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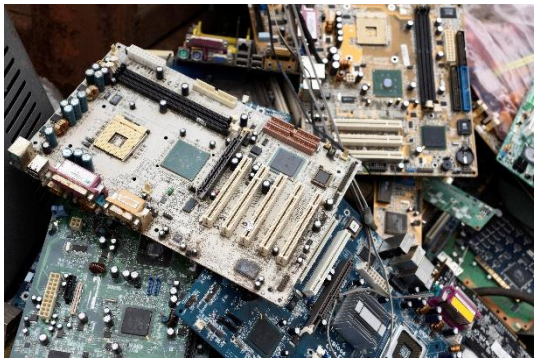
Mint Explainer | Can battery scrap secure India's rare earth future?



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Article Content:

Summary

As India chases rare earth security, policymakers are turning to an unlikely source: waste. Battery scrap and used magnets are emerging as a strategic supplement to mining. Here's a dive into India's gameplan

The parliamentary standing committee on coal, mines and steel has recommended the promotion of so-called 'urban mines'—the recovery of minerals from waste streams such as used batteries and discarded electronics—as part of its recommendations on mineral and metal self-reliance made on17 December.

The push comes as battery recycling gathers pace, with companies starting to recover critical minerals such as lithium, cobalt, and rare earth elements from secondary sources.

This strategy is expected to supplement the government's efforts to localisethe production of rare earth magnets, a key input for sectors ranging fromdefence and electronics to renewable energy and electric vehicles.

Mint unpacks the committee's recommendations and India's ambitions for rare earth magnets.

Why is India's mineral security a national imperative?

Critical mineral security assumes significance amid geopolitical uncertainties and trade wars as nations try to leverage their resources to disrupt supply chains.

China's export ban on rare earth magnets in April 2025, which disrupted manufacturing supply chains globally, resulted from an escalating trade war, with the world's second-largest economy retaliating to steep US tariffs.

Beijing used its dominance in the sector–60% of the world's rare earth mining and 90% of the world's processing capacity–as a tool to disrupt supply chains, pushing manufacturers across the globe into a frenzy.

The UN Conference on Trade and Development (UNCTAD), in its Sustainable Development Goals Pulse 2025 report in July this year, noted that minerals required for the energy transition – copper, zinc, germanium, tin, and nickel, among others – faced higher export restrictions compared to other trade critical minerals.

"This trend reflects rising geopolitical sensitivities and growing domestic value chain ambitions in producing countries," the report noted.

The International Energy Agency narrowed and simplified this sentiment, focusing on how critical minerals are shaping the energy transition. Its Global Critical Minerals outlook 2025 noted that demand for cobalt and rare earths increased 6-8% in 2024, "driven by energy applications such as electric vehicles, battery storage, renewables and grid networks".

India, in its ambition to produce rare earth magnets, plans to leverage its domestic stockpile of 6.9 million tons of rare earth deposits along its coastline, Union minister Ashwini Vaishnaw told reporters while announcing a ₹7,280-crore incentive package for potential magnet makers on 26 November.

New Delhi-based think tank Centre For Energy, Environment and Water noted in September that India relies heavily on imports to meet its critical mineral needs, making it vulnerable to market fluctuations and supply disruptions.

What are the secondary sources of these critical minerals?

For import-dependent economies, secondary sources—materials recovered from waste—offer a faster and potentially less capital-intensive route to securing critical mineral supplies.

The committee, therefore, called for the promotion of 'urban mines' to fuel critical minerals processing. It emphasised the need to scale up scrapping and shredding centres to reduce reliance on new greenfield extraction projects.

"This approach will not only reduce import dependence but also strengthen supply chains and promote sustainability by treating waste as a valuable resource," the recommendations said.

The limelight shifts to rare earth magnets, where companies like Attero Recycling and Lohum Cleantech have announced significant investments into recycling used batteries to obtain critical minerals such as lithium and even rare earths.

Attero CEO Nitin Gupta told *Mint* earlier this week that the company plans to spend ₹2,000 crore over the next three years to scale up recycling capacity, especially in rare earth recovery from used magnets to 100 tonne a day from 1tonne presently.

Lohum has also announced plans to create a new ₹500 crore rare earth magnet-making facility in Uttar Pradesh, to be operationalised by FY28, for various use-cases such as electric vehicles, renewable energy, electronics, aerospace, and defence applications.

What is India's game plan?

India's rare earth plan has two key elements: producing its own rare earth magnets for its own supply chains, and simultaneously investing in R&D to move away from rare earths in the long run,

said Abhay Tilak, director of the Indian School of Political Economy.

Sourcing rare earth oxides becomes crucial for the short-term plan of making magnets on India's turf, as the country's annual consumption of these magnets is expected to top 15,400 tons by 2032, from about 1,700 tons in 2022, according to consultancy Primus Partners.

The parliamentary panel's recommendations come as India looks to implement its rare earth magnet-making scheme with a whole-of-government approach. Union minister Vaishnaw had said the rare earth magnet incentive programme will work in tandem with the government's National Critical Minerals Mission, a₹1,500 crore plan to boost exploration and processing of critical minerals, and the India Semiconductor Mission, a ₹76,000 government initiative to create a robust domestic ecosystem for fabs.

Together, these initiatives signal India's intent to move up the value chain, from securing raw materials and recycled inputs to manufacturing key components at home.