Rare Earths, Magnets, and Missiles: Unmasking the West's Military Metals Gap

written by Jack Lifton | June 13, 2025

> *"Until we invest in a domestic rare earth magnet pipeline, our 'arsenal of democracy' rests on supply chains we neither own nor control—and that's a strategic vulnerability no amount of rhetoric can fix." — Jack Lifton, Co-Chair, Critical Minerals Institute*

The mismatch between the political narrative of a critical materials crisis and the effective allocation of financial resources—both public and private—to address it is now undeniable. At the heart of the problem are divergent agendas. Governments frame the issue as a matter of national security, while the private sector often sees an opportunity to extract short-term gains by framing speculative ventures in complex, poorly understood natural resources as patriotic investments.

The actual demand for rare earth-enabled products—primarily specialized permanent magnets—is routinely obscured. Industry marketing continues to rely on overblown claims, often featuring dramatic depictions of fighter aircraft, naval vessels, and spacecraft, suggesting exaggerated quantities of rare earth permanent magnets required in their manufacture. These tropes persist despite the fact that genuine defense-related material requirements remain classified, as they always have been.

Yet clues emerge. A permanent magnet production facility currently under construction in South Carolina, backed by the U.S. government, is expected to produce 2,000 metric tonnes

annually. Of this, 1,200 tonnes are reportedly earmarked for current military demand. This is a more accurate proxy for defense sector needs—measured, defined, and far less than the speculative tonnages regularly floated in public discourse.

For the U.S. Department of Defense, the key criteria for supplier qualification are proven capability and demonstrated capacity—not price. This is, in effect, the inverse of what private industry demands from its Tier One suppliers, who must be cost-competitive and scalable.

The few U.S.-based companies vying to establish themselves as domestic sources of rare earth permanent magnets for private industry possess aspirations, not achievements. They lack the capacity to produce at scale, the technical experience to compete globally, and the balance sheets to operate without subsidy. Their proposals for public funding, often cloaked in the language of national security, are in reality mechanisms to obscure their inability to compete.

These subsidies, ostensibly justified by geopolitics, are necessary only because the global rare earth magnet supply chain is dominated by China. China’s position is underpinned by decades of capital investment, vertical integration, and state-subsidized infrastructure that no other nation has matched. The result is a self-reinforcing ecosystem that is, by design, unassailable in conventional economic terms.

Collectively, the U.S. and European consumer sectors represent a modest portion of global demand for rare earth permanent magnets—approximately 40,000 tonnes annually spread across more than 30 nations. This figure amounts to just 10% of China’s installed production capacity. China itself consumes an estimated 80% of what it produces, underscoring both the scale and self-sufficiency of its domestic industry.

Can the rest of the world construct a rare earth permanent magnet industry capable of global cost-competitiveness with China? No. Can select non-Chinese firms develop limited-scale, financially sustainable magnet production capacity for strategic or niche markets? Possibly.

Despite the clear vulnerability, the U.S. and European defense sectors have largely declined to address this gap in their critical supply chains. Their reluctance stems from both a lack of internal expertise and an unwillingness to invest the time and capital required to rebuild what was lost. Instead, they have outsourced the problem to government funding mechanisms, effectively abandoning market principles in favor of political solutions.

In the defense sector, the cost of production is a secondary concern. Procurement decisions are made not on price but on affordability relative to budgetary allocations—how many can be purchased, not what they cost to make. This logic diverges sharply from that of the commercial sector, where sustainable production depends on market-driven pricing and reliable customer demand.

A quarter-century ago, the military-industrial complex in the U.S. concluded that rare earth permanent magnet production could not be sustained domestically on a profitable, standalone basis. Production, and the knowledge that underpinned it, gradually shifted to what was then a non-threatening China.

In the 1980s and 1990s, American corporations such as General Motors were early pioneers in the development and use of rare earth permanent magnets. But with the discovery of substantial rare earth reserves by China’s burgeoning iron ore industry, and with the West’s need for advanced magnet technologies growing rapidly, production naturally migrated to the lower-cost,

industrializing Chinese economy. At the time, the United States lacked both the infrastructure and the policy motivation to retain downstream manufacturing.

Western corporate leaders, intent on cost-cutting and enamored with just-in-time logistics, congratulated themselves as they divested from vertical integration. By the end of the century, Chinese companies had captured the rare earth magnet market, and the West's industrial presence in this domain had effectively vanished. Few raised concerns. After all, the prevailing belief in Detroit, Stuttgart, and Tokyo was that China would remain a peripheral player in the global OEM automotive hierarchy.

The parallel is striking: when Germany's military leadership advised Hitler against declaring war on the United States in 1941, they argued that it was already too late for America to influence the outcome. In the same spirit, Western industry and policy circles appear to believe the rare earth magnet barn door has long since been left open.

Can this industry be rebuilt in the U.S. or Europe in a way that restores global competitiveness?

Perhaps. But it will require more than rhetoric. It will require capital, time, policy alignment—and above all, the political will to stop confusing wishful thinking with strategy.