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India Auctions 46 Critical Mineral Blocks: Reducing China Dependence

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CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator

linkedin.com/in/epicbharat

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WHY IN NEWS

Union Minister **G Kishan Reddy** (Ministry of Mines) announced the successful auction of **46 critical mineral blocks** — the largest batch since India began critical mineral auctions in 2024. The move is central to India's strategy to reduce import dependence on minerals essential for the green energy transition, electric vehicles, semiconductors, and defence manufacturing. India currently imports **80–90%** of its critical mineral needs, with heavy dependence on China for processed minerals.

WHAT ARE CRITICAL MINERALS?

Critical minerals are raw materials that are **economically significant** and face **supply disruption risk** due to:

- Geographic concentration of deposits
- Processing monopolies (often China)
- Rising demand from green energy + digital + defence sectors

India's Critical Mineral List

India's Ministry of Mines identified **30 critical minerals** in 2023, revised to **34** in 2024. Key minerals include:

MINERAL	PRIMARY USE	INDIA'S
Lithium	EV batteries, grid storage	No domestic production; imports from Australia, Chile
Cobalt	EV batteries (cathodes)	DRC + China supply chain
Nickel	EV batteries, stainless steel	~80% from imports
Graphite	Li-ion battery anodes	China supplies >90% of processed graphite
Rare Earth Elements (REEs)	Permanent magnets (EVs, wind turbines), electronics	China: 85–90% of global processing
Titanium	Aerospace, defence	India has deposits but limited processing
Manganese	Steel, Li-Mn batteries	Partially domestic
Vanadium	Grid storage batteries	Largely imported

THE 46 BLOCKS AUCTION — WHAT IT MEANS

Legal Framework

The auction was conducted under the **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)**, as amended in:

- **2021**: Allowed composite licences (exploration + mining in one)
- **2023**: Added critical minerals to Schedule VII; allowed direct auction without prior exploration; permitted private entities to mine critical minerals that were previously reserved for government

The 2023 MMDR amendment was specifically designed to fast-track critical mineral development and attract private investment.

The Auction Structure

- Blocks are auctioned as **composite licences** — winner gets both exploration rights and mining lease
- Auctioned via **competitive bidding** on royalty share
- **Geological Survey of India (GSI)** + **Mineral Exploration and Consultation Ltd (MECL)** provide the pre-exploration data

Where Are These Blocks?

India's critical mineral deposits are concentrated in:

- **Jharkhand, Odisha** — nickel, cobalt, PGE (platinum group elements)

- **Rajasthan** — lithium (identified 2023), REEs
- **Andhra Pradesh** — REEs; graphite
- **Tamil Nadu, Karnataka** — titanium, graphite
- **Chhattisgarh, Odisha** — REEs, cobalt
- **Jammu & Kashmir** — lithium (G3-level resource at Salal-Haimana, Reasi; announced 2023)

INDIA'S IMPORT DEPENDENCE — THE CORE PROBLEM

METRIC	FIGURE
India's critical mineral import share	**80–90%**
Lithium imports	100% (no domestic production yet)
Cobalt imports	~95%
India's EV target	30% EV penetration by 2030
Estimated lithium demand (2030)	~7,500 tonnes for India's EV fleet alone
Battery cell demand (2030)	~100 GWh capacity

China's dominance is not just in mining — it is in processing:

- China refines ~60% of global lithium, ~70% cobalt, ~90% graphite, ~85% REEs
- Even minerals mined in Africa or Australia often go to China for processing before reaching India
- This creates a **two-step vulnerability**: supply disruption at mining AND processing stage

INDIA'S MULTI-PRONGED CRITICAL MINERAL STRATEGY

1. KABIL — Overseas Mineral Acquisition

Khanij Bidesh India Limited (KABIL) was established in 2019 as a joint venture:

- **NALCO** (National Aluminium Company) — 40%
- **HCL** (Hindustan Copper Limited) — 30%
- **MECL** (Mineral Exploration and Consultation Ltd) — 30%

KABIL's mandate: acquire critical mineral assets abroad (like Australia, South America, Africa) to ensure supply security for India — modelled on China's overseas mineral investment strategy.

KABIL's acquisitions so far:

- Lithium blocks in **Argentina** (Catamarca province) — signed 2024
- Cobalt-nickel blocks in **Australia**
- Copper-cobalt blocks in **Chile** (under negotiation)
- REE assets being explored in **South Africa**

2. Domestic Auction Programme

- **2024 pilot**: 20 blocks auctioned (first batch)
- **April 2026**: 46 blocks — the largest single tranche
- Target: 100 blocks by 2027 end

3. Processing Capacity

India currently lacks domestic processing for most critical minerals. Initiatives:

- **PLI schemes** for advanced chemistry cell (ACC) batteries
- **National Battery Mission** (under NITI Aayog)
- **GreenHydrogen Mission** (electrolysers use critical minerals)

CRITICAL MINERALS AND INDIA'S GREEN TRANSITION

EV Sector Demand

India's EV target (30% penetration by 2030) will require:

- **Lithium**: For Li-ion battery cathodes + anodes
- **Cobalt**: For NMC (nickel-manganese-cobalt) battery chemistry
- **Graphite**: For anodes (~20% of battery weight)
- **Copper**: For motors, wiring (India has some domestic capacity)
- **REEs**: For EV permanent magnet motors

Defence and Semiconductor

- **Titanium**: Fighter aircraft, naval vessels, missiles — India imports most
- **Germanium, Gallium**: Semiconductor substrates — both China-dominated
- India's **semiconductor mission** (₹76,000 crore incentive package) will increase critical mineral demand

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GEOPOLITICAL DIMENSION — THE CHINA FACTOR

China has used critical mineral access as geopolitical leverage:

- 2010: China cut REE exports to Japan during Senkaku Islands dispute
- 2023: China restricted **gallium and germanium** exports (semiconductor materials) in response to US chip controls
- 2024: China tightened **graphite export controls** — directly affecting battery supply chains globally

India's calculus:

- India's border tensions with China (post-Galwan 2020) make single-source mineral dependence a **security risk, not just an economic one**
- India has joined the **Minerals Security Partnership (MSP)** — US-led coalition (including EU, Japan, Australia, UK) to diversify critical mineral supply chains away from China

UPSC RELEVANCE

PAPER	ANGLE
GS3 — Economy	Critical minerals; MMDR Act; KABIL; PLI for batteries; India's green transition
GS3 — Environment	EV transition; green energy minerals; mining vs. environment trade-off
GS2 — IR	Minerals Security Partnership; China's mineral leverage; India-Australia mineral partnership
GS3 — Science & Tech	Battery technology; semiconductor minerals; REE applications
Prelims	KABIL (NALCO+HCL+MECL); MMDR 2023 amendments; India's 30/34 critical minerals list; lithium in Reasi, J&K
Interview	"India's critical mineral strategy is essentially a race against time — why?"
Mains Keywords	Critical minerals, MMDR Act, KABIL, Minerals Security Partnership, REE, graphite export controls, China's mineral dominance

46 blocks auctioned | Ministry of Mines | Minister: **G Kishan Reddy** *| India imports:* **80–90%** *of needs | Key minerals: lithium, cobalt, nickel, graphite, REEs | Legal basis:* **MMDR Act** *(2023 amendment) |* **KABIL***: overseas acquisition JV — NALCO (40%) + HCL (30%) + MECL (30%) | KABIL assets: Argentina (lithium), Australia (cobalt-nickel) | China dominates: ~60% lithium refining, ~90% graphite, ~85% REE processing | India joined* **Minerals Security Partnership (MSP)** *| Lithium found: Salal-Haimana, Reasi (J&K), 2023 | GS3: Economy, Environment; GS2: IR*

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