



***RARE EARTHS REALISM: BREAKING
THE PRC'S GLOBAL REFINING
MONOPOLY***

BY BRANDT MABUNI

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"The Middle East has oil, and China has rare earths."
- [Deng Xiaoping](#) (1987)

Rare earth elements (REEs) are a class of 17 metals essential to the technology, transportation, energy, defense, and aerospace industries. These are used for high-powered magnets and precision parts in anything ranging from batteries, solar panels, and wind turbines, to smartphones, lasers, and jet engines. The People's Republic of China (PRC) came to dominate global supply chains for these valuable inputs during the Deng-era of foreign policy characterized by the adage, 韬光养晦 (*tāo guāng yǎng huì*), often translated as "hide your strength, bide your time." Subsidized state-owned enterprises were [empowered](#) to drive competitors out of the rare earths mining and processing businesses, giving the PRC a virtual monopoly in the space by the late 1990s.

The wider world only came to fully appreciate the strategic implications of this concentration in 2010, when a maritime dispute between China and Japan [triggered](#) a total halt of rare earths exports from the former to the latter. Though trade resumed following the incident's resolution, the episode highlighted both the vulnerabilities that the dependency allowed, and the PRC's willingness to exploit those for political leverage. Japan was subsequently motivated to begin investing in [alternative suppliers](#) abroad, while the United States moved to jumpstart its own shuttered [domestic capacity](#).

State of the Market

Thirteen years later, the green shoots of new market entrants display a small but meaningful movement towards diversifying the world's REEs supply. The United States and Australia in particular have demonstrated [political resolve](#) to break China's hold on the market. [Japan](#) and [India](#) are also attempting to establish domestic industries but the barriers to entry remain formidable. Mining and ore refinement are notoriously lengthy and capital-intensive industries to develop –doubly so in countries with complex licensing and ecological surveying requisites. The PRC still [dominates](#) the entire vertical industry and has the ability to flood global markets with cheap material, as it has done before with [steel](#) and with [solar panels](#). In 2022, it [mined](#) 58% of all REEs, refined 89% of all raw ore, and manufactured 92% of REE-based components worldwide. There is no other global industry so concentrated in the hands of the Chinese Communist Party, nor with such asymmetric downstream impact, as rare earths –so further diversification should be pursued with unique urgency.

The United States: Reviving Heavy Industry

Beijing's 2010 dispute with Tokyo was one of its several assertive foreign policy maneuvers to set off alarm bells in Washington and precipitate the Obama administration's "[pivot to Asia](#)." As the swiftness of China's rise continued to outpace expectations during the Trump years, American political appetite shifted from [defending](#) hegemony in Asia, to addressing its own vulnerabilities at home –one of which being the outsourcing of mining industries for REEs, amongst

others such as lithium, nickel, and graphite. The global bottleneck for midstream industry segments like refining is so severe that the few American rare earths miners in operation send their raw ore to China for processing, before it returns to the US as permanent magnets for use in [F-35s](#), [Tesla Model 3s](#), and the like.

In conjunction with an [overarching strategy](#) to address this weakness by revitalizing domestic supply chains for critical minerals, the US government is supporting the buildout of processing facilities in California and Texas for two rare earths juggernauts in-the-making – [MP Materials](#), an American company, and [Lynas Rare Earths](#), an Australian firm. Additionally, the Biden administration’s recent Inflation Reduction Act provided [tax incentives](#) for critical mineral businesses, and supercharged two faculties that will allow the executive branch to bolster industrial development on an ad hoc basis: the Department of Energy’s [Loan Programs Office](#) and the [Defense Production Act](#). The US should continue focusing grants towards ventures past the proof of concept stage in rare earths refining and magnet manufacturing, so that they can then access the Department of Energy’s lending resources to scale quickly.

People’s Republic of China: Tightening the Reins

The media often characterizes the PRC’s rare earths dominance as the “[trump card](#)” of wolf warrior diplomacy, but Xi Jinping likely understands that the [implicit threat](#) of applying this leverage outweighs the cost-benefit of its actual use. The international environment of today is far less forgiving than that of 2010, and a rare earths embargo applied tomorrow on a nation like Japan or the United States would easily spark a bellicose trade dispute and push a tsunami of funding towards emerging competitors.

However, there exists a dangerous window during the next several years, when the PRC’s influence over the global industry is diminishing but still overwhelming enough to put importing nations in a bind. In this sense, the “trump card” could still be played over a critical political moment –becoming even more tempting once its monopoly’s decline appears inevitable. Beijing’s cognizance of this scenario is reflected in its

[recent merger](#) of three state-owned mining giants into the China Rare Earth Group. This massive consolidation allows the Party to more easily control the market and develop synergies to bring costs even lower, which will hamper foreign upstarts.

Realist Conclusions in a Global Market-Based System

In the long run, monopolistic behavior will be solved by the interconnected markets on which modern society is built. The strategic calculus and narratives between great powers may be swiftly changing, but the fundamental rules of the game remain the same. The more likely the world perceives the weaponization of the rare earths industry by Beijing, the more pressure will be applied on the two competitive market forces already working towards solutions.

The first is the potential for new market entrants. Rising Chinese export tariffs and spiking prices signal opportunity. [Canada](#), [India](#) and [the United Kingdom](#) have all recently announced their intent to develop their first domestic refineries for REEs, with national security interests undoubtedly providing propulsion. Relatively small investments now could pay off big by shaking up market dynamics later this decade, so the US could seed promising ventures abroad, and consider this high-profile sector an opportunity to build up “friendshoring” partnerships with alternate producers.

The second is the threat of substitutes. Necessity is the mother of invention –and if [substitutes](#) can effectively replace REEs in end-use products, then supply fears may be sidestepped. The embedded risks of REEs have already been driving manufacturers like [Toyota and Volkswagen](#) to redesign their electric motors with less rare earths or alternative (albeit less efficient) magnet metals. The US [Energy](#), [Defense](#), and [Commerce](#) departments have been pursuing alternatives, but governments should also consider rewarding companies who find innovative ways of designing their products without REEs, in the style of [bug bounties](#). Even without necessarily implementing substitutes, establishing backup options builds supply chain resilience and saps the power of a monopoly.

[Tetrataenite](#) is one promising breakthrough in magnetic alternatives. Until recently, this nickel-iron alloy was only observed in meteorite samples, but last year was successfully replicated in a University of Cambridge [laboratory](#). Experts say it has an outside chance at upending the entire rare earths industry in the years to come.

Aside from proactively pressing into the two competitive market forces of new entrants and substitution, the United States should continue subsidizing the rapid development of its rare earths supply chains –particularly the midstream layers: ore processing, mineral refining, and alloying. The faster it can do so, the narrower the window will be for Xi Jinping to play hardball during the waning years of China’s monopoly, and the less likely that opportunity is to coincide with an attempted [invasion](#) of Taiwan.

The economic downturn, domestic discontent, and international scrutiny resulting from the PRC’s stringent Covid-19 lockdown policies have left Xi Jinping’s political capital temporarily spent as he works to patch up relations and entice businesses back to China. In order to break the global refining monopoly without sparking a larger geopolitical firestorm, an inflection point in broadening supply diversification needs to be achieved soon.

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