Research Unit
Press Information Bureau
Government of India

National Critical Mineral Mission

Powering India's Clean Energy Future

(Ministry of Mines)

April 9, 2025

Introduction

The Government of India launched the **National Critical Mineral Mission (NCMM)**[1] in 2025 to establish a robust framework for self-reliance in the critical mineral sector. Under this mission, the **Geological Survey of India (GSI)** has been tasked with conducting **1,200 exploration projects** from 2024-25 to 2030-31.

A committee formed by the Ministry of Mines in November 2022 identified **30 critical minerals**[2], with **24** included in **Part D of Schedule I of Mines and Minerals Development and Regulation Act, 1957 (MMDR Act, 1957)**. The inclusion of 24 critical minerals in Part D of the First Schedule of the Mines and Minerals (Development and Regulation) Act (MMDR Act) means that the Central Government now has the exclusive authority to auction mining leases and composite licenses for these specific minerals. It also recommended setting up a **Centre of Excellence on Critical Minerals (CECM)** to regularly update the mineral list and guide strategy.

Critical minerals are essential for clean energy technologies like solar panels, wind turbines, EVs, and energy storage systems. To secure these resources, India launched the NCMM to ensure their long-term availability and processing.

Critical minerals are essential for a country's economic development and national security, and their lack of availability or concentration in a few geographical locations can lead to supply chain vulnerabilities.

Usage of Critical Minerals[3]

Critical minerals are essential components of various clean energy technologies and industries. Their importance can be highlighted across different sectors:

1. Solar energy

- Critical minerals such as **silicon, tellurium, indium, and gallium** are vital for the production of photovoltaic (PV) cells used in solar panels.

[1] https://pib.gov.in/PressReleasePage.aspx?PRID=2118380
[2] https://pib.gov.in/PressReleseDetail.aspx?PRID=1984942&reg=3&lang=1
[3] https://www.ibef.org/research/case-study/critical-mineral-imports-and-india-s-green-energy-transition

- India's current solar capacity of **64 GW** is heavily dependent on these minerals.

2. Wind energy

- **Rare earth elements** like **dysprosium and neodymium** are used in permanent magnets for wind turbines.
- India aims to increase its wind energy capacity from **42 GW to 140 GW by 2030**, necessitating a stable supply of these minerals.

3. Electric vehicles (EVs)

- **Lithium, nickel, and cobalt** are key materials used in lithium-ion batteries.
- Under the **National Electric Mobility Mission Plan (NEMMP)**, India plans to deploy **6–7 million EVs by 2024**, leading to increased demand for these critical minerals.

4. Energy storage

- Lithium-ion batteries used in advanced energy storage systems depend on **lithium, cobalt, and nickel**.

Objectives of NCMM

I. To secure India's critical mineral supply chain by ensuring mineral availability from domestic and foreign sources.

II. Strengthening the value chains by enhancing technological, regulatory, and financial ecosystems to foster innovation, skill development, and global competitiveness in mineral exploration, mining, beneficiation, processing, and recycling.

Mission Output

Mission Objectives	Key Heads	Target (2024-25 to 2030-31)
Securing Domestic and Foreign Sourcing	**Domestic Critical Mineral Exploration Projects**-Projects aimed at identifying and evaluating domestic reserves of critical minerals.	1200
	Foreign Critical Mineral Mines – PSUs Exploration and acquisition of overseas mineral assets by Public Sector Undertakings.	26
	Foreign Critical Mineral Mines – Private Entities-Facilitation and support for private firms to acquire critical mineral assets abroad.	24
	Incentive Scheme for Recycling (kt) Scheme to promote recovery of critical minerals from secondary	400

Mission Objectives	Key Heads	Target (2024-25 to 2030-31)
	sources like scrap and waste	
Strengthening Value Chains	**Patents in Critical Mineral Value Chain** Encouraging innovation through development of patents across the critical mineral lifecycle.	1000
	Skill Development Training and upskilling workforce to support activities in mining, processing, and R&D.	10000
	Mineral Processing Parks Dedicated zones for processing critical minerals with modern infrastructure and facilities**.**	4
	Centre of Excellence Institutions established for advanced research and technological development in the sector.	3
	Mineral Stockpile (Cumulative) Strategic reserves maintained to ensure uninterrupted supply of critical minerals**.**	5

Components of the National Critical Mineral Mission (NCMM)[4]

India's exploration efforts[5]

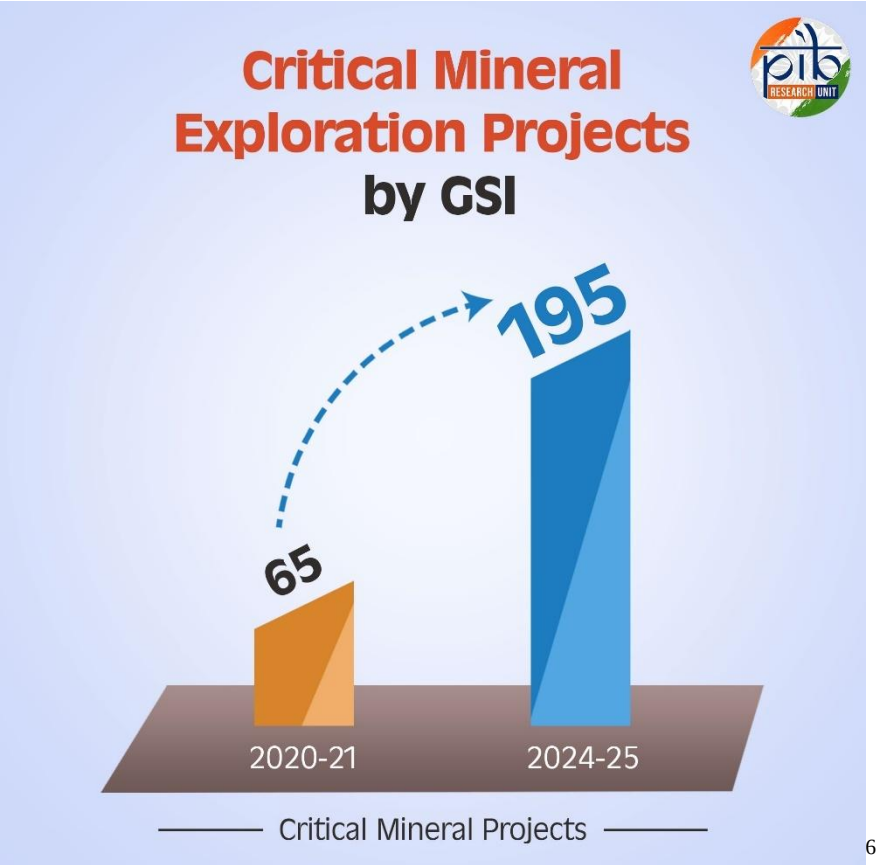
Under NCMM mission, GSI has intensified its exploration programs. In the **2024-25 field season**, GSI has taken up **195 projects**, including **35 in Rajasthan**, focused on identifying and assessing critical mineral deposits. The mission seeks to minimize import dependency by enhancing domestic exploration and mining efforts. More than 100 critical mineral blocks are set to be auctioned, and exploration will be expanded to offshore regions rich in polymetallic nodules containing cobalt, rare earth elements (REEs), nickel, and manganese.

The **Geological Survey of India (GSI)**, under the Ministry of Mines, follows the United Nations Framework Classification (UNFC) classification and Minerals (Evidence of Mineral Contents) (MEMC) Rules, 2015, to carry out exploration activities for critical minerals. Earlier in **2021-22 and 2022-23**, GSI conducted reconnaissance surveys for rare earth elements (REEs) including **neodymium** in **Sirohi and Bhilwara districts** of Rajasthan. Additionally, the **Department of Atomic Energy**

[4] https://mines.gov.in/admin/storage/ckeditor/DAY_1_PPT_4_1737542656.pdf

[5] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2117701#:~:text=As%20policy%20framework%20for%20utilizing,production%20and%20foreign%20supply%20sources.

discovered around **1,11,845 tonnes of in-situ Rare Earth Elements Oxide (REO**) in **Balotra, Rajasthan**.



[6]

To speed up projects, a **fast-track regulatory approval system** will be introduced. A new **Exploration Licence (EL)** will encourage private sector participation. Recovery of minerals from secondary sources like **fly ash, tailings, and red mud** will be promoted through relaxed rules and incentives. Efforts will also focus on **trace mineral assessment**, development of **processing parks**, and increased involvement of **state governments** and **PSUs** in the critical mineral value chain.

Acquisition of assets abroad[7]

India will invest in exploring and acquiring critical mineral assets in **resource-rich countries**. PSUs and private firms will be supported through **funding, guidelines, and inter-ministerial coordination**. Public-private partnerships will be promoted, and infrastructure support will be ensured with MEA's help.

Key International Initiatives

- **KABIL (Khanij Bidesh India Ltd)** signed an agreement with **CAMYEN SE**, a state-owned enterprise in Catamarca, Argentina, on **15th January 2024** for lithium exploration covering

[6] https://mines.gov.in/admin/storage/ckeditor/DAY_1_PPT_4_1737542656.pdf
[7] https://mines.gov.in/admin/storage/ckeditor/DAY_1_PPT_4_1737542656.pdf

15,703 hectares.

- KABIL also signed an **MoU** with the **Critical Mineral Office (CMO), Department of Industry, Science and Resources (DISER)**, Government of Australia, in **March 2022**.
- Due diligence is underway for selection of **lithium and cobalt** projects in Australia for strategic investments through **off-take arrangements**.

IREL (India) Limited[8]

With a processing capacity of **6 lakh tons per annum**, IREL produces key minerals like **ilmenite, rutile, zircon, sillimanite**, and **garnet.** It also operates a Rare Earth Extraction Plant in Chatrapur, Odisha and a Rare Earth Refining Unit at Aluva, Kerala. The company has been making profit consistently since 1997-98, with a peak turnover of over **₹14,625 million** in 2021-22, including ₹**7,000 million** in exports.

IREL is focused on expanding its production capacity, supporting value chain industries, and advancing R&D through its facility in Kollam, Kerala.

IREL (India) Limited, formerly known as Indian Rare Earths Limited, was incorporated on August 18, 1950. It operates under the Department of Atomic Energy since 1963. IREL began with its Rare Earths Division (RED) in Aluva (Kerala), and later expanded to mining operations in Chavara (Kerala), Manavalakurichi (Tamil Nadu), and its flagship unit, Orissa Sands Complex (OSCOM) in Odisha. Headquartered in Mumbai, it is committed to sustainable practices, ethical governance, and contributing to the global clean energy mission.

Vision: *To be a significant contributor to the global clean energy mission by providing high-quality performance-enhancing materials and operating in a socially responsible manner.*

Mission: *To grow sustainably in heavy minerals and rare earths, adopt advanced technologies, prioritize customer satisfaction, empower employees, and uphold strong ethical standards.*

Conclusion

India aims to reduce the emissions intensity of its **GDP** by **45%** by **2030** (from 2005 levels), achieve **50%** of its electric power capacity from non-fossil sources by 2030, and **reach net-zero emissions by 2070**. To achieve these climate goals, the **National Critical Mineral Mission** (NCMM) plays a vital role by building a resilient and self-reliant ecosystem for critical minerals. The mission focuses on boosting domestic production, encouraging private sector participation, strengthening international partnerships, and streamlining regulations to ensure a steady supply of minerals essential for clean energy technologies.

[8] https://www.irel.co.in/quick-aboutus

References

- https://pib.gov.in/PressReleasePage.aspx?PRID=2118380
- https://mines.gov.in/admin/storage/ckeditor/DAY_1_PPT_4_1737542656.pdf
- https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2117701#:~:text=As%20policy%20framework%20for%20utilizing,production%20and%20foreign%20supply%20sources.
- https://pib.gov.in/PressReleseDetail.aspx?PRID=1984942&reg=3&lang=1
- https://www.ibef.org/research/case-study/critical-mineral-imports-and-india-s-green-energy-transition
- https://www.irel.co.in/quick-aboutus
- https://www.irel.co.in/vision-mission

Santosh Kumar/ Sarla Meena/ Anchal Patiyal