

India's rare-earth dilemma amid the Mekong and Irrawaddy mining boomUddipan Nathⁱ

The clean-energy transition has produced, in recent years, an uncomfortable irony: the metals required to build a greener global economy — a group of seventeen elements — are, in great many cases, extracted through processes that are anything but green. Rare earth elements — the seventeen metals prized for magnetic properties essential to electric vehicles, wind turbines and defense systems — sit at the center of this irony, being neither especially scarce in the earth's crust nor especially easy to mine without significant ecological cost. Having tightened its own domestic rules on hazardous extraction during the 2010s, China effectively exported the dirtiest stage of the industry to its periphery, a migration that has since taken root, with striking speed, across the river basins of the Irrawaddy and the Mekong. The Irrawaddy River flows entirely within Myanmar as its primary north-south economic and geographic artery, while the Mekong River acts as a major international waterway further east, forming Myanmar's borders with Laos and Thailand before flowing across mainland Southeast Asia into the South China Sea. The result, documented across Kachin State in Myanmar and increasingly in Laos, is an unregulated, Chinese-led mining boom whose consequences extend well beyond the immediate region — reaching, in particular, India, though by a route markedly different from the one felt by India's Southeast Asian neighbours.

For Thailand and Laos, the boom has produced direct trans boundary ecological disaster. Toxic runoff from in-situ leaching — a method that involves pumping acidic chemical solutions into hillsides to dissolve the ore, before collecting the resulting slurry in plastic-lined pools — has contaminated tributaries such as the Kok and Sai-Ruak rivers, prompting tens of thousands of people in Thailand's Chiang Mai and Chiang Rai provinces to stop using waterways they had relied upon for generations. Laos, for its part, has seen at least twenty-seven large-scale mines open since 2022 despite official bans, several inside zones nominally protected for their ecological value. India's rivers do not carry this burden directly. The Irrawaddy and Mekong flow south and east, away from Indian territory, so the arsenic, cyanide and heavy-metal contamination now documented in Southeast Asian watercourses does not enter Indian soil. However, if proximity were the only measure of exposure, India might reasonably be considered insulated from the crisis. But India is still affected — just in different ways. And those different ways are important to understand.

One channel runs through trade rather than terrain. India imports freshwater fish products, much of it in the form of aquaculture, from markets connected to the Mekong and Irrawaddy basins, and it is this commercial link — rather than any shared riverbank — that ties Indian consumption to the health of these upstream waters. Heavy-metal contamination of the kind already measured in Thailand's tributaries does not remain confined to the point of discharge; it accumulates in fish tissue and moves downstream and along trade routes alike. Should contamination levels in the core watersheds in and around the region's rare earth mining belt continue to rise as mining expands into new territories, it stands to reason that freshwater aquaculture drawing on these systems would carry that risk forward into any market it supplies, India's included. This is not yet a significantly documented crisis in the way that Chiang Rai's abandoned fishing grounds are a documented crisis. It is, rather, a plausible and largely unexamined

vulnerability — one that follows logically from the geography of contamination even where hard trade data has yet to be assembled and publicised.

The second channel is geopolitical, and considerably more developed in the public record. China controls, by most measures, somewhere around sixty percent of global rare earth mining and roughly ninety percent of the world's refining and magnet-manufacturing capacity, a concentration that has been converted into leverage on more than one occasion, most visibly through export restrictions imposed in 2023 and again in 2025 that forced production cuts among Indian automakers dependent on magnet supplies. Confronted with this dependency, India has pursued an option that would have seemed improbable only a few years earlier: direct engagement with the Kachin Independence Army, the rebel group that seized Myanmar's principal heavy rare earth mining belt around Pangwa and Chipwi in 2024, even as Prime Minister Narendra Modi has simultaneously conducted high-level diplomacy with junta leader turned the President of Myanmar Min Aung Hlaing. India's state-owned IREL and private firms such as Midwest Advanced Materials have been authorised to collect sample ores from KIA-held territory for testing. It is a bold hedge. It is also, by most accounts, a fragile one, given that Kachin remains landlocked, mountainous and poorly connected, with its existing transport infrastructure oriented historically toward China rather than India.

Even a successful arrangement with the KIA would resolve only half the problem, and this is the third channel: the processing bottleneck. India accounts for less than one percent of global rare earth mining output, and its capacity to refine raw ore into the high-purity compounds needed for magnet production is still smaller. If Myanmar's ore were to reach India in bulk tomorrow, it would arrive at a country lacking the industrial infrastructure to convert it into anything usable at scale — rather like acquiring the oil field while the refinery remains unbuilt. The comparison might come across as imperfect but instructive: possession of the raw material confers little strategic advantage without the capacity to process it, and it is precisely this capacity that China has spent decades consolidating and that India has, until recently, largely neglected.

The reputational dimension compounds the matter further. India has positioned itself, through initiatives such as the International Solar Alliance, as a leading voice in the global clean-energy transition. Sourcing critical minerals from mines that finance an active civil war and inflict documented ecological devastation on the Mekong and Irrawaddy basins sits uneasily beside that positioning, a tension that global supply-chain scrutiny — increasingly attentive to sourcing standards, particularly among European EV and wind turbines buyers — is unlikely to overlook indefinitely. Supporters of the Myanmar engagement argue, not without justification, that India cannot afford ethical scruple while its clean-energy and defence sectors face genuine supply shocks, and that China's own conduct in exporting its dirtiest mining practices abroad hardly establishes a higher standard to be measured against. Critics counter that trading dependence on Beijing for dependence on a conflict-ridden supply route controlled by a militia group resolves little, and may in time generate new vulnerabilities of its own.

India has taken several steps to deal with the rare-earth problem. Whether all these steps fit together into a clear and effective strategy is still uncertain, but it would be wrong to say that India has done nothing. A National Critical Mineral Mission carrying an outlay of ₹34,300 crore, a ₹7,280 crore scheme to build domestic magnet manufacturing, amendments to the Mines and Minerals Act ending a decades-old state

monopoly, and the announcement of dedicated Rare Earth Corridors across Odisha, Kerala, Andhra Pradesh and Tamil Nadu together suggest an attempt to close the very processing gap that makes the Myanmar gambit necessary in the first place. Whether these measures mature quickly enough to render the Kachin engagement a temporary bridge rather than a permanent dependency appears, for now, as unresolved. So too does the question of the region's fish, its aquaculture trade, and how much further upstream contamination might travel before its consequences for Indian markets become impossible to ignore.

The way forward, therefore, contains a tension that cannot be resolved merely by increasing the number of overseas mining agreements. India needs diversified sources, and Myanmar can provide a strategic hedge against excessive dependence on China; yet sourcing from conflict-affected mines where extraction is associated with severe environmental degradation creates its own supply-chain and reputational risks. India, consequently, appears to be treating Myanmar as a strategic option rather than an exclusive dependency, while exploring assets in Australia, Argentina and Chile and expanding domestic exploration. Cooperation with Australia, Japan and the United States through the Quad Critical Minerals Initiative could provide additional financing, processing capacity and responsible-sourcing standards.

The central issue is thus larger than the competition for a particular mineral. Rare earths may be essential to a cleaner energy economy, but the extraction of those minerals can simultaneously intensify deforestation, water contamination, conflict financing and social vulnerability. For India, the choice is not simply between Chinese dependence and Myanmar access. It lies between a supply chain organised primarily around securing raw material and one capable of controlling processing, technology, manufacturing and recycling as well. Myanmar may remain an important source of heavy rare earths, and India's proximity, diplomatic engagement and industrial ambitions make continued cooperation likely, but the environmental consequences of the Mekong and Irrawaddy boom demonstrate the limits of treating mineral security as a question of extraction alone. The unresolved question is whether India's pursuit of strategic autonomy will ultimately be measured by the volume of minerals it can secure abroad, or by how far it can build a value chain in which access, technology, environmental responsibility, food security and industrial capability reinforce rather than undermine one another.

Sources:

- https://pure.manchester.ac.uk/ws/portalfiles/portal/1574943308/Briefing_Paper_2_The_rare_earth_mining_process_in_Myanmar.pdf
- <https://www.stimson.org/2026/rare-earth-mining-in-myanmar-expands-to-tula-held-territory/>
- <https://www.stimson.org/2025/unregulated-mining-along-rivers-in-mainland-southeast-asia/>
- <https://www.reuters.com/world/asia-pacific/india-myanmar-signal-closer-rare-earth-mining-ties-2026-07-23/>
- <https://www.reuters.com/world/china/india-explores-rare-earth-deal-with-myanmar-rebels-after-chinese-curbs-2025-09-10/>
- <https://news.mongabay.com/2026/05/dangerous-arsenic-levels-detected-in-thailands-mekong-mainstream-for-first-time/>
- <https://news.mongabay.com/2025/10/rare-earth-mining-expands-into-laos-threatening-entire-mekong-river/>
- <https://news.mongabay.com/2025/10/more-thai-rivers-and-downstream-communities-at-risk-from-myanmars-rare-earth-mines/>

- <https://thediplomat.com/2025/11/unregulated-mining-boom-pouring-toxins-into-southeast-asian-rivers-report/>
- <https://www.bangkokpost.com/world/2112407/illegal-rare-earth-mining-surges-in-myanmar>
- <https://www.mekongeye.com/2022/05/23/myanmars-environment-hit-by-rare-earth-mining-boom>
- <https://en.vietnamplus.vn/mekong-delta-seafood-firms-urged-to-invest-in-india-post111636.vnp>
- <https://tradingeconomics.com/india/imports/myanmar>
- <https://www.seafdec.org/country-fisheries-trade-myanmar/>
- <https://www.orfonline.org/expert-speak/rare-earths-armistice-india-s-shift-from-mining-to-processing>
- <https://www.orfonline.org/expert-speak/india-s-ree-strategy-turning-resources-into-capacity>
- <https://www.orfonline.org/expert-speak/examining-policy-readiness-to-scale-rare-earth-recycling-in-india>
- <https://theshillongtimes.com/2026/09/06/report-india-advances-rare-earths-ties-with-myanmar/>
- <https://www.spglobal.com/energy/en/news-research/latest-news/metals/062926-myanmars-rare-earths-could-serve-as-strategic-hedge-for-india-experts>
- <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2120525>
- <https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=157165&ModuleId=3®=3&lang=1>
- <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2220193®=1&lang=1>
- <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2071486®=48&lang=2>
- <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2039606®=48&lang=2>
- <https://www.nextias.com/ca/current-affairs/21-09-2026/rare-earth-magnets-india>
- <https://www.telegraphindia.com/business/india-deepens-rare-earth-mining-partnership-with-myanmar-to-reduce-china-dependence-prnt/cid/2171508>

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