India’s Mining Sector Reforms

For Prelims:

Mines and Minerals (Development and Regulation) Amendment Acts, 2015, **District Mineral Foundation (DMF)**, **National Mineral Policy (NMP) 2019**, **PARIVESH Portal**, **Khanan Prahari App**, **National Mineral Exploration Trust (NMET)**, **National Critical Minerals Mission (NCMM)**, **M-Sand (Manufactured Sand)**, **Forest Rights Act, 2006**, **Rare Earth Elements (REEs)**.

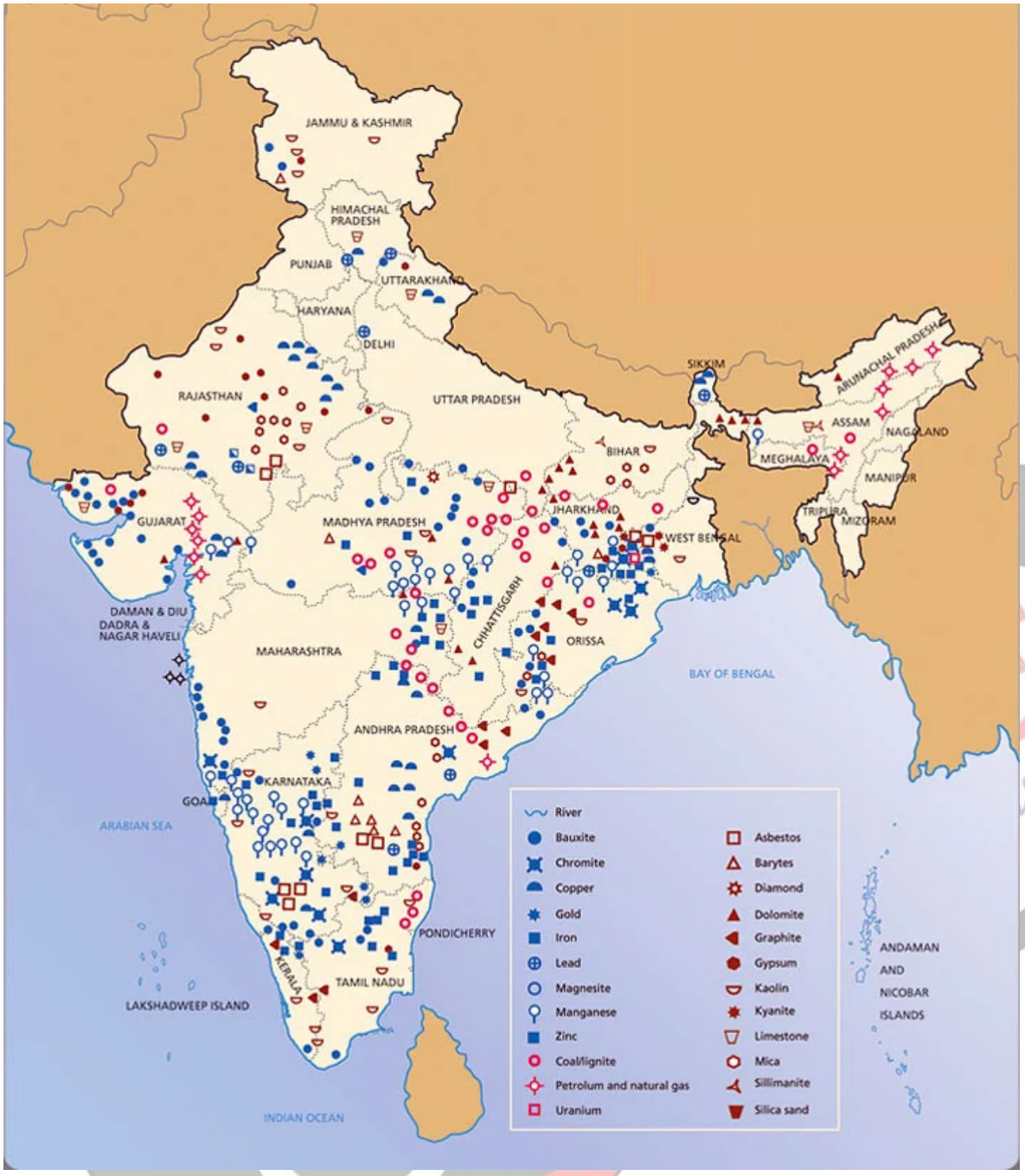
For Mains:

Reforms undertaken in India’s mining sector, Significance of India’s mining sector – scope and challenges. Steps needed to strengthen India’s mining sector.

Source: PIB

Why in News?

In **May 2025**, India **auctioned its first potash block**, marking a milestone in **mining sector reforms** aimed at transforming India’s mining sector and driving **economic growth.**



What Reforms Have Been Taken to Transform India's Mining Sector?

- **Legal Reforms:** Mines and Minerals (Development and Regulation) Amendment Acts, 2015 **introduced auction-based allocation to replace the discretionary system, ensured automatic extensions for captive mines, and created the** District Mineral Foundation (DMF) **for local area development.**
    - The **2021 Amendment** removed **end-use restrictions** to enable **commercial coal mining**, increased lease terms to **50 years**, and introduced a **Composite License for Exploration-Cum-Mining (CEMP)** to attract **private investment.**
- **National Mineral Policy (NMP) 2019: The** National Mineral Policy (NMP) 2019 **focuses on sustainable mining, private sector participation, ease of doing business, adoption of AI, drones, blockchain for transparency, and promotion of downstream industries for value addition.**
- Coal Sector Reforms: Coal sector reforms allowed commercial coal mining (2020) by private players, promoted coal gasification and liquefaction for cleaner coal technologies, and ensured faster environmental approvals through the single-window clearance (PARIVESH Portal).

- Technological Advancements: Satellite imagery monitors illegal mining and ensures compliance, while the Khanan Prahari App lets citizens report such activities.
    - The **National Geoscience Data Repository (NGDR)** offers **12,000+ geological reports** for public access, while **drone surveys**, **Mining Tenement System (MTS)**, and **faceless filings** improve **efficiency** and **transparency**.
- **Exploration Reforms:** The **National Mineral Exploration Trust (NMET)** funds **exploration projects**, with **private sector participation** and the **Exploration Licence (EL)** regime creating opportunities for **MSMEs** and **startups**.
    - The **National Critical Minerals Mission (NCMM)** was launched to secure **lithium**, **cobalt**, **nickel**, and **rare earth elements** vital for the **energy** and **tech sectors.**
    - **Offshore mineral mining** initiated, expanding India's role in the **global resource supply chain.**
- **Sustainable Mining Initiatives:** The **Star Rating System** rates **mines** on **sustainable practices**, **mine closure plans** are mandatory for **environmental rehabilitation**, and use of **M-Sand (manufactured sand)** is promoted to reduce **river sand mining**.

What is the Significance of India's Mining Sector?

- **Economic Growth Driver: India's mining sector** contributed **1.97%** to **GVA** in 2023-24, generating **Rs 4 lakh crore** for states through **auctions** and **royalties** that fund **infrastructure** and **welfare schemes.**
    - **Odisha** led with a **44.9% share**, followed by **Chhattisgarh (13.9%)**, **Jharkhand (4.1%)**, and **Maharashtra (3.9%).**
- **Industrial & Infrastructure Foundation: India produces 95 minerals including fuel, metallic, non-metallic, atomic, and minor minerals.**
    - **Metallic minerals** (90.3%) like **iron ore**, **bauxite**, and **copper** support **steel**, **aluminum**, and **electronics**, while **non-metallic minerals** (9.7%) like **limestone** and **phosphates** aid **cement**, **fertilizers**, and **chemicals.**
- Employment & Rural Development: DMF Trusts use mining revenues to support healthcare, education, and livelihoods in mining-affected regions, while exploration licenses for MSMEs and startups create jobs in mineral-rich states.
- **Energy Transition:** Critical minerals (lithium, cobalt, rare earths) exploration reduces import dependence for EV batteries, renewables, and defense technology.
    - **Potash mining** boosts **fertilizer self-sufficiency**, enhancing **food security.**
- **Global Competitiveness: Auction reforms and offshore mining attract private investment, positioning India in the global critical minerals supply chain.**
    - **KABIL's overseas acquisitions** (e.g., **Argentina for lithium**) secure **strategic resources.**

What are the challenges in India's Mining Sector?

- **Regulatory & Bureaucratic Hurdles: Delays in clearances** for **environmental**, **forest**, and **wildlife approvals**, along with **land acquisition issues** involving **tribal rights** under the **Forest Rights Act, 2006** and local resistance, slow down projects.
    - **Frequent policy changes** like **iron ore export bans** and shifts in **royalty rates** create regulatory **uncertainty** for investors.
- **Illegal & Unsustainable Mining: Rampant illegal mining** due to weak enforcement, especially in **Jharkhand**, **Rajasthan**, and **Goa**, along with **unregulated mining** like **rat hole mining**, causes **deforestation**, **water pollution**, and **soil erosion.**
    - A **nexus of politicians**, **bureaucrats**, and **mining mafias** fuels **corruption** and disrupts **legal operations.**
- **Low Exploration:** Only **10% of India's Obvious Geological Potential (OGP)** has been explored, with under **1% of the global exploration budget** spent in India, while reliance on **obsolete mining techniques** over **automation**, **AI**, and **drone surveys** lowers efficiency.
- **Logistics Bottlenecks: Poor transport connectivity** in mining belts (e.g., **Odisha**, **Chhattisgarh**), **port constraints**, and **power shortages** raise costs, cause delays, and disrupt mining operations.

- **Dependence on Imports for Critical Minerals:** In **2020**, India imported **100% of its lithium, cobalt, nickel**, and **60% of its graphite**, all crucial for **EVs** and **renewables**, with heavy reliance on **Chinese processed minerals**.
    - In **2025**, **China's export controls** on **rare earth elements (REEs)** and **magnets** hampered Indian industries dependent on these imports.
- **Social & Environmental Conflicts: Mining in forest areas** like **Niyamgiri Hills** faces **tribal displacement** protests, causes **water scarcity** and conflicts with **farmers**, and suffers from poor **DMF fund implementation** for community **rehabilitation.**
    - **Poor working conditions** with frequent **accidents** (e.g., **Meghalaya rat-hole mining deaths**) and a **skilled labour shortage** hinder adoption of **modern mining technology.**

What Steps are Needed to Strengthen India's Mining Sector?

- **Boost Exploration & Geological Data: Increase budget for exploration** by raising funds for **Geological Survey of India (GSI)** and **National Mineral Exploration Trust (NMET)**, and promote **private sector participation** through **incentives** like tax breaks and revenue-sharing.
- **Infrastructure & Logistics Development:** Strengthen **mine-to-plant connectivity** with improved **railways**, **roads**, and **pipelines** in clusters like **Odisha** and **Jharkhand**, and expand **port capacity** at **Vizag**, **Paradip**, and **Mormugao** for **mineral exports**.
    - Develop **dedicated mineral corridors** and **freight corridors** for efficient **coal** and **iron ore transport.**
- **Technology & Automation Adoption:** Adopt **AI**, **drones**, **satellite imaging**, and **geospatial mapping** for better surveys, and create an **open data portal** with a **national mineral database** for investors.
    - Promote **remote-controlled drilling**, **zero-waste mining**, and invest in **R&D** for **clean mining** like **coal gasification**, **hydrogen-based steel**, and **lithium extraction from brine.**
- **Sustainable & Responsible Mining: Enforce** Environmental, Social, and Governance (ESG) **norms with water recycling, carbon-neutral mining, and bio-reclamation, ensure mine closure funds for land restoration, and promote community-centric mining through effective DMF spending on healthcare, education, and livelihoods.**
- Tackling Illegal Mining & Corruption: Strengthen surveillance with expanded satellite monitoring (Mining Surveillance System) and the Khanan Prahari App, impose harsh penalties on illegal miners and corrupt officials, and ensure whistleblower protection to expose mafia activities.
- Focus on Critical & Strategic Minerals: Secure global partnerships for lithium, cobalt, and rare earth assets in Africa, Australia, and South America, establish domestic refining plants for lithium and graphite, and implement a National Critical Minerals Policy to ensure supply for EVs, solar panels, and defense tech.

Conclusion

India's mining sector, revitalized by reforms like **auctions**, **tech adoption**, and **critical mineral security**, drives **economic growth** and **self-reliance**. However, challenges like **illegal mining**, **import dependence**, and **environmental concerns** persist. **Strategic investments** in **exploration**, **infrastructure**, and **sustainability** can transform mining into a pillar of **Viksit Bharat** while balancing **ecological** and **social equity**.

Drishti Mains Question:

Q. Discuss the role of India's mining sector in achieving national economic, energy, and food security. How can reforms strengthen its contribution?

UPSC Civil Services Examination, Previous Year Questions

(PYQs)

Prelims

Q.With reference to the management of minor minerals in India, consider the following statements: (2019)

1. Sand is a ‘minor mineral’ according to the prevailing law in the country
2. State Governments have the power to grant mining leases of minor minerals, but the powers regarding the formation of rules related to the grant of minor minerals lie with the Central Government.
3. State Governments have the power to frame rules to prevent illegal mining of minor minerals.

Which of the statements given above is/are correct?

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

Ans: (a)

Q. What is/are the purpose/purposes of ‘District Mineral Foundations’ in India? (2016)

1. Promoting mineral exploration activities in mineral-rich districts
2. Protecting the interests of the persons affected by mining operations
3. Authorizing State Governments to issue licences for mineral exploration

Select the correct answer using the code given below:

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

Ans: (b)

Mains

Q. Despite India being one of the countries of Gondwanaland, its mining industry contributes much less to its Gross Domestic Product (GDP) in percentage. Discuss. (2021)