

Magnets, Minerals, and Leverage: India's Rare Earth Predicament

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By Chetna Gill

India is navigating a sensitive phase, dealing with its heavy reliance on China for rare earth elements (REEs) and the magnets derived from them, which are indispensable to its burgeoning electric vehicle (EV) industry, defense manufacturing, and semiconductors. China's recent export restrictions, effective from April 4, 2025, have exposed vulnerabilities in India's supply chains, prompting urgent calls for self-reliance and strategic recalibration. The imposition of stringent requirements, such as end-user certificates (EUCs) authorized by both the Indian Ministry of External Affairs and the Chinese Embassy, has disrupted the flow of these critical materials, threatening production schedules and economic goals. With only 2-3 weeks of magnet supply left, Indian automakers like Bajaj Auto have sounded alarms, warning of a "dark cloud on the horizon" that could halt EV production by July. Yet, amidst this crisis, India is mobilizing to reduce its dependence on China through domestic production initiatives, government incentives, and diplomatic efforts.

The significance of rare earth magnets cannot be overstated. These pint-sized powerhouses, made from elements like neodymium, samarium, dysprosium, and praseodymium, are the backbone of high-performance EV motors, wind turbines, aerospace components, and defense systems. Neodymium-iron-boron (NdFeB) magnets, in particular, are prized for their compact size, high torque, and energy efficiency, making them indispensable for India's EV revolution and green energy goals. As Rajat Verma, Founder and CEO of LOHUM Cleantech, noted, "China produces the best magnets today," a reality evident in China's dominance in the global supply chain, controlling 70% of mining and 90% of refined output. India, despite holding the world's third-largest rare earth reserves at 6.9 million tonnes, contributes a mere 0.25% to global production, ranking seventh with 2,900 tonnes in 2024 compared to China's 255,000 tonnes. This stark disparity highlights the gap between India's resource potential and its underdeveloped processing capabilities.

China's export curbs, announced on April 4, 2025, were a calculated move, ostensibly to safeguard national security and prevent misuse in defense applications, but widely perceived as retaliation against U.S. tariffs. The policy requires exporters to obtain licenses and submit detailed end-use documentation, ensuring magnets are not used for

military purposes or re-exported to third parties like the United States. For India, this has translated into a bureaucratic bottleneck, with no auto component or vehicle manufacturer receiving approval to procure magnets, leaving consignments stuck at Chinese ports. “There were no approvals so far,” a source told The Times of India, adding, “The situation is grave, and there is now massive uncertainty regarding manufacturing schedules and factory output.” The impact is immediate: companies like Uno Minda, Bosch, Mareli, TVS Group, Motherson Sumi, and Sona Comstar face disrupted production lines, while Bajaj Auto’s Executive Director Rakesh Sharma warned, “Any delay or disruption will start to seriously impact production by July.” TVS Motor’s Managing Director Sudarshan Venu echoed this concern, noting potential output halts and price hikes in the electric two-wheeler segment by June or July.

India’s reliance on China is starkly illustrated by trade data. In FY25, India imported 53,700 tonnes of permanent magnets, a near-doubling from 28,700 tonnes the previous year, with 93% sourced from China. Despite the volume surge, the value of imports grew only 5% to Rs 1,744 crore, indicating China’s ability to flood the market with cheaper magnets, undercutting global competitors. This pricing strategy has historically stifled India’s domestic magnet production, which shut down over the past two decades due to uncompetitive costs. “The industry members requested government to support companies in setting up magnet production by providing incentives and monetary benefits,” a source told The Times of India, reflecting the urgency to revive local capabilities.

In response, India is taking decisive steps. The government is finalizing a ₹3,500-5,000 crore scheme, expected to be approved by mid-July 2025, to incentivize domestic production of rare earth minerals and magnets through a reverse auction process. This initiative, coupled with production-linked incentives (PLIs), aims to make homegrown magnets competitive with Chinese imports. Companies like Midwest Advanced Materials, Entellus Industries, and Indian Rare Earths Limited (IREL) have presented ambitious plans to the Ministry of Heavy Industries. Midwest projects producing 500 tonnes of custom-made magnets annually by the end of 2026, with plans to scale to 5,000 tonnes by 2030. Entellus, despite having a plant ready to produce magnetic powder, requires more time to achieve industry-grade magnet production. IREL, a public-sector entity, claims it can match China’s pricing once production scales, though it cautioned that “ore present in Indian geography is 100 times less than in China, the US, and Australia.” Heavy Industries Secretary Kamran Rizvi has urged these companies to make “realistic statements about magnet production,” emphasizing the auto sector’s need for reliable timelines to avoid further disruptions.

India’s rare earth reserves, while substantial, pose challenges. The country’s 6.9 million tonnes are concentrated in states like Andhra Pradesh, Odisha, Karnataka, Uttar Pradesh, and Chhattisgarh, but extraction and refining remain underdeveloped. IREL processes limited quantities of rare earth oxides like cerium and lanthanum, primarily for defense and nuclear applications, but lacks the capacity to produce magnets for commercial industries. The processing of ores into alloys and magnets involves over 100

complex, costly, and environmentally hazardous steps, an area where China holds a near monopoly. Moreover, REEs in India often co-occur with uranium, complicating extraction due to policy restrictions. As Verma observed, “We have resources, but we aren’t doing much,” pointing to IREL’s failure to scale in 70 years.

Geopolitically, China’s restrictions exposes India’s strategic vulnerability. The timing, coinciding with strained Western military resources and India’s tensions with Pakistan following the April 2025 Pahalgam terror attack, suggests a deliberate leveraging of rare earths as a tool of influence. Chinese Vice Foreign Minister Sun Weidong’s June 2025 visit to New Delhi, aimed at normalizing relations post the BRICS summit, was overshadowed by Beijing’s support for Pakistan and concerns over the Yarlung Tsangpo dam, highlighting the broader strategic context. Victor Gao’s warning that India must respect the Indus Waters Treaty, lest it face reciprocal actions on the Brahmaputra, illustrates how resource control extends beyond minerals to water, amplifying India’s need for self-reliance.

India has initiated steps to diversify supply chains. The National Critical Mineral Mission, launched in April 2025, targets key minerals like neodymium, while the KABIL joint venture—a joint venture of three state-owned companies: National Aluminium Company Limited (NALCO), Hindustan Copper Limited (HCL), and Mineral Exploration Corporation Limited (MECL)—seeks to acquire overseas mineral assets. Bilateral mining cooperation with Australia and QUAD agreements aim to bolster access, but progress is slow. The Ministry of Mines has auctioned three rare earth blocks, yet commercial production remains years away due to ongoing exploration. In the interim, India has resorted to diplomatic measures, with the DGFT issuing approximately 30 EUCs by May 23, 2025, to resume magnet imports for non-defense use. Industry delegations are also engaging Chinese authorities to expedite approvals, though outcomes remain uncertain. “We need China to clear shipments now,” an industry insider told Reuters, acknowledging that a total supply chain overhaul is a long-term endeavor.

To navigate this crisis, India can consider three scenarios, each balancing immediate needs with long-term goals. First, India could prioritize diplomatic and bureaucratic efficiency to secure short-term supplies while accelerating domestic production. By streamlining EUC processes and sending high-level delegations to Beijing, India could ensure magnet imports continue, buying time to operationalize plants like Midwest’s Hyderabad facility, set to produce 500 tonnes annually within six months. This approach requires sustained government-industry coordination to meet auto sector timelines and avoid production halts. However, it risks prolonging dependence on China if domestic efforts falter, especially given the technical and environmental challenges of scaling magnet production.

Second, India could aggressively pursue alternative supply chains by importing ores from countries like Sri Lanka, Mongolia, and Myanmar, as suggested by industry sources. This would involve leveraging QUAD partnerships and KABIL’s overseas ventures to secure raw materials, while PLI schemes incentivize private players to develop processing

capabilities. For instance, Entellus could be supported to transition from magnetic powder to industry-grade magnets, reducing reliance on Chinese alloys. This scenario demands significant investment and regulatory reforms to ease private sector entry into mining, but it risks delays due to the complexity of establishing new supply routes and the high costs of competing with China's price cuts, which saw import values rise only 12% despite a 95% volume increase in FY25.

Third, India could adopt a hybrid strategy, combining interim imports of fully built motors from China, as suggested by Jefferies, with a phased push for self-reliance. This would allow OEMs to maintain production while aligning supply chains to new homologation standards, though it may reduce eligibility for PLI benefits due to lower domestic value addition. Simultaneously, the ₹5,000 crore scheme could prioritize a few high-potential players like IREL to scale oxide-to-magnet production, addressing environmental and uranium-related hurdles through public-private partnerships. This balanced approach mitigates immediate risks but requires careful calibration to avoid over-reliance on imported motors and ensure competitive pricing against China's dominance.

Each scenario has trade-offs. The diplomatic approach ensures short-term stability but delays self-reliance. The domestic push accelerates autonomy but risks cost overruns and technical setbacks. The global strategy diversifies supply but requires sustained investment and geopolitical finesse. A balanced path likely combines elements of all three: securing immediate supplies through diplomacy, fast-tracking domestic production with incentives, and building global partnerships for resilience.

The rare earth crisis is more than an industrial challenge—it's a geopolitical imperative. India's EV ambitions, and defense capabilities hinge on securing these critical materials. The government's proactive steps, from incentive schemes to international outreach, signal determination, but the road ahead is long. China's dominance, built over decades, won't be undone overnight. As Rajat Verma noted, "We have resources, but we aren't doing much." India must translate its reserves and ambition into action, balancing urgency with strategic patience. By fostering innovation, forging alliances, and prioritizing self-reliance, India can turn this vulnerability into an opportunity to emerge as a rare earth powerhouse, securing its place in a high-tech, sustainable future.

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