

Securing the Rare Earth Supply Chain: Considerations for U.S. Industry and Policymakers

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Introduction

For years the U.S. government adopted a hands-off approach to rare earths (REEs) mining and manufacturing, enabling foreign adversaries like China to dominate the global industry and exploit U.S. reliance. U.S. policymakers have now fully recognized the threat of REE supply chain disruptions and are galvanized to confront this vulnerability directly. Both the past administration and incumbent are determined to push forward government policies and funding to support and grow the U.S. rare earth sector, which domestic industry should leverage to compete against Chinese suppliers.

Reorientation of the U.S. Rare Earth Industry

For the past several decades, Chinese-produced rare earth elements (REEs) were the dominant or only source of rare earths in U.S. defense and commercial systems. This created an imbalance frequently weaponized by China's government to artificially manipulate the market and seek concessions from U.S. leaders. Though rare earth mining has recently restarted at Mountain Pass, California, the U.S. only possesses one operating REE mine. Imports from China, Myanmar, Australia, and elsewhere must supply the U.S. market, which subjects the U.S. to significant foreign pressures.¹ The U.S. also remains dependent on China for downstream REE separation, a necessary value-added precursor to manufacturing finished REE permanent magnets.²

Recognition of this vulnerability has fluctuated among U.S. government policymakers. A boat collision in 2010 that happened in disputed waters prompted China to unofficially restrict REE exports to Japan,³ causing rare earth prices to soar that same year. The U.S. had few alternatives: globalization, just-in-time logistics, and the U.S. government's prerogative to acquire the most capability at the lowest cost had already hallowed out what was left of the U.S. rare earth sector. The initial U.S. government response to the 2010 "embargo" was to "reduce, reuse, recycle, and substitute" REE products. However, this approach failed to curb the U.S. appetite for

¹ <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021-rare-earths.pdf>

² <https://prd-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb1-2017-raree.pdf>

³ <https://www.nytimes.com/2010/10/25/business/global/25rare.html>

rare earths, spurred by accelerating defense and commercial needs for advanced technology.

With Buy American rhetoric and policy regaining popularity after the 2016 elections, the U.S. government changed course. In 2017, President Trump signed Executive Order 13806, *Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States*,⁴ and Executive Order 13817, *A Federal Strategy To Ensure Secure and Reliable Supplies of Critical Minerals*,⁵ each focused on identifying and addressing supply chain reliance.

In 2018, Congress took a significant step to address the U.S. rare earth vulnerability by including a provision in the National Defense Authorization Act for Fiscal Year 2019 that barred the Defense Department from procuring neodymium-iron-boron (NdFeB) or samarium-cobalt (SmCo) magnets from China, Iran, Russia, and North Korea.⁶ The prohibition has had the intended effect of reducing the Defense Department's reliance on China for REE magnets. In 2020, Congress passed additional legislation that expanded this law to provide DoD sourcing restrictions for NdFeB and SmCo all the way back to the initial mine products. The law, effective in five years, demonstrates that lawmakers are prepared to continually respond to supply chain weaknesses where they exist.

In 2019, the White House built on congressional action by signing five "Presidential Determinations" which authorized up to \$50 million in Defense Production Act (DPA) Title III funding to address each of the following issues within the REE supply chain: NdFeB magnet manufacturing, SmCo manufacturing, light rare earth separation, heavy rare earth separation, and metals and alloys manufacturing.⁷ The Defense Department has already awarded tens of millions of dollars in total to Urban Mining Company, MP Materials, Lynas Corp. and TDA Magnetics to restore domestic production of REEs.

The Biden Administration: Same Goal, New Strategy

The Biden Administration is expected to build on the previous administration's objective of securing U.S. access to REEs, as demonstrated by its continued focus on supply chain security. The Administration's actions have not gone unnoticed by the

⁴ <https://www.govinfo.gov/content/pkg/FR-2017-07-26/pdf/2017-15860.pdf>

⁵ <https://www.federalregister.gov/documents/2017/12/26/2017-27899/a-federal-strategy-to-ensure-secure-and-reliable-supplies-of-critical-minerals>

⁶ <https://www.congress.gov/bill/115th-congress/house-bill/5515/text>

⁷ <https://www.businessdefense.gov/News/News-Display/Article/1913110/defense-production-act-title-iii-presidential-determinations-to-strengthen-the/>

REE market; major suppliers are carefully watching and analyzing the Administration's statements and policies to decide whether to establish or expand U.S. operations.⁸ Market observers have reason to be optimistic as they keenly await a report this year, required under the White House's *Executive Order on America's Supply Chains* in February, that could further influence U.S. policymaking in the REE sector.⁹ The Executive Order directs a government-wide 100-day review of key supply chains, including for REEs, and requires recommended courses of action to address associated vulnerabilities. The Administration executed its mission in March, soliciting REE magnet makers and other members of the critical minerals industry for information that will help serve as a basis for U.S. government action in 2022 or 2023.

Though the report will likely revalidate the data gathered under the previous administration, most notably expressed in the Executive Order 13806 report, there are signs the White House may diverge in strategy from the previous administration to curb U.S. REE reliance on China. It was reported that the Administration may depart from its Buy American posture on critical minerals and would instead rely on importing EV raw materials from allied nations to domestically process into EV battery parts.¹⁰ The Administration has since revised its position, clarifying it supports responsible mining. The Administration's strategy may have been influenced, in part, during President Biden's meeting in March 2021 at the Quadilateral Security Initiative (Quad) "Summit"¹¹ where a REE procurement chain for EVs was reportedly discussed between leaders of Australia, Japan, and India.¹²

U.S. REE miners, who had hoped for renewed interest in mine permitting relief, are fortunate that the Administration's stance on mining has moved in a practical direction. For domestic REE producers, the White House's new policy presents an opportunity to secure an alternative and qualified source of feedstock to meet the needs of the EV battery market, potentially from a Quad partner such as Australia. REE producers may also stand to benefit from a Biden Administration proposal, nestled within the American Jobs Plan, to utilize a portion of the \$580 billion designated for R&D and manufacturing to be used toward REE separation and electric vehicle battery production.¹³ Underpinning these efforts is the Administration's central focus on climate change prevention, renewable energy, and green technology, which may influence trade policy

⁸ <https://investorintel.com/investorintel-video/jack-lifton-interviews-constantine-karayannopoulos-of-neo-performance-materials-about-the-state-of-the-rare-earths-market/>

⁹ <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/02/24/executive-order-on-americas-supply-chains/>

¹⁰ <https://www.reuters.com/business/energy/biden-looks-abroad-electric-vehicle-metals-blow-us-miners-2021-05-25/>

¹¹ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/12/fact-sheet-quad-summit/>

¹² <https://asia.nikkei.com/Politics/International-relations/Indo-Pacific/Quad-tightens-rare-earth-cooperation-to-counter-China>

¹³ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/>

concerning REE-based products. Testifying at a House Foreign Affairs Committee hearing, climate envoy John Kerry hinted at the possibility that the Administration could deploy sanctions against China in response to forced labor in the manufacturing of solar panels and REEs.¹⁴

The REE sector is not only responsive to the Administration, but also to Congress where the Buy American platform for critical minerals is growing and solidifying among congressional Republicans but less so with congressional Democrats. This trend represents a reversal in less than 20 years, as Republicans previously adopted a hands-off free trade approach while Democrats sought to advocate U.S. labor interests through economic and trade policies. The 117th Congress has witnessed a host of legislation aimed at strengthening supply chains from Chinese interference, most notably the U.S. Innovation and Competition Act, which passed the Senate in May 2021 and awaits consideration in the House. The legislation, among many other components, includes funding for critical mineral extraction research and domestic electronics manufacturing¹⁵—a salient industry for the REE permanent magnet market.

Policy Solutions are Market Assurances

Establishing a resilient supply chain capable of meeting U.S. REE needs will require private industry to provide competitive alternatives that can compete on a cost basis with Chinese suppliers. Though greatly challenging, achieving this will be possible by building out innovative and cost-effective REE extraction infrastructure, developing high-value domestic deposits, utilizing promising recycling technology, and forging strategic partnerships.

There is broad consensus that countering China will require both policy changes and government investment to provide necessary the demand signal for the private sector, and we are seeing both occur. The underlying primacy of reshoring critical minerals has remained constant between the administrations, but the U.S. government should consider the following measures:

1. Purchase rare earths from domestic producers.
2. Reduce regulatory burdens.
3. Continue using Defense Production Act funds to invest in innovative domestic producers.
4. View trusted foreign allies as part of the process to achieve true supply chain security.

¹⁴ <https://foreignaffairs.house.gov/hearings?ID=F84F2905-A7D3-4742-A082-4C723B2A7A09>

¹⁵ <https://www.democrats.senate.gov/imo/media/doc/DAV21A48.pdf>

Conclusion

The next year should be promising for the REE industry, as members of Congress and the White House continue to spotlight the visibility of rare earths and seek solutions. However, developing a long-term U.S. strategy to deliver access to REEs free from Chinese influence is ultimately contingent on the success of a policy platform that can navigate political and market obstacles. The federal government should consider mobilizing its purchasing power and providing industry with the right incentives needed to build a resilient domestic supply chain for REEs.