



# CURRENT AFFAIRS



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## CRITICAL MINERALS

*This article covers "Daily Current Affairs" and the topic details "Critical Minerals". The topic "Critical Minerals" has relevance in the Science and Technology section of the UPSC CSE exam.*

### **Relevance:**

#### **For Prelims:**

*What are Critical Minerals?*

*Critical Minerals for India?*

#### **For Mains:**

*GS 3: Science and Technology*

*Significance of Critical Minerals for India?*

*Challenges for India?*

### **Why in the news?**

An expert committee set up by the Centre Government has identified 30 minerals as critical to India, including lithium and vanadium which are largely used in the manufacturing of batteries.

### **What are Critical Minerals?**

Critical minerals refer to a group of minerals that are essential for various sectors, including technology, energy, defense, and manufacturing, and are considered critical due to their economic and strategic importance. Here are the key points about critical minerals:

- **Importance:** They are necessary for key industries, such as electronics, renewable energy, electric vehicles, aerospace, and defense.
- **Supply Risk:** Critical minerals often face supply chain vulnerabilities, including limited global production, geopolitical factors, and trade restrictions
- **Economic Impact:** Countries with domestic reserves of critical minerals can gain a competitive advantage in industries reliant on these resources.
- **Technological Advancement:** Critical minerals are crucial for the advancement of technologies like smartphones, batteries, electric vehicles, and renewable energy systems.

### **Critical Minerals for India?**

- **Identification of Critical Minerals:** An expert committee under the Ministry of Mines in India has identified a set of 30 critical minerals.
- **List of Critical Minerals:** The identified critical minerals include Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium,

Molybdenum, Niobium, Nickel, PGE (Platinum Group Elements), Phosphorous, Potash, REE (Rare Earth Elements), Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium, and Cadmium.

- **Centre of Excellence for Critical Minerals (CECM):** The committee has recommended the creation of a Centre of Excellence for Critical Minerals within the Ministry of Mines.

### Significance of Critical Minerals for India?

- **Industrial Development:** Critical minerals are essential for the growth and development of key industries in India, including electronics, electric vehicles and defense.
- **Technology Sector:** These minerals play a crucial role in advanced technologies, such as smartphones, batteries, solar panels, driving innovation and economic competitiveness.
- **Energy Transition:** Critical minerals are vital for India's transition to a cleaner and more sustainable energy system
- **Strategic Importance:** Access to domestic reserves of critical minerals reduces India's dependency on imports, enhances national security, and strengthens its position in global supply chains
- **Job Creation and Economic Growth:** The development of critical mineral resources can generate employment opportunities and contribute to economic growth

### Challenges for India?

- **Limited Domestic Reserves:** India's domestic reserves of critical minerals are relatively limited, leading to a high dependence on imports from other countries.
- **Supply Chain Vulnerabilities:** supply chains for critical minerals are complex and subject to various risks such as trade restrictions and disruptions caused by geopolitical tensions or natural disasters.
- **Environmental Impacts:** The extraction and processing of critical minerals can have significant environmental impacts, including habitat destruction, water pollution, and carbon emissions.
- **Technological Expertise:** Developing the necessary technological expertise for efficient extraction, processing, and recycling of critical minerals requires huge investment in research and development.

Source:

<https://www.aninews.in/news/business/business/india-identifies-30-critical-minerals-in-self-reliance-push-read-here20230629100554/>

### Q.1 Which of the following properties are associated with critical minerals?

1. High economic value
2. Limited global production
3. Strategic importance
4. Essential for renewable energy technologies
5. Environmental sustainability

#### Select the correct option(s):

- (a) 1, 2, 3 and 4 only
- (b) 1, 2, and 3 only
- (c) 2 and 3 only

(d) 1, 2, 3, 4 and 5

**Answer: (a)**

**Q.2 Which of the following minerals are included in the list of critical minerals for India?**

1. Lithium
2. Gold
3. Copper
4. Rare Earth Elements (REE)

**Select the correct option(s):**

- (a) 1, 3 and 4 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2, 3 and 4

**Answer: (a)**

**Q.3 Examine the significance of critical minerals for India's economic growth, technological advancement, and strategic interests. Analyze the challenges associated with the availability, extraction, and sustainable management of critical minerals in the country.**

**Rishabh**

