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EDITORIAL ANALYSIS

Critical Minerals Geopolitics — India's Strategy in the New Resource Race

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Critical Minerals Geopolitics — India's Strategy in the New Resource Race

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INTERVIEW ANGLE

"China controls 60–80% of processing for most critical minerals. How should India position itself in the global critical minerals supply chain — as a source, a processor, or a technology developer — and what policy instruments are available?"

WHY IN NEWS

EAM Dr. S. Jaishankar participated in the inaugural Critical Minerals Ministerial Meeting in Washington D.C. (February 2–4, 2026), where India announced support for FORGE (Forum on Resource, Geostrategic Engagement) and engaged with US Secretary of State Marco Rubio on supply chain security — as the US launched "Project Vault," a USD 12 billion strategic minerals reserve.

WHY CRITICAL MINERALS HAVE BECOME CENTRAL TO GEOPOLITICS

The global energy transition — from fossil fuels to renewables and electrification — is creating a new class of strategically important commodities. **Critical minerals** are elements whose supply chains are concentrated in a small number of countries, whose demand is rapidly growing, and whose scarcity or access disruption could significantly harm national economies or defence capabilities.

The list varies by country, but broadly includes:

Lithium, cobalt, nickel, manganese, graphite: Batteries (EVs, grid storage)

Rare Earth Elements (REEs): Wind turbines, electric motors, defence electronics, smartphones

Copper: Electrical infrastructure (EVs use 4x more copper than ICE vehicles)

Gallium, germanium, indium: Semiconductors, solar panels, defence systems

Platinum Group Metals (PGMs): Fuel cells, catalysts

The critical insight is that **China dominates the processing** of almost all these minerals — not necessarily the mining (lithium is largely mined in Chile and Australia; cobalt in DRC; REEs in multiple countries) but the chemical refining and processing steps that turn raw ore into usable materials. China processes approximately:

60% of global lithium

65% of cobalt

85% of rare earth processing

80% of gallium and germanium (and in late 2023, China placed export restrictions on gallium and germanium — a direct demonstration of this leverage)

For countries building EV industries, renewable energy capacity, or advanced defence systems, dependence on Chinese processing creates structural vulnerability.

INDIA'S CRITICAL MINERAL POSITION — ASSETS AND VULNERABILITIES

India's mineral assets:

India has significant reserves of several critical minerals that position it as a potential supplier:

Lithium: Significant deposits discovered in Reasi, Jammu (2023, ~5.9 million tonnes — one of the world's largest), and Chhattisgarh, Rajasthan

Rare Earth Elements: India has the **fifth-largest REE reserves globally** (approximately 6.9 million tonnes); concentrated in Andhra Pradesh (Amaravati region, monazite sands), Kerala (coastal sands), and Jharkhand

Cobalt/Nickel: Smaller deposits in Rajasthan and Odisha

Graphite: Deposits in Jharkhand, Tamil Nadu, Odisha

Titanium, Zircon, Ilmenite: India has substantial reserves via coastal mineral sands (beach sand minerals — processed by Indian Rare Earths Limited, a PSU)

India's vulnerabilities:

Despite these reserves, India currently **imports most of its processed critical minerals** — the same processing gap that defines China's leverage over others. India does not yet have large-scale lithium processing or REE separation capabilities at commercial scale.

India imports roughly **80% of its cobalt and lithium** needs (primarily from China); electric vehicle manufacturers in India source battery-grade materials either from China directly or from Korean/Japanese battery makers who themselves source from China.

INDIA'S POLICY RESPONSE — THREE TRACKS

Track 1: Domestic mining and processing

The **Mines and Minerals (Development and Regulation) Amendment Act, 2023** added **24 critical minerals** to the list of "atomic minerals" under atomic energy legislation for the first time, and simultaneously placed a separate list of 30 critical minerals on a fast-track auctioning regime for private sector participation. This was a significant policy shift — previously, minerals like lithium, cobalt, and REEs were largely controlled by PSUs (Indian Rare Earths Ltd, MECL) or not commercially exploited at all.

The **Geological Survey of India (GSI)** has been tasked with accelerating block-level exploration. The **National Mineral Exploration Trust (NMET)** is providing funding for exploration in remote areas.

Track 2: International acquisition

The **Khanij Bidesh India Ltd (KABIL)** — a joint venture of NALCO (National Aluminium Company), HCL (Hindustan Copper Limited), and MECL (Mineral Exploration Corporation Limited) — was established in August 2019 specifically to acquire mineral assets abroad. KABIL has been pursuing lithium and cobalt assets in Argentina, Chile, Australia, and Africa. The Argentina lithium MoU was the first major KABIL success (November 2022).

Track 3: Multilateral engagement and alliances

India has joined several critical minerals coalitions:

> **Minerals Security Partnership (MSP):** US-led initiative (launched 2022); India joined in 2023; aims to build resilient critical mineral supply chains among like-minded countries
>
> **Quad Critical Minerals Working Group:** Within the Quad framework (India, USA, Japan, Australia), specific focus on supply chain diversification
>
> **FORGE (Forum on Resource, Geostrategic Engagement):** India announced support at the February 2026 ministerial — focused on resource-linked geostrategic coordination
>
> **India-Australia Critical Minerals Partnership:** MoU for joint exploration and supply

THE CHINA DIMENSION — RISK AND RESPONSE

China's dominance in critical mineral processing is not accidental — it reflects **deliberate industrial policy** over 30 years: subsidised REE mining in Inner Mongolia (near Baotou — the "rare earth capital"), environmental externalities internalised domestically, and systematic acquisition of mineral assets in Africa (DRC cobalt, Zambia copper) through the Belt and Road Initiative.

China has demonstrated willingness to weaponise this dominance:

> **2010:** Rare earth export quotas and export taxes triggered a WTO dispute; Japan (targeted in a maritime dispute) faced supply disruptions

2023: Export restrictions on gallium and germanium (in response to US semiconductor export controls)

2025: Threats of graphite supply restrictions to countries joining US-led semiconductor restrictions

For India, the China mineral dependency is particularly acute given active border disputes. A scenario where minerals used in Indian defence electronics are sourced from China's supply chain creates leverage that adversaries could exploit.

INDIA'S OPPORTUNITY — VALUE ADDITION, NOT JUST MINING

India should not simply position itself as a raw material exporter. The lesson from commodity dependence is that mining without processing captures only 10–15% of mineral value; processing + manufacturing captures 60–80%.

India's real opportunity is:

Refine domestically — build REE separation plants, lithium hydroxide conversion, cobalt processing — technologies that China has, but others (USA, EU, Japan) are now scrambling to develop independently

Battery chemistry R&D — develop sodium-ion or other alternatives that reduce dependence on lithium/cobalt (DRDO and IITs have active programs)

Position as a "trusted supplier" — India's democratic governance and rule-of-law framework is increasingly valued by Western partners seeking non-China supply chains; leverage this trust premium through investment frameworks

UPSC RELEVANCE

KABIL (NALCO + HCL + MECL; est. August 2019); Minerals Security Partnership (MSP; US-led, India joined 2023); FORGE (Forum on Resource, Geostrategic Engagement); Indian Rare Earths Limited (IREL — PSU; beach sand minerals); Geological Survey of India (GSI; est. 1851; under MoMines); NMET (National Mineral Exploration Trust); MMDR Amendment 2023 (24 critical minerals + 30 fast-track auction list); Lithium deposit: Reasi, J&K (~5.9 million tonnes, 2023); India REE reserves (5th globally, ~6.9 million tonnes); Project Vault (USA, USD 12 billion strategic minerals reserve).

India-US relations, critical minerals diplomacy; multilateral institutions and India (Quad, MSP, FORGE); resource geopolitics and supply chain security. **GS-3:** *Critical minerals policy; MMDR Act; domestic mining and processing value chain; India's EV transition and input dependencies; China's industrial policy in resources; India's opportunity in trusted supply chains.*

📌 FACTS CORNER — KNOWLEDGEPEDIA

CRITICAL MINERALS — CHINA'S PROCESSING DOMINANCE:

Lithium processing: **~60%** global (China)

Cobalt processing: **~65%** global (China)

Rare Earth processing: **~85%** global (China)

Gallium + Germanium: **~80%** global (China; export restrictions placed August 2023)

INDIA'S MINERAL RESERVES (CRITICAL):

Lithium: Reasi district, J&K (~**5.9 million tonnes**, 2023 discovery); also Rajasthan, Chhattisgarh

Rare Earth Elements: **5th globally** (~6.9 million tonnes); Andhra Pradesh (coastal monazite), Kerala, Jharkhand

Beach Sand Minerals (Ti, Zr, Il): Substantial; processed by IREL (Indian Rare Earths Limited)

INDIA'S POLICY INSTRUMENTS:

KABIL (Khanij Bidesh India Ltd): JV of NALCO + HCL + MECL; est. August 2019; acquires mineral assets abroad

MMDR Amendment 2023: 24 critical minerals designated; 30 on fast-track auction regime for private sector

MSP (Minerals Security Partnership): US-led; India joined 2023; 14 partner countries

Quad Critical Minerals WG: India, USA, Japan, Australia

FORGE: Forum on Resource, Geostrategic Engagement; India supported February 2026

KEY INTERNATIONAL INSTITUTIONS/INITIATIVES:

IEA Critical Minerals Report: Annual assessment of supply-demand; highlights concentration risks

EU Critical Raw Materials Act (2024): Benchmarks for domestic mining (10%), processing (40%), recycling (25%) by 2030

US IRA (Inflation Reduction Act, 2022): EV tax credits linked to sourcing from FTA partners — US mechanism to build non-China supply chains

OTHER RELEVANT FACTS:

India imports ~**80% of cobalt and lithium** processed requirements (primarily China-sourced)

EVs use **4x more copper** than ICE vehicles; also need Li, Co, Ni, Mn, graphite (anode)

REE: Used in wind turbines (neodymium-iron-boron magnets), EV motors, defence radar, smartphones, missile guidance

Baotou, Inner Mongolia, China: "Rare earth capital of the world" — hosts largest REE processing complex

MECL: Mineral Exploration Corporation Limited; PSU under Ministry of Mines; geological exploration mandate

Sources: Indian Express, AffairsCloud

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