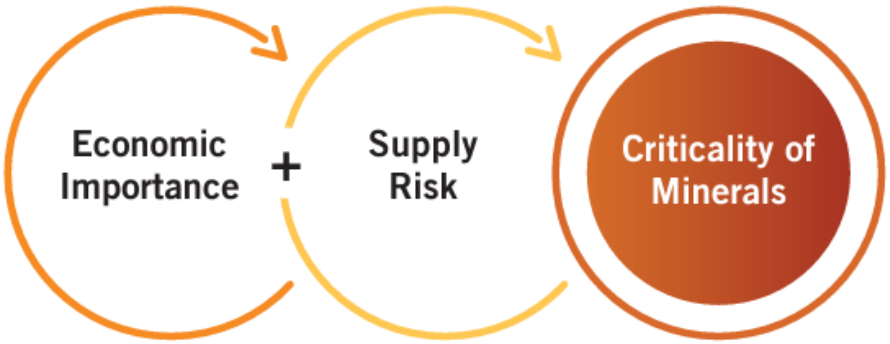
Critical Minerals Import Dependency of India

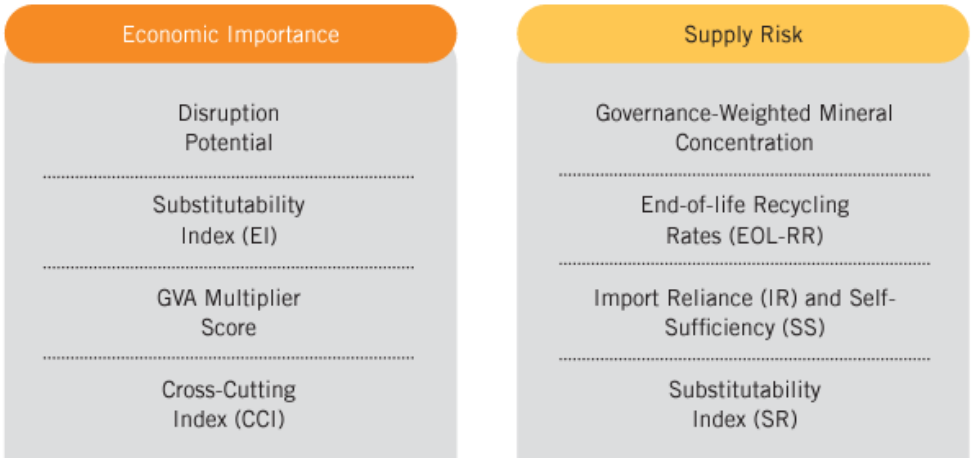
Why in News?

India to kick off critical minerals mission to bolster energy transition, EV manufacturing.

What are critical minerals?

- **Critical minerals** – These are both primary and processed minerals which are essential inputs in the production process of an economy, and whose supplies are likely to be disrupted due to the risks of non-availability or unaffordable price spikes.





- **30 Critical minerals** - The Ministry of Mines in 2023 identified 30 critical minerals deemed essential for the nation's economic development and national security.

1. Antimony
2. Beryllium
3. Bismuth
4. Cadmium
5. Cobalt
6. Copper
7. Gallium
8. Germanium
9. Graphite
10. Hafnium
11. Indium
12. Lithium
13. Molybdenum
14. Niobium
15. Nickel
16. PGE
    i. Platinum
    ii. Palladium
    iii. Rhodium
    iv. Ruthenium
    v. Iridium
    vi. Osmium
17. Phosphorous
18. Potash
19. REE
    i. Lanthanum
    ii. Cerium
    iii. Praseodymium
    iv. Neodymium
    v. Promethium
    vi. Samarium
    vii. Europium
    viii. Gadolinium
    ix. Terbium
    x. Dysprosium
    xi. Holmium
    xii. Erbium
    xiii. Thulium
    xiv. Ytterbium
    xv. Lutetium
    xvi. Scandium
    xvii. Yttrium
20. Rhenium
21. Selenium
22. Silicon
23. Strontium
24. Tantalum
25. Tellurium
26. Tin
27. Titanium
28. Tungsten
29. Vanadium
30. Zirconium

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The Indian Critical Minerals Identification process tries to address five core objectives:

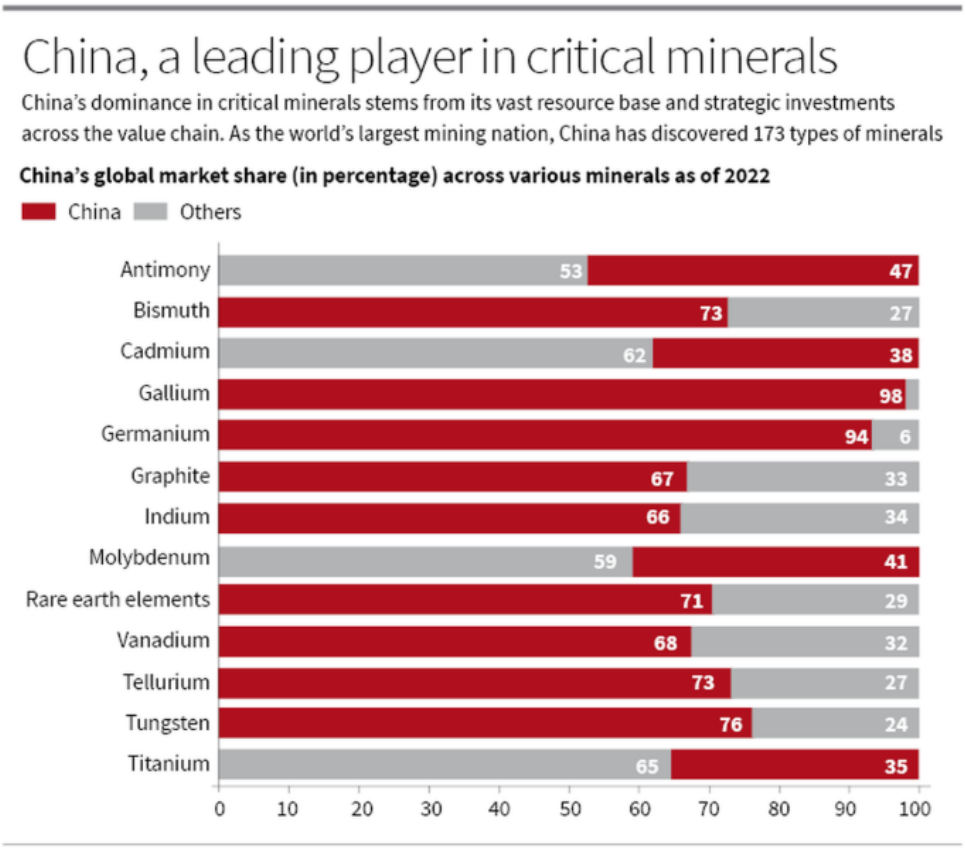


What is the mineral dominance of China?

- **China's mineral wealth** - The world's largest mining nation, China has discovered 173 types of minerals, including 13 energy minerals, 59 metallic minerals, and 95 non-metallic minerals.

Mineral	Usuage	China's Dominance
Bismuth	Primarily used in pharmaceuticals and chemicals	80% of global refinery production
Lithium	Crucial for EV batteries and energy storage	58% of global refining
Tellurium	Important for solar power and thermoelectric devices	60% global production
graphite	Indispensable for EV batteries and steel production	Controls 67.2% of global output

- **China's investment** - Supported by an exploration investment of $19.4 billion, the reserves of nearly 40% of these minerals, have increased significantly last year.
- **China's mineral value chain** – It has invested strategically across the mineral value chain production.
- China has dominance in processing and refining, with control over 87% of rare earth processing, 58% of lithium refining, and 68% of silicon processing.
- **Global investments** - China has strategically invested in overseas mining projects and built unparalleled midstream refining capabilities.
- **Weaponisation of critical mineral exports** - Beijing primarily targets minerals deemed critical by Western nations and their allies, especially those essential for semiconductors, batteries, and high-tech manufacturing.



Why does India rely on imports?

- **India's import dependence** – India is acutely vulnerable to Chinese supplies, particularly for six critical minerals where dependency exceeds 40 %.

Minerals	Bismuth	Lithium	Silicon	Titanium	Tellurium	Graphite
Import dependency on China	85.6%	82%	76%	50.6%	48.8%	42.4%

Sl. No.	Critical Mineral	Percentage (2020)	Major Import Sources (2020)
1.	Lithium	100%	Chile, Russia, China, Ireland, Belgium
2.	Cobalt	100%	China, Belgium, Netherlands, US, Japan
3.	Nickel	100%	Sweden, China, Indonesia, Japan, Philippines
4.	Vanadium	100%	Kuwait, Germany, South Africa, Brazil, Thailand
5.	Niobium	100%	Brazil, Australia, Canada, South Africa, Indonesia
6.	Germanium	100%	China, South Africa, Australia, France, US
7.	Rhenium	100%	Russia, UK, Netherlands, South Africa, China
8.	Beryllium	100%	Russia, UK, Netherlands, South Africa, China
9.	Tantalum	100%	Australia, Indonesia, South Africa, Malaysia, US
10.	Strontium	100%	China, US, Russia, Estonia, Slovenia
11.	Zirconium(zircon)	80%	Australia, Indonesia, South Africa, Malaysia, US
12.	Graphite(natural)	60%	China, Madagascar, Mozambique, Vietnam, Tanzania
13.	Manganese	50%	South Africa, Gabon, Australia, Brazil, China
14.	Chromium	2.5%	South Africa, Mozambique, Oman, Switzerland, Turkey
15.	Silicon	<1%	China, Malaysia, Norway, Bhutan, Netherlands

- **Inaccessible reserves** - Many critical minerals are deep-seated, requiring high-risk investments in exploration and mining technologies.
- **Structural challenges** – India lacks adequate institutional mechanisms and infrastructures capacity to extract critical minerals.
- **Lack of technological capacity** – Despite the presence of 5.9 million tonnes of lithium deposits in Jammu and Kashmir, India lacks the technological capability to extract lithium from such geological formations.
- **Lack of private sector participation** – High-risk investments in exploration, absence of adequate incentives and policy support has deterred private sector participation.

What measures has India taken to reduce the dependency?

- India has initiated a multi-pronged approach to reduce its dependency on China.
- **Establishment of KABIL** – It is a joint venture of three State-owned companies, to ensure supply side assurance of critical and strategic minerals and mineral security of the nation.

Khanij Bidesh India Limited (KABIL), is a Joint Venture of National Aluminium Company Ltd. (NALCO), Hindustan Copper Limited (HCL) and Mineral Exploration & Consultancy Limited (MECL) .

- **Strategic partnerships** - India has joined Minerals Security Partnership and the

Critical Raw Materials Club to diversify its supply sources and strengthen partnerships.

- **National Critical Minerals Mission** – It was launched as part of Budget 2024-25, aimed at reinforcing India's Critical Mineral value chain across all stages – from exploration and mining to processing, and recovery from end-of-life products.
- **Research investment** – India is investing in research through institutions like the Geological Survey of India and the Council for Scientific and Industrial Research.
- **Mineral recycling** - India has been promoting recycling and circular economy practices to reduce virgin mineral dependency.
- **PLI Incentives** - Mines Ministry has proposed production linked incentive (PLI) scheme to encourage e-waste recycling, incentivize the production of recycled critical minerals and promote investments in advanced recycling technologies.

What India can do?

- Transitioning away from China will require sustained investment and long-term commitment.
- Financial and administrative support to accelerate the development of critical mineral mining, processing, manufacturing, and recycling may be provided by the Central Government.
- A national critical minerals strategy for India, underpinned by the minerals identified in this study, can help focus on priority concerns in supply risks, domestic policy regimes, and sustainability.
- There is a need for establishing a National Institute or Centre of Excellence on critical minerals.

Reference

The Hindu | India's reliance on China for critical minerals

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