



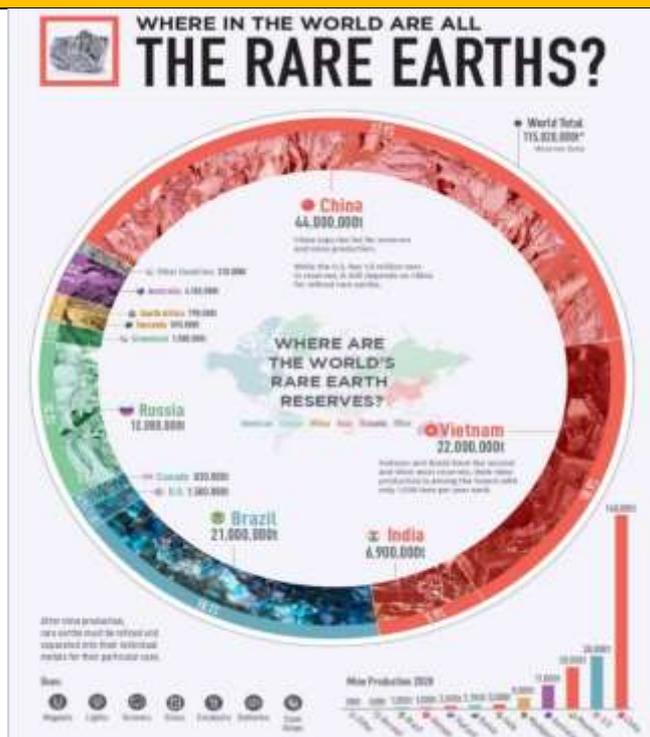
Balalatha's  
**CSB IAS ACADEMY**  
The Road Map to Mussoorie...

PRELIMS EDGE 2025

28-11-2025

## CRITICAL MINERALS

**Context:** The implementation of the Incentive Scheme for Critical Mineral Recycling, which was launched in Sept. 2025 under the National Critical Minerals Mission, was reviewed by the Union Govt.



### About Critical Minerals:

- They are elements that are **crucial to modern-day technologies** and are at **risk of supply chain disruptions**.
- They are used in making mobile phones, computers, batteries, electric vehicles, and green technologies like solar panels and wind turbines.

- **Example:** Graphite, Lithium, Cobalt, Silicon, Germanium, etc.
- In 2023, an Expert Committee under **Ministry of Mines identified a set of 30 critical minerals for India.**
  - These are Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, Platinum Group Elements (PGE), Phosphorous, Potash, Rare Earth Elements (REE), Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

### Significance of Critical Minerals for India:

- **Economic Development:** High-tech electronics, smart transport telecommunications, clean/green technologies, etc.
- **National Security:** Vital for defense, aerospace, nuclear, and space applications.
- **Environmental Sustainability:** Integral to the transition toward clean energy and a low-carbon economy.
  - Indium, gallium, Tellurium (solar PV technology), REEs (wind turbines).
- **Foreign Policy and Self Reliance:** Enable India to diversify imports and reduce dependency on China. Energy security and reducing fossil fuel imports can have positive impacts on our trade balance & energy autonomy.

- **Space Exploration and Satellite Technology:** India's ambitious space program, including missions like Gaganyaan, relies heavily on critical minerals - for making high-performance magnets, specialized alloys, and advanced electronics used in satellites and spacecraft.
- **Digital Economy:** As India's Digital Economy expects to reach 1 trillion Dollar by 2025, the success of Digital India and the rollout of 5G networks heavily depends on minerals such as gallium, indium, and tantalum.
- **Semiconductors:** Semiconductors, the brains of modern electronics, heavily rely on critical minerals. Silicon, germanium, and gallium are key to semiconductor production.
- **Geopolitical Influence:** Securing critical minerals enhances India's geopolitical standing and bargaining power.

#### About Rare Earth Elements (REEs):

- Set of **17 metallic elements**. These include the **15 lanthanides on the periodic table in addition to scandium and yttrium** that show similar physical and chemical properties to lanthanides.
- Have **unique magnetic, luminescent, and electrochemical properties** and thus are used in many modern technologies, including consumer electronics, computers and networks, communications, health care, national defense, clean energy, etc.

#### Govt. Initiatives:

- ✓ **National Critical Minerals Mission** under the Ministry of Mines.
- ✓ Dept. of Science and Technology drafted **Critical Minerals Strategy for India** in

2016, with a focus on requirements till 2030.

- ✓ Govt. estd **Khanij Bidesh India Ltd. (KABIL)** in 2019 to secure supplies for the domestic market.
- ✓ **India-Australia Critical Minerals Investment Partnership.**
- ✓ Creation of **Indian Rare Earths Ltd.** under Dept. of Atomic Energy.
- ✓ **Union Govt. approved royalty rates** of 3% each for lithium and 1% for REEs to attract private sector participation through auctions.
- ✓ In Dec 2023, India had its **first-ever auction of critical minerals**, offering 20 blocks for sale to private sectors.

#### International Initiatives:

- ✓ USA ordered a review of risks in its critical minerals supply chains.
- ✓ Australia has established a Critical Minerals Facilitation Office (CMFO).
- ✓ UK launched a Critical Minerals Intelligence Centre to study future demand and supply.

 92% by value and 97% by quantity of  Indian imports of critical minerals and rare earth elements are from China, as of October 2024.

Source: *Development of 3 Lakh Ton Annual Recycling Capacity for Critical Mineral Extraction aimed from the ₹1,500 crore Incentive Scheme (PIB)*

## PMLA, 2002

**Context:** The ED has conducted searches across multiple states in connection with an alleged large scale bribery scam involving multiple govt. agencies.



### About Prevention of Money Laundering Act (PMLA), 2002:

- PMLA was **enacted under Article 253**, which empowers Parliament to make laws for implementing international conventions. It was enacted in pursuance of two treaties to which India was a party:
  - **UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1998**
  - **UN Convention against Transnational Organized Crime, 2000** (Palermo Convention)

### Key Provisions of PMLA

- **Offences & Penalties:** Defines money laundering offences and imposes penalties for such activities - rigorous imprisonment and fines for offenders.
- **Attachment and Confiscation of Property:** Allows for attachment and confiscation of property involved in money laundering. It establishes an Adjudicating Authority to oversee these proceedings.
- **Reporting Requirements:** Mandates certain entities, such as banks and financial institutions, to maintain records of transactions and report suspicious transactions to the Financial Intelligence Unit (FIU).
- **Designated Authority and Appellate Tribunal:** Establishes a Designated

Authority to assist in investigation and prosecution. It also provides for the establishment of an Appellate Tribunal to hear appeals against orders of the Adjudicating Authority.

- **Appeals against decisions of the PMLA Appellate Tribunal lie to the High Courts.**

### Amendments to PMLA in 2023

- **Clarification about Proceeds of Crime:** Proceeds of the Crime not only includes property derived from the offence but now also includes any other property derived or obtained from any criminal activity relatable or similar to the alleged offence.
- **Money Laundering Redefined:** Money Laundering was not an independent crime – rather, it depended on another crime, known as predicate offence or scheduled offence. The amendment seeks to treat money laundering as a stand-alone crime.
- **Defines PEPs (Politically Exposed Persons):** Individuals who have been entrusted with prominent public functions by a foreign country.
- **For Cryptocurrencies:** Virtual digital assets (VDA) trade has been brought under PMLA. New rules mandate crypto exchanges and intermediaries dealing in virtual assets to maintain the KYCs of their clients and report suspicious transactions to FIU.
- **Due diligence documentation for companies:** It has been expanded to include the submission of details such as names of persons holding senior positions, names of partners, etc.
- **Beneficial Owners:** Lowered the threshold for identifying beneficial owners

by reporting entities, where the client is acting on behalf of its beneficial owner.

- 'Beneficial owners' are those entitled to more than 25% of shares/capital/profit – this has now been reduced to 10%.
- **NPOs:** Reporting entities have to register details of the client on DARPAN portal of NITI Aayog if it is a non-profit organization (NPO).

#### Enforcement Directorate (ED)

- ✓ It is a domestic law enforcement & economic intelligence agency. It is responsible for **enforcing economic laws & fighting economic crimes**.
- ✓ Its origin goes back to **May 1956**, when an "enforcement unit" was formed for the Foreign Exchange Regulation Act. In 1957, it was renamed as ED.
- ✓ **Nodal Agency: Department of Revenue, Ministry of Finance**
- ✓ The ED enforces three Acts:
  - **Foreign Exchange Management Act, 1999 (FEMA)**
  - **Prevention of Money Laundering Act, 2002**
  - **Fugitive Economic Offenders Act, 2018 (FEOA).**

Source: ED conducts searches in several States in PMLA case (The Hindu)

## TERMS IN NEWS

### HAMMER Precision-Guided Weapon



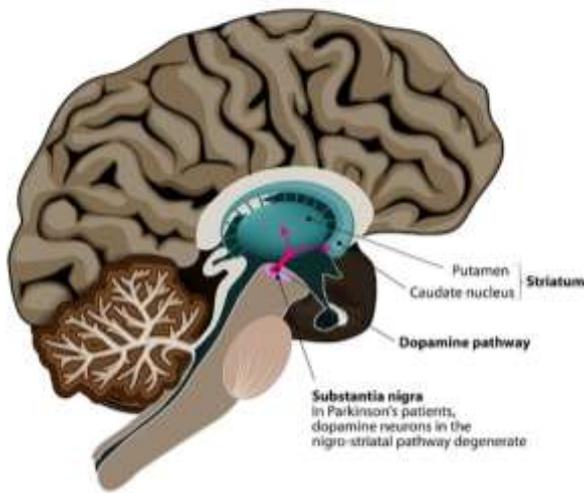
- **India and France have signed a Joint Venture Cooperation Agreement (JVCA)** to produce the Highly Agile Modular Munition Extended Range (HAMMER) system in India.
- It is a precision-guided air-to-ground weapon developed by **Safran Electronics & Defence**, a French defence tech firm.
- It **converts unguided bombs into precision-strike weapons** using a modular guidance + propulsion kit.
- It has a **range of up to 70 km**, enabling attacks from outside hostile air defence zones. It also maintains **high accuracy even in GPS-denied or electronic warfare conditions**, making it very effective against both stationary and moving targets.
- It was effectively used by India during **Operation Sindoor** and compatible with the **French Rafale and India's Tejas** light combat aircraft.
- Its production enhances India's precision strike capability and deep offensive potential. It also enables India to perform

strikes without exposing aircraft to enemy air defence.

- In the coming years, **indigenisation will rise to 60%**, covering both electronic & mechanical components.

### Parkinson's Disease

## PARKINSON'S DISEASE



- Parkinson's disease is a **progressive neurodegenerative disorder** that impairs movement and **can lead to immobility and dementia** over time.
- It usually occurs in older people. **Men are affected more often** than women.
- Its prevalence has doubled in the past 25 years. **India shares around 10% of the global burden** of the disease.
- The **exact cause of Parkinson's disease is not fully known** yet, but it is believed to involve a combination of genetic and environmental factors.
- It is primarily characterized by the **loss of dopamine-producing neurons** in the brain, leading to **motor and non-motor symptoms**.
  - Motor symptoms include slow movement, tremors, & rigidity.

- Non-motor symptoms include cognitive issues, mental health disorders, sleep disturbances, pain, and sensory problems.

- **There is no cure** for the disease, but medicines, surgery and rehabilitation can reduce symptoms.

### Abujhmediya Tribe



- It is a **sub-group of the Gond tribe of the Central India region**.
- They inhabit the dense forests and hilly terrains of the **Abujhmarh region**, which spans Chhattisgarh's border areas with Maharashtra and Odisha.
- It is also recognized as one of the seven **Particularly Vulnerable Tribal Groups (PVTGs)** in Chhattisgarh.
- They **speak 'Madi'**, a local dialect of the Dravidian language family's Gondi dialect.
- The tribe **worships natural elements** such as the Sun, Moon, rivers, mountains, and the Earth.
- Their **major festivals** include Pola, Kakasar, and Pandum- and these are often linked to agricultural cycles.
- Their **folk songs** include Dadriya, Reloget, Poojageet, songs for marriage, engagement, and baby showers (chhatthi).

- **Tattooing (Godana)** is considered as a permanent jewel for their women.

**PLACES IN NEWS**

**Lake Urmia**



- Iran has used cloud-seeding over the Urmia Lake basin to address the country’s severe drought.
- It is a **large and extremely hypersaline lake located in Iran.**
- It is the **largest lake in the Middle East region & the 6<sup>th</sup>-largest saltwater lake on Earth.**
- It is surrounded by mountains in the west and north, and plateaus in the south and east. The inflow of water in the lake is from rivers like the **Talkheh, Zarineh, and Simineh.**
- It lies at an elevation of 4,183 feet (1,275 meters) above sea level.
- The Lake, along with its 102 islands were protected to create **Urmia Lake National Park in 1975.**
- A unique feature of Lake Urmia is its **changing colors in certain seasons.** The high salinity and microscopic activities cause the water to turn red and orange, creating a striking scene.

- **Fluctuating water levels and reduced inflow** due to climate change, water diversion, and human activity have raised concerns about the lake’s future sustainability.

**Ningaloo Reef**



- A new study shows that nearly 70% of corals in Australia’s **UNESCO World Heritage-listed Ningaloo Reef** have died due to one of the most intense and prolonged marine heatwaves ever recorded.
- It is located in **Western Australia** and is one of the largest fringing reefs in the world (~260 km long).
- It is important for marine biodiversity and supports whale sharks, turtles, reef sharks, and diverse coral species.
- **70% of corals in this region have died** recently, as per the latest survey. Of 1,600+ corals assessed in March, only ~600 survived by October.

As per the US National Oceanic & Atmospheric Administration (NOAA), 84.4% of the world’s reef areas experienced bleaching-level heat stress (Jan 2023–Sept 2025). There has been mass coral bleaching in

83 countries. Marine heatwaves in 2024 lasted 4× longer than the long-term average and affected 96% of the world's oceans.

## PRACTICE QUESTIONS

Q1. Consider the following tribal communities in India and the regions where they primarily reside:

1. Abujmadiya Tribe: Mizoram
2. Bugun Tribe: Arunchal Pradesh
3. Saura Tribe: Odisha
4. Konyak Tribe: Nagaland

How many of the above pairs are **INCORRECTLY** matched ?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Q2. Consider the following list of elements and minerals:

1. Uranium
2. Tantalum
3. Titanium
4. Aluminium
5. Cobalt
6. Zirconium
7. Silicon

Which of these are included in the list of 30 Critical Minerals for India, published by the Ministry of Mines ?

- (a) 1, 2, 3, 5 and 6
- (b) 2, 4, 5, 6 and 7
- (c) 1, 3, 4, 5 and 7
- (d) 2, 3, 5, 6 and 7

Q3. Consider the following lakes that are often seen in the news:

1. Lake Chad
2. Lake Titicaca
3. Lake Van
4. Lake Baikal

5. Lake Urmia
6. Lake Tanganyika
7. Lake Turkana

How many of the above are freshwater lakes ?

- (a) Only two
- (b) Only three
- (c) Only four
- (d) Only five

Q4. The Ningaloo Reef, which was in news recently due to mass death of coral polyps, is located in which of the following countries ?

- (a) Indonesia
- (b) Solomon Islands
- (c) Australia
- (d) Maldives

Q5. Consider the following statements regarding the Prevention of Money Laundering Act (PMLA) of 2002:

1. PMLA was enacted in pursuance of India's ratification of certain UN Conventions.
2. Non-profit organizations are excluded from the ambit of the PMLA.
3. Appeals against the decisions of the PMLA Appellate Authority lie to the High Courts.

How many of the above statements are correct ?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

### Answers:

1. A
2. D
3. C
4. C
5. B