence of a predictable price floor meant that mining companies were vulnerable to dramatic price swings in the critical minerals sector, and this left producers in higher-cost markets vulnerable to sustained price pressure from lower-cost or state-supported competitors.

The Office of the United States Trade Representative (USTR) is leading the development of the ACTM and seeks to establish price floors through the use of tariffs and minimum import prices. The United States has already laid the foundation for tariffs on critical minerals through the Section 232 investigation that was completed earlier this year. While tariffs have not been put in place yet, the goal is to eventually create a tariff wall, where only countries participating in the ACTM would receive duty-free treatment for their critical minerals. The 232 investigation may also pave the path for the administration to implement minimum import prices for critical minerals.

Creating a stable price for critical minerals goes beyond tariffs and minimum import prices, and as part of the ACTM, USTR will likely aim to negotiate higher labor and environmental standards for participating countries to prevent what it refers to as "regulatory arbitrage." When countries have lax labor and environmental regulations, this can help significantly lower production costs and incentive companies to locate their manufacturing facilities in these countries.

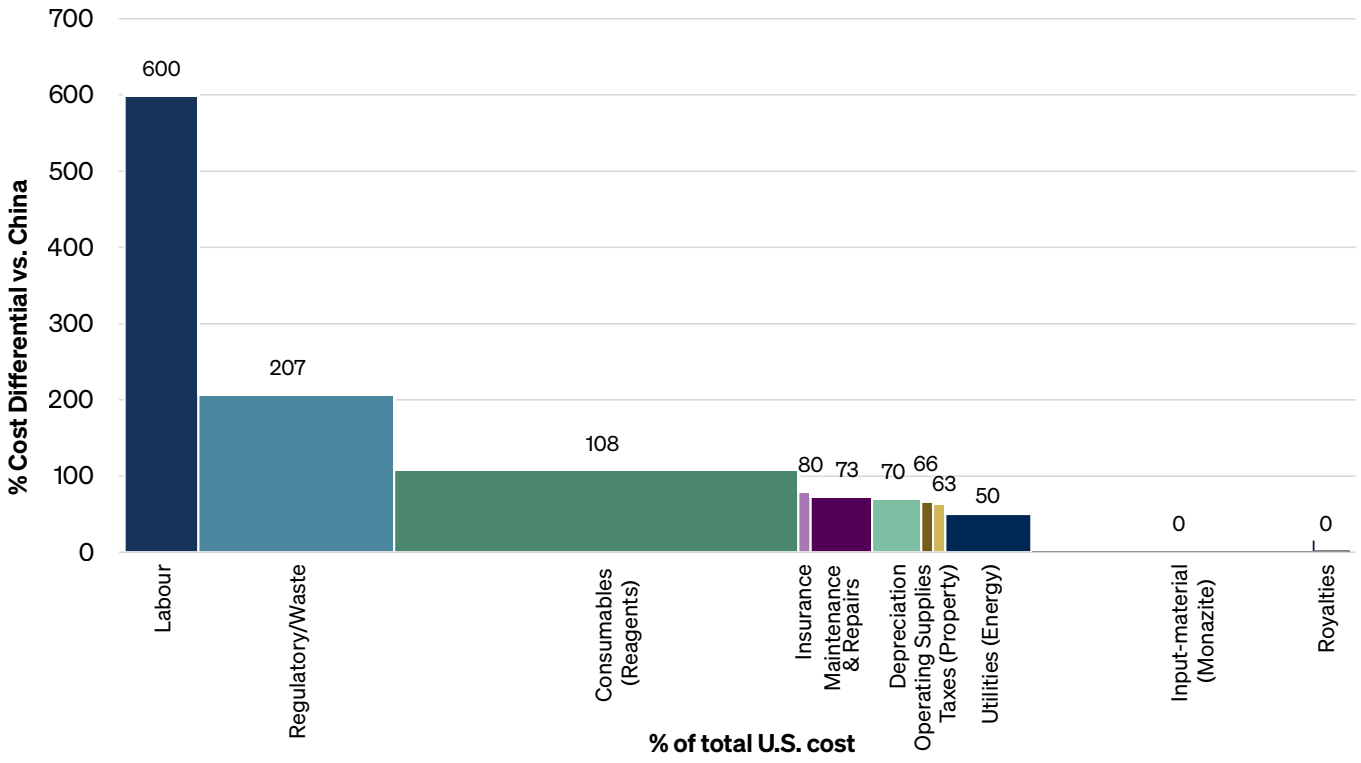
As the United States begins this process, the biggest challenge will be balancing the policy goal of creating a new secure supply chain for critical minerals versus the goal of keeping costs down for consumers. Any price-support mechanism would need to be calibrated carefully – high enough to support investment in diversified supply across participating countries, while avoiding excessive downstream cost pressures for manufacturers and consumers.

We expect the United States to double down on midstream processing and co-product recovery

As the race to derisk on critical minerals accelerates, the United States is expected to make a shift in emphasis from individual transactions to establishing broader frameworks to align private sector incentives. Research suggests that the United States could meet much of its critical minerals demand by processing what already occurs alongside production of other metals.[2] This was not previously done because it was not economical to do so.

There is also significant potential in the tailings, or waste, of production. The Department of Interior has attempted to make it easier to process tailings, and the Department of Energy provided $250 million in financial assistance to support the recovery of byproducts during mineral processing. J.P. Morgan Research has previously identified the long-term potential of recycling and efficiency improvements to reduce critical minerals demand by as much as 40%,[3] and a host of players are seeking to demonstrate the potential to leapfrog current dependencies with new technology.[4] These new approaches, alongside other levers to shape pricing and demand, will be needed to offset a processing cost differential that J.P. Morgan Research estimates can be as much as 70% higher in the United States for rare earth oxides.[5]

Representative cost differential of producing rare earth oxides in the U.S. vs. China
Even when holding input-material cost constant, U.S. is ~70% higher



Source: J.P. Morgan estimates with data from BLS, China NBS, DOE, ICIS, IEA, USGS, SMM, S&P Global, World Bank. Cost structure derived from Mukhlis et al. (2024)

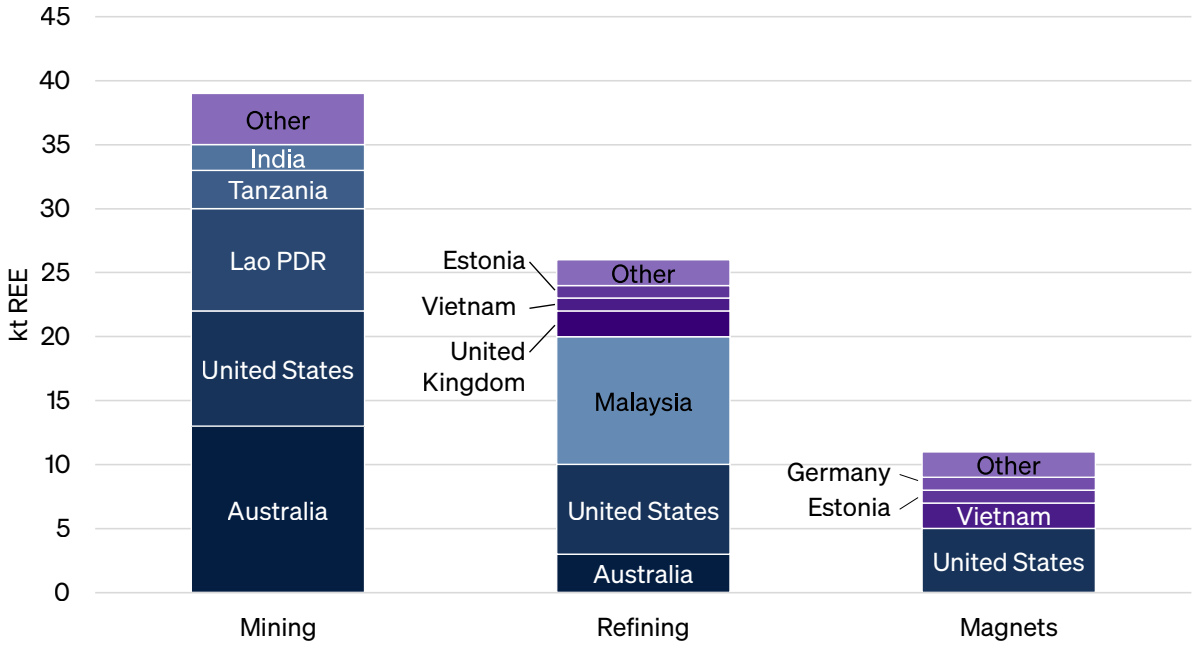
Other countries are also advancing national and regional resilience strategies

Beyond their multilateral engagements, other countries have also taken independent steps to reduce their critical minerals vulnerabilities. Australia and Canada are among the countries which have established strategic critical minerals reserves and/or investment funds.[6] Australia's first fully integrated rare earths refinery will be commissioned in 2027.[7]

Japan has conducted the world's first deep-sea rare earth extraction;[8] the approach remains controversial in part due to continued uncertainties about the environmental consequences and, in the United States, due to its stance toward the International Seabed Authority. Japan is also expected to make a recycling push.[9]

Meanwhile, the European Union's ReSourcEU initiative has set out plans for joint purchasing and stockpiling and prioritized strategic projects;[10] it and the United Kingdom both seek to limit dependence on third countries to 60–65% of any particular mineral value chain. German companies are reportedly considering launching a Japanese-style trading house with government backing to execute global critical minerals projects.[11] **While rare earth mining, refining, and magnet production outside China is on track to be 2–4 times 2024 levels by 2030 (see chart), still low overall levels of magnet production poses a "key source of concern."**[12]

Existing and planned projects for magnet rare earth mining, refining and magnet manufacturing in diversified regions, 2030



Source: IEA

Supply concentration will continue to shape market outcomes

Current market concentration means incumbent suppliers continue to retain significant influence over pricing, licensing, technology access, and the pace at which alternative supply chains can scale. In October, Beijing threatened a further escalation by asserting the right to control exports from third countries of any product containing even trace amounts of Chinese rare earths. Today, the flow of critical minerals to most non-defense firms has resumed under general licenses, albeit at levels that will prevent stockpiling. Japanese firms, however, have been subject to additional restrictions following a dispute over Prime Minister Sanae Takaichi's rhetoric on Taiwan.

Recent policy and commercial developments illustrate how incumbent advantages can continue to slow or complicate diversification efforts. In May, Shenghe Resources paid a 200% premium to acquire an Australian company's rare earths project in Tanzania in which it already held a minority stake.[13] The October controls also included restrictions on rare earth mining and processing equipment and the ability of Chinese nationals to support third country efforts without a license. (These controls were nominally suspended for one year following the meeting between presidents Trump and Xi at APEC later that month, but are consistent with a pattern of behavior in which China has throttled diversification efforts in other sectors even absent formal directives.[14]) Diplomatically, China has expressed its opposition to efforts that set up exclusive blocs, such as coordinated price floors, that "disrupt international economic and trade order."[15]

The lessons learned from the critical minerals experience will have implications for other supply chains

As difficult as it will be to diversify critical minerals supply, **the experience of the past year is increasingly being viewed as a template for how governments and markets may respond to vulnerabilities in other strategic sectors.** The core lesson is that concentrated supply chains are not simply a trade or industrial issue; they can become a strategic constraint on commercial resilience, policy flexibility, and national security.

Several broader lessons stand out.

First, markets alone often do not deliver resilience when strategically important supply chains become highly concentrated. In critical minerals, governments have concluded that private capital will often underinvest in capacity that is commercially marginal in normal conditions but strategically important in periods of disruption, elevating the role of public-private partnerships, targeted financing, procurement support, and selective policy intervention.

Second, diversification does not require full duplication to materially reduce risk: establishing alternative supply for even a modest share of demand may, in some cases, be enough to improve resilience and create greater room to absorb shocks.

Third, long-term resilience will depend as much on market design and technology as on new physical capacity. Price-support mechanisms, coordinated procurement, stockpiling, recycling, coproduct recovery, and processing innovation may prove just as important as new mines or refineries in making diversification commercially durable.

Perhaps the most important lesson is one of timing. Resilience is far less costly to build before a chokepoint becomes disruptive than after it has already shaped commercial decisions or policy choices. In that sense, critical minerals are less an isolated case than an early warning. The effort to build more resilient supply chains remains a multi-year test of policy, diplomacy, capital, and innovation—but it also offers an early case study in how strategic interdependence is likely to shape the global economy. Concentrated supply chains will remain a source of commercial and geopolitical risk, governments will play a larger role in shaping outcomes, and the search for the next potential chokepoint is likely to intensify.

What we're watching

- **Progress towards a common critical minerals price floor** – which could incentivize and sustain long-term investment in critical minerals production and mark a shift from transactional to systemic solutions.
- **Broader U.S.-China diplomacy** – and whether it sets the stage for critical minerals license renewals.
- **Implications for other chokepoints** – can the United States apply the lessons learned in critical minerals to other chokepoints without losing momentum.

Endnotes

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