

China Is a Paper Tiger on Rare Earth Minerals

Dean Cheng, Nicolas D. Loris, and Klon Kitchen

KEY TAKEAWAYS

Rare earth minerals (REMs) are important and abundant.

Chinese threats to constrain REM supplies are unlikely to have their intended effect—and may even backfire.

Creating a predictable, efficient regulatory pathway for new American mines will ensure ample supplies of REMs in the future.

The U.S. and China are seeking leverage over one another as the two nations negotiate their future trade relationship. Recently, as part of this posturing, Chinese president Xi Jinping suggested Beijing may use its position as the world's leading supplier of rare earth minerals (REMs)—metals that are critical for everything from mobile phones to fighter jets—as a means of pressuring Washington to ease or remove more than \$300 billion in trade tariffs. Such a strategy, however, is unlikely to significantly constrain U.S. manufacturing or to apply decisive pressure to U.S. negotiators because these resources are actually abundant. China's previous attempts to use them as bargaining chips backfired and spurred greater supply-chain diversity and resilience.

This paper, in its entirety, can be found at <http://report.heritage.org/ib4968>

The Heritage Foundation | 214 Massachusetts Avenue, NE | Washington, DC 20002 | (202) 546-4400 | heritage.org

Nothing written here is to be construed as necessarily reflecting the views of The Heritage Foundation or as an attempt to aid or hinder the passage of any bill before Congress.

Rare Earth Minerals Are Important—and Abundant

There are 17 rare earth minerals,¹ and these elements are critical in multiple industries due to their relative strength, light weight, and highly conductive properties. The U.S. government identifies these elements as critical to the nation's economic and national security, and the Trump Administration has exempted REMs from the current tariffs on Chinese goods. Contrary to their name, the U.S. Geological Survey describes REMs as “relatively abundant in Earth's crust,”² but that does not mean they are easily extracted.

REMs are often found mixed together with other minerals, and the ores must be thoroughly refined before they can be used in manufacturing. Raw ores, for example, often undergo “solvent extraction,” which entails moving the minerals through hundreds of liquid-filled vats that separate individual elements—and this process must be repeated hundreds or even thousands of times. Mining in general, and REM processing specifically, faces significant barriers in the United States in the form of environmental regulations, and this has allowed China, although it only has about 36 percent of the world's REM reserves, to be the source of approximately 80 percent of the world's REM resourcing between 2004 and 2017.³

Threatening REMs Is a Failed Strategy for China

China has sought to use this position of market dominance for its benefit before. In 2010, a Chinese fishing boat collided with two Japanese coast guard vessels near the disputed Senkaku Islands. The captain of the fishing boat was detained and was scheduled to be put on trial. After strong Chinese protests, however, the Japanese government returned the captain without trial. Despite the return, Beijing decided to prohibit the export of REMs to Japan. Officially, the Chinese claimed this was in order to ensure a sufficient domestic stockpile to supply Chinese industries, but it is broadly understood that this was a form of punishment in the wake of the fishing boat incident.

This embargo, in turn, sent shock waves through not only the rare earths market but also among users of these metals, including defense industries. While this led to a short-term price spike and some dislocations, the longer-term effects demonstrated the reality of free markets. In the wake of the Chinese decision, many countries either reopened mines and facilities that had been closed (e.g., the Mountain Pass mine in the United States) or began to survey their own territories to identify new sources.

In the years following the Chinese move, Australia and the U.S. both substantially expanded their production of rare earth minerals, as did Brazil, Malaysia, Russia, Thailand, and Vietnam. New reserves were also identified in India and Canada. Most recently, Japan discovered a major offshore deposit of rare earths that is estimated to be able to meet centuries of demand.⁴

In addition, the World Trade Organization (WTO) ruled against China's actions, finding the embargo and quotas on sales to be in violation of WTO rules. By 2015, China ended its quotas, while still requiring an export license for rare earths. The result has been a decrease in rare earth prices and the shuttering, again, of a number of mines outside China.

With this renewed threat, however, Beijing runs the real risk of creating permanent competitors. Doubts about the security and stability of supply chains originating in China are likely to be exacerbated, especially given the national security uses for rare earth minerals. As important, having identified new reserves, other states may be able to access alternatives far more quickly now than they could in 2010, thereby limiting even the mid-term volatility caused by any Chinese action.

Deregulating Domestic REM Development Is Essential

According to the U.S. Geological Survey, the U.S. has a great wealth of mineral reserves—and many of those estimates are outdated.⁵ However, the abundance of rare earth minerals in the country does little good when overburdensome regulations and seemingly endless litigation thwarts extraction. Domestic mines already have to compete with cheap labor and extremely lax environmental regulations in China.

Washington is not helping, either. In the U.S., it could take a decade or longer to get a new mine established and operating. American mines must comply with more than a dozen major environmental statutes, in addition to several dozen more at the federal, state, and local levels.⁶ Improving the regulatory landscape that properly safeguards against environmental risk and protects against frivolous lawsuits would provide new economic opportunities and a stable supply of rare earths. Policy reform should improve and right-size the regulatory landscape to allow for mining while protecting air and water quality.

Currently, this is not the case for mining operations in the U.S. For instance, Pebble Mine in Alaska is home to at least 70 known occurrences of rare earth elements.⁷ However, the Obama Administration's Environmental Protection Agency (EPA) issued a pre-emptive veto under authority from

the Clean Water Act, prohibiting development of the mine *even before* the mine's operator could file a permit with the agency. The EPA's case rested on an environmental analysis of a theoretical mine that would not come close to meeting state and federal standards for mining activities in the U.S.⁸

The EPA has also used its power in the past to retroactively veto the permit for a coal mine four years *after* the Army Corps of Engineers issued the permit.⁹ Such unchecked authority, which could just as easily be directed at a rare earths mine, has a chilling economic effect on investors and mine owners and creates an enormous amount of regulatory and economic uncertainty.

Sensible regulations that permit American mines to open will nonetheless be safer and more environmentally friendly than the ones operating in China. Moreover, even with a more streamlined permitting process, new mines will still take years to come online—but now is the time to fix the policy. While China currently has a stranglehold on the processing of rare earths, new projects are in development. The United States' lone rare earth mine, Mountain Pass, which has faced its own financial difficulties, will have a processing plant online in 2020.¹⁰ The mine, operating since the early 1950s, closed in 2002 but restarted in 2012 before the mine's owner, MolyCorp declared bankruptcy in June 2015.¹¹ The current owner of Mountain Pass, MP Materials, ships 50,000 tons of ore to China for processing.¹² James Litinsky, Co-Chairman of MP Materials, estimates that "Mountain Pass should be self-sufficient from China by next year and produce its own separated rare earth products."¹³

Furthermore, Texas-based Blue Line Corp is teaming up with Australian-based Lynas to build a separation facility in Texas, the first such facility outside China in years.¹⁴ Texas Mineral Resources Corp also has plans to develop a mineral deposit in the state and add a processing plant next to it.¹⁵

Creating a predictable, efficient regulatory pathway for new American mines will ensure these processing units have ample supplies for processing.

Recommendations

Even though China's posturing on REMs is unlikely to have its intended effect, the United States should use this occasion to improve its posture regarding these strategic resources by reforming outdated regulations and planning for the future.

Reform Outdated Environmental Statutes. Congress should reform outdated environmental statutes that comport with economic development and environmental protection. This includes reforming and modernizing federal water policy and major environmental statutes.¹⁶

Specifically, Congress should:

- **Clearly define “navigable waters” in the Clean Water Act to strictly limit federal authority.**
- **Prohibit both pre-emptive and retroactive vetoes under Section 404 of the Clean Water Act.**
- **Empower states to manage their water resources**—while preventing them from abusing Section 401 of the Clean Water Act to block projects for non-water issues.¹⁷
- **Repeal the National Environmental Policy Act (NEPA).** Rather than improving environmental outcomes, NEPA has evolved to become a tool to delay and obstruct projects that are unpopular with special interest groups or politicians who ignore scientific and technical logic. Far from compromising environmental stewardship, repealing NEPA will provide an opportunity to remove duplication of state environmental and other federal requirements.
- **Reform the Endangered Species Act (ESA).** The ESA has largely been an ineffective conservation tool, but it *has* succeeded in blocking economic development, creating perverse incentives, and engendering unintended consequences.
- **Prohibit the use of the social cost of carbon (SCC) in regulatory proceedings, and eliminate agencies’ ability to regulate greenhouse gases.** The federal government uses the SCC to calculate the climate benefit of abated carbon-dioxide emissions from regulations or the “climate cost” of infrastructure projects. Models used to estimate the SCC are highly subjective—and are inadequate tools for policymaking.

Study REM Stockpiles. Congress should require the Department of Defense to provide a report on the ability of the National Defense Stockpile to provide an uninterrupted supply of required rare earth elements to the defense industrial base to support the production of key weapon systems in the event such minerals are not available from the People’s Republic of China and/or Russia. This report should also include potential options for methods, other than stockpiling, to secure the rare earth supply chain.

Protect Mountain Pass. The U.S. should prohibit the sale of Mountain Pass to any foreign investor. This would be justified under a review by the Committee on Foreign Investment in the United States.

Conclusion

Rare earth minerals are vital to modern technology and national security. China's threats to constrain the availability of REMs—while a flawed strategy—should be considered seriously and properly planned against. Currently, the United States is well-suited to meet this challenge, but it must also take deliberate action so that it remains properly positioned in the future.

Dean Cheng is Senior Research Fellow in the Asian Studies Center, of the Kathryn and Shelby Cullom Davis Institute for National Security and Foreign Policy at The Heritage Foundation. Nicolas D. Loris is Deputy Director and Herbert and Joyce Morgan Fellow in Energy and Environmental Policy in the Thomas A. Roe Institute for Economic Policy Studies, of the Institute for Economic Freedom, at The Heritage Foundation. Klon Kitchen is Senior Research Fellow for Technology and National Security in the Douglas and Sarah Allison Center for Foreign Policy, of the Davis Institute.

Endnotes

1. The 17 REMs are Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Gadolinium, Terbium, Dysprosium, Holmium, Erbium, Thulium, Ytterbium, and Lutetium.
2. U.S. Geological Survey, *Minerals Commodities Summary 2019*, 2019, pp. 132 and 133, <https://minerals.usgs.gov/minerals/pubs/mcs/2018/mcs2018.pdf> (accessed June 4, 2019).
3. Phil Stewart and Andrea Shalal, "Eyeing China, Pentagon Briefs Congress Rare Earth Minerals Report," Reuters, May 29, 2019, <https://www.reuters.com/article/china-usa-rareearth-pentagon/corrected-update-2-eyeing-china-pentagon-briefs-congress-on-rare-earth-minerals-report-idUSL2N23515N> (accessed June 4, 2019).
4. Yen Nen Lee, "A Massive 'Semi-Infinite' Trove of Rare Earth Metals Has Been Found in Japan," CNBC, April 12, 2018, <https://www.cnbc.com/2018/04/12/japan-rare-earths-huge-deposit-of-metals-found-in-pacific.html> (accessed June 11, 2019).
5. U.S. Geological Survey, *Minerals Commodities Summary 2019*.
6. National Mining Association, "Regulating U.S. Mining," 2019, <https://nma.org/wp-content/uploads/2019/04/Mining-Law-Fact-Sheet.pdf> (accessed June 4, 2019).
7. State of Alaska, "Fact Sheet: Alaska Strategic Minerals/ Rare Earth Elements," Department of Natural Resources, 2011, http://dnr.alaska.gov/commis/priorities/Fact%20Sheet_Rare%20Earth%20Elements_Strategic%20Minerals.pdf (accessed June 4, 2019).
8. "Pruitt's Bad Pebble Precedent," *Wall Street Journal*, January 30, 2018, <https://www.wsj.com/articles/pruitts-bad-pebble-precedent-1517357679> (accessed June 4, 2019).
9. U.S. Environmental Protection Agency, "Chronology of CWA Section 404(c) Actions," 2019, <https://www.epa.gov/cwa-404/chronology-cwa-section-404c-actions> (accessed June 4, 2019).
10. Jessica Bursztynsky, "If We Can't Challenge China, No One Can, Warns Operator of Only U.S. Mine for Rare Earth Metals," MSNBC, May 30, 2019, <https://www.cnbc.com/2019/05/30/if-we-cannot-challenge-china-no-one-can-warns-only-us-rare-earths-mine.html> (accessed June 4, 2019).
11. John Miller and Anjie Zheng, "Molycorp Files for Bankruptcy Protection," *Wall Street Journal*, June 25, 2015, <https://www.wsj.com/articles/SB10907564710791284872504581069270334872848> (accessed June 4, 2019).
12. Ernest Scheyder, "China Set to Control Rare Earth Supply for Years Due to Processing Dominance," Reuters, May 30, 2019, <https://www.reuters.com/article/us-china-usa-rareearth-refining/china-set-to-control-rare-earth-supply-for-years-due-to-processing-dominance-idUSKCNIT004J> (accessed June 4, 2019).
13. Bursztynsky, "If We Can't Challenge China, No One Can."
14. Julie Limitone, "First Rare Earth Processing Facility Outside of China to Be Built in Texas," Fox Business, May 31, 2019, <https://www.foxbusiness.com/industrials/first-rare-earth-processing-facility-outside-of-china-to-be-built-in-texas> (accessed June 4, 2019).
15. Scheyder, "China Set to Control Rare Earth Supply."
16. Daren Bakst, "Three Key Reforms for Federal Water Policy," Heritage Foundation *Issue Brief* No. 4633, November 23, 2016, <https://www.heritage.org/agriculture/report/three-key-reforms-federal-water-policy>.
17. Daren Bakst, "Some States Abuse This Provision to Block Critical Projects. Here's What Congress Can Do," Heritage Foundation *Commentary*, March 13, 2019, <https://www.heritage.org/agriculture/commentary/some-states-abuse-provision-block-critical-projects-heres-what-congress-can>.