

Critical Mineral Policies for Supply Chain Diversification and Price Hedging

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1. Introduction

Many of the supply chains for critical minerals run through China, raising concerns over political, national security, and economic risks. In February 2026, the United States hosted representatives of 54 countries and the European Commission to “reshape the global market for critical minerals and rare earths” (US Department of State 2026). The United States proposed a “plurilateral” initiative, the Forum on Resource Geostrategic Engagement (FORGE).¹ FORGE would “friendshore” critical mineral supplies among allied countries by geographically diversifying supply chains through investments in each country’s supply capacities.

FORGE would create what Vice President JD Vance called a “preferential trading zone” that would establish “reference prices for critical minerals at each stage of production.” The price floors would protect new critical mineral investments by allies from price declines, thus lowering investment risk. To maintain the price floors, coalition countries would impose “adjustable tariffs to uphold pricing integrity.”

The United States also announced the establishment of the US Strategic Critical Minerals Reserve, “Project Vault,”² a public-private partnership financed by a \$10 billion loan from EXIM and \$2 billion of private capital. “The goal of the stockpile is to protect the private sector from supply disruptions and price volatility” (Uricke 2026). Vault incorporates deep involvement by the private sector in determining the necessary types and quantities of inventory holdings.

This brief first considers the concerns about Chinese dominance of critical mineral markets, the implementation challenges of FORGE, and strategies for addressing those challenges. It then considers how Vault complements FORGE by giving buyers of critical minerals an additional tool for hedging their purchases against upward price shocks.

2. What critical mineral security risks prompted FORGE?

Many observers believe that targeted restrictions on critical minerals could cause major economic dislocations and threaten national security. In this view, potential for geopolitical conflict underlies the need to geographically diversify supply chains.

Although China has large market shares for numerous processed minerals and some extracted minerals (e.g., graphite, rare earths), not all materials present equal risks. To impose targeted restrictions, China has to control not just the quantity of exports but also subsequent transactions, such as reselling. For example, export licensing can limit the total volume of exports, but it is more difficult to influence who ultimately receives the supplies in high-volume markets involving numerous buyers. Targeted restrictions are difficult to enforce for battery minerals (Kannan and Toman 2025). Several rare earths are produced in limited quantities and have “thin” markets (IEA 2026).

China could also exercise market power by restricting exports, thus raising international prices above market

1 See Blakemore and Harmon (2026), Urecki (2026), Baskaran and Schwartz (2026), Froman (2026), and Northey and Bikales (2026).

2 See Baskaran (2026), Northey and Bikales (2026), Urecki (2026), and Brunelli and Moerenhout (2026).

levels, and by periodically cutting prices to undermine competing investments. There is ample evidence of export restrictions for rare earths (Kannan and Toman 2025). However, this is an economic risk, not an existential threat. Moreover, there are limits to how high China could raise export prices without injuring its own critical minerals industry.

Although predatory pricing cannot be ruled out, China's economic planning system generally tends to overbuild industrial capacity (Lee 2025). This can lead to episodic price reductions to stimulate international demand and thereby reduce domestic job losses and debt defaults.

Ameliorating concerns about China's large market shares does not require replacing all Chinese supplies; it is sufficient to offer a degree of supply assurance and spark a degree of price competition. However, the amount of geographical diversification needed to accomplish these aims is unclear.

3. How would FORGE be implemented?

It will be costly, complex, and time consuming to geographically diversify critical mineral supply chains. China's technological advantages in the sector give it an advantage in offering lower prices—a benefit that purchasers of critical minerals will lose as the FORGE coalition develops costlier alternative supply chains.

Higher costs for minerals supplied within the coalition, at least at the outset, can weaken the coalition's durability, since participants will have an incentive to deviate from the agreement to achieve lower costs. Cost allocations (who pays and how) also need to be determined. Finally, if China possesses the leverage over critical minerals that its critics claim, it could retaliate.

As mentioned at the Ministerial, one way of implementing FORGE for mineral processing, the part of the supply chain in which many security concerns arise, is coordinating tariffs for processed minerals across coalition countries. Another option is coordinating subsidies for processing.

3.1. Coordinated tariffs for friendshored critical mineral processing

An import tariff on processed critical minerals will set common domestic price floors among coalition members so that new investments can recover costs and earn a sufficient return. The tariff will vary so that the transaction price for minerals among coalition members is the floor price unless the market price is higher. The coalition can monitor imposition of the tariff, but deterring illegal purchases of non-tariffed critical minerals depends on enforcement by individual coalition members.

The larger the quantitative target for geographically diversifying supplies, the higher the floor price should be. In practice, however, the additional mineral-processing investment supported by a floor price is uncertain. Moreover, because firms know more about their costs than governments do, and because this industry has political influence in at least some importing countries, the floor prices chosen by the coalition may be upwardly biased.

An underlying premise in proposals for friendshoring is that innovation will make new investments in processing more cost-competitive with Chinese capacities over time. However, uncertainties remain: how much new investments will cost, how rapidly costs will fall over time, how long price floors must be maintained. Tariffs also can be difficult to relax when they are no longer needed.

Moreover, what if a coalition member subsidizes new domestic processing capacity to gain market share within the coalition? Such incentives support geographical diversification but also stimulate costly competition among coalition members. Ideally, with the common price floors, countries' comparative advantages can determine the location of investments to reduce the cost of friendshoring.

The variable tariff ultimately gets passed on to purchasers of critical minerals—first companies, then customers—within the coalition. This aligns the cost of geographically diversifying supply chains with the benefits. However, industries using critical minerals also

are targets for economic growth in many economies; price floors work against those industrial policy goals.

What if countries outside the coalition sell processed critical minerals at the floor prices? From the perspective of mineral security, this is another form of geographical diversification. However, it also implies a leakage of jobs and other benefits from geographically diversifying supply chains. A non-coalition country with processing capacity might be required to join the coalition as a condition of selling to coalition members. However, it might not be in this country's interest to join, while its exclusion limits international competition to help moderate mineral price increases.

Could China use its ostensible market power to retaliate against the price floors? Because the tariff reduces coalition demand for its output, China will have excess refining capacity and may discount its prices, giving importing countries an incentive to stay out of the coalition. China also could idle some refining capacity, raising international market prices to floor prices. It would then capture prospective tariff revenues as economic rent that could be used to compensate costs borne by its idled companies.

3.2. Coordinated subsidies for new domestic processing

Subsidies by coalition members can support new critical mineral investments without raising domestic prices above the international market price. Subsidies are thus better than tariffs for critical mineral buyers, and they are a less obvious target for Chinese retaliation.

Coordinating coalition members' subsidies to provide consistent economic signals for different investments is more difficult, however, than coordinating price

floors. This affects not just the scale of geographical diversification but also how comparative advantages shape where new investments are made.

The focus of subsidies also matters. Investment cost subsidies benefit weak as well as strong firms, and it is inherently difficult for governments to target subsidies effectively; this can lead to expensive flops. Production tax credits reward expanded output and thus benefit efficient firms with larger market shares, but they could be hard to shut off when not needed.³

The subsidies may need to be substantial, depending on China's comparative advantage over coalition members. Their cost is borne by taxpayers rather than critical mineral users—an economically less efficient approach that adds to the economy's tax burden. However, subsidies may be more politically palatable than floor prices that elevate domestic prices.⁴

4. Coordinated support for geographic diversification of extraction

Comparative advantages in extraction depend on geology as well as technology. China has developed reserves of several critical minerals, particularly graphite and rare earths, and has become a dominant supplier of those extracted materials (IEA 2026).

The US Geological Survey publishes annual estimates of mineral reserves that are technically feasible to extract under prevailing economic conditions.⁵ The estimates indicate the potential for geographical diversification of extraction for many critical minerals. There are other possibilities for supply diversification—albeit at higher cost and using novel technology (e.g., reprocessing mining wastes or ash from coal-fired power plants).

3 Uricke (2026) notes that Congress is considering more complex price-support mechanisms that can share the burden of low prices and the benefit of high prices. A “contract for differences” establishes a reference price and then adds subsidies to top up the supplier price when the international price is low while taxing away the difference with an international price above the reference price.

4 Public-private partnerships can be another form of implicit subsidy in which government agencies obtain ownership stakes in critical mineral suppliers with purchase agreements locking in prices sufficient to support the needed investments. However, this approach generally is less efficient than support across a critical mineral subsector without government ownership.

5 See <https://www.usgs.gov/centers/national-minerals-information-center/mineral-commodity-summaries>.

The timing for geographically diversifying mineral extraction is uncertain, even for well-documented mineral reserves.⁶ Common price floors for extracted minerals or domestic subsidies for extraction could speed development of alternative sources. However, priority should be given to projects that reduce high levels of Chinese dominance but are challenging to develop with market incentives alone.

The presence of floor prices for processed minerals should be accounted for in setting floor prices for raw materials. Support for additional resource extraction should not exceed what can be absorbed by the coalition's increased processing capacity. This is a challenge especially for critical minerals that are geologically found together, such that increased extraction of one mineral also increases the supply of others.

Two questions about mineral extraction parallel the issues with mineral processing. First, what if non-coalition sources of extracted materials will supply the coalition at or below the floor prices? Second, what if China uses its market power over extraction to retaliate against floor prices? Subsidies for specific extraction projects have the same coordination and performance challenges as subsidies for mineral-processing projects.

5. The economics of Vault

The US Strategic Critical Minerals Reserve will use the \$12 billion of loaned capital to purchase and store minerals for the subscribing companies. Companies will in effect borrow from that capital by specifying quantities of minerals to be acquired on their behalf, along with the prices they would pay when withdrawing materials. Those payments will reduce their loan balances. Companies also will pay an as-yet-undetermined “commitment fee” to participate and must cover storage and interest charges for the minerals held on their behalf.⁷

The reserve functions much like a call option in financial and commodity markets. Enrollment gives a company

an opportunity to obtain a specified quantity of a particular critical mineral at a predetermined price (the “strike price”). The commitment fee is analogous to an option price except that under Vault, the fees are predetermined, not market determined. Since the reserve involves physical inventories, companies pay storage costs as well as debt service costs for the quantities of loaned funds they are using. Private companies that use critical minerals tend to hold meager inventories, if any (Jacobs 2024). By aggregating individual companies' demands for critical minerals, the reserve can lower the cost of hedging through economies of scale in mineral storage. Nonetheless, there are logistical challenges. For example, processed materials have short shelf lives and must be cycled in and out of the reserve, thus raising inventory costs for the most useful forms of critical minerals (Uricke 2026).

Because price volatility is an ongoing concern and geographic diversification of supply chains under FORGE will take time, the reserve authority should be prepared to purchase inventory holdings for Vault in a timely way from the least costly sources, including China. If, under FORGE, a price floor protects new critical mineral investments and lower-cost supplies from China are no longer available, then the government should consider transferring to the authority the tariff revenues associated with reserve purchases. That way, the reserve could provide maximum hedging consistent with its available financing.

6. What about hedging against price declines?

For suppliers of critical minerals, the economic risk is loss from unexpected declines in prices of their output. Critical mineral mines and processing facilities are capital intensive, and to manage the risk, the mining and processing companies typically have multiyear contracts with their customers (IEA 2024).

A common feature in offtake agreements is a requirement for a minimum purchase volume over the

⁶ For higher-cost alternatives like extraction from waste materials, the timing also depends on the pace of support for needed R&D to improve technical feasibility.

⁷ The potentially available storage capacity for the reserve is not currently known.

life of the contract. However, mineral markets often have significant price volatility. To address that, contracts may adjust the contract price over time to reflect changes in market conditions. This leaves suppliers exposed to price declines that may inflict serious losses.

Some observers believe Vault could benefit suppliers as well as purchasers because mineral purchases to stock the reserve can raise prices, depending on how fast inventories are built up. However, such price effects diminish in importance as FORGE raises mineral prices.

In principle, a reserve policy could offer price protection to both buyers and suppliers (Jacobs 2024). The hedge for sellers could be implemented by a provision to purchase and store minerals at a specified floor price if market prices fall below that price. The reserve could replenish its funds when the stored minerals are withdrawn from inventory and sold at prices above the floor price. When suppliers withdraw and sell quantities that the government stores, the reserve authority could be paid a portion of the gain. Suppliers also could be required to cover costs of storage and debt service, as mineral users must do under Vault.

However, complications arise with two-sided hedging with a government reserve. The floor prices needed differ across suppliers, with less efficient suppliers calling for more support than more efficient suppliers. Moreover, the commitment to purchase any critical minerals offered by suppliers at specified floor prices is open ended. What if the financial capital or storage capacity available to the reserve authority runs out? Would minerals suppliers even be interested if they faced potentially substantial costs of storage and debt service?

7. Policy conclusions

Using a coordinated variable tariff to expand critical mineral supply chains could provide clear and consistent signals for geographically diversifying supplies in critical mineral markets. However, extensive within-coalition information exchange and monitoring is needed, as

well as mechanisms to manage disputes over national industrial policies in the sector. Chinese retaliation against such a large and visible trade measure is another concern. Would the effort be worth it? If the main threat from China is high prices rather than supply cutoffs, consider that the tariff approach, too, will increase prices while requiring enormous new investment.⁸

An alternative might be limited domestic subsidies among coalition members to stimulate increased investment in processing capacities and (as needed) extraction capacities for minerals with especially high Chinese market shares and thin markets—where market manipulation might be a particular concern. The advantages: a more limited approach limits the cost of policy implementation, provides insight on the effectiveness of the policy, allows policymakers to carefully set priorities, and is a more elusive target for retaliation. Although subsidies may be harder to coordinate, less efficient, and less transparent than price floors, they could provide basic reassurance about supply while reducing retaliation risks and internal political opposition to higher domestic mineral prices. Loosely coordinated subsidies across coalition members could be focused on priority critical minerals and exploit comparative advantages within the coalition.

Countries ultimately want security of critical mineral supplies for domestic manufacturers using those minerals. There also are debates over Chinese trade practices in component manufacturing and utilization. However, protecting domestic component suppliers also dampens competition—a key to spurring affordability and innovation. Thus, coalition members should avoid broad-based protection for critical mineral users. Negative impacts on affordability and innovation also are an inevitable side effect of protecting mineral extraction and processing within the coalition. This is an important reason why the potential benefits of protection need to be carefully evaluated.

Vault has a very different purpose than FORGE: the former provides insurance against episodic price shocks; the latter seeks to geographically diversify supply chains away from heavy reliance on China to

8 Whitlock et al. (2025) provide a rough estimate of the costs for the United States to meet domestic demands for electric vehicle battery minerals with domestic processing.

address concerns about prices and availability. Vault could be made available to non-US as well as US-based companies (or imitated by other countries).

Vault can be useful whether mineral price jumps result from market manipulation or regular market fluctuations. FORGE is useful only under the premise that geographic concentration of critical mineral supplies poses persistent risks. Vault takes advantage of potential economies of scale in mineral storage to centralize the physical management of inventories, while relying on purchasers to determine the types and quantities of minerals to be stored. FORGE is a collective exercise of industrial policy-type measures to change the functioning of critical mineral markets.

Finally, there is no rationale for subsidizing the cost of providing price hedging under Vault. The benefit comes from the hedge itself. If potential users are not willing to pay enough to cover the reserve's costs of acquisition, storage, and debt service, that is a sign that societal costs exceed Vault's benefits and it should not be implemented.

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