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News: Copper

- As demand for copper grew by 16% yearly-on-year in FY23, policymakers and corporations have increasingly turned their attention to the critical role of copper in spurring economic growth.

Copper

- Copper is a malleable, ductile metal known for its excellent heat and electricity conductivity. It possesses corrosion resistance and antimicrobial properties.
- Malleability refers to the ability of a material to be pressed, or rolled into thin sheets without breaking or cracking.
- Ductility is the property of a material that allows it to be stretched or drawn out into a thin wire without losing its strength or breaking.

Applications

- Copper is widely utilised in construction, consumer durables, transportation, and industrial manufacturing.
- It is also integral to clean energy technologies such as solar panels, electric vehicles (EVs), and energy-efficient motors.

- It is a **100% recyclable metal** (allows for a circular economy).

Occurrence and Composition

- Copper is **naturally found in various forms in the Earth's crust.**
- It can be **found in sulphide deposits (as chalcopyrite, bornite, chalcocite, covellite), in carbonate deposits (as azurite and malachite), in silicate deposits (as chrysocolla and diopside) and as pure native copper.**
- **Most commercial copper ore deposits contain an average grade of 0.8% copper, while copper ore in India has an average copper content of around 1%.**

Mining Methods

- There are **two primary methods of copper mining: open-pit and underground mining.**
- **Open-pit mining dominates, constituting 80% of global copper mining operations.**

Copper Deposits in India

- **Mainly located in Singhbhum (Jharkhand), Balaghat (Madhya Pradesh), and Jhunjhunu and Alwar (Rajasthan) districts.**

- Minor deposits are found in Agnigundala (Andhra Pradesh), Chitradurg and Hasan (Karnataka), and South Arcot (Tamil Nadu) districts.

India's Copper Appetite

- India's demand for copper is soaring due to rising infrastructure projects, renewable energy initiatives, and urbanisation.
- Despite this, the country heavily relies on copper imports due to limited domestic reserves.
- To address this, the government is promoting investments in smelters and refineries while Indian companies are acquiring copper mines abroad to secure a stable supply and reduce dependence on international markets.
- Recently, the Ministry of Mines has proposed sending an Indian industry delegation to copper-rich Zambia to discuss potential copper exploration and mining projects in the southern African country.
- Recognizing copper's criticality, the government has included it in its list of critical minerals, highlighting the need to reduce import dependence.