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India Energy Security Risks

Prelims: *Current events of national and international importance | Energy*

Why in News?

Recently, CII-EY - India report said that India's energy security risks are shifting beyond oil and gas to critical minerals, manufacturing capacity, electricity storage and grid infrastructure.

- **Shift in Energy Security –** India's energy risks moving beyond oil and gas to **critical minerals, manufacturing, storage, and grid infrastructure**.
- **Mineral Dependence –** Fully import-dependent for lithium, cobalt, nickel, silicon, rare earths, gallium, germanium, platinum group elements.
    - *Projected needs (2025–2070) – **66 MT copper, 46 MT graphite, 19.5 MT silicon, 11.5 MT nickel**.*
- **Electricity Demand –** Per capita consumption rose from **780 kWh (2015–16) to 1,153 kWh (2024–25)** and demand is expected to rise further with industrialisation and urbanisation.

Investment Needs

- **Energy storage – USD 1.15 trillion (2025–2050)**, **USD 3.3 trillion (2051–2070)**.
- **Transmission/distribution –USD 2 trillion+** long-term.
- **Nuclear capacity – P**rojected to reach **100 GW by 2047**.
- **Renewable Energy Progress –** India nearing **300 GW non-fossil capacity**, target **500 GW by 2030**.
    - Rooftop solar under PM Surya Ghar scheme expanding rapidly.
- **Manufacturing and Oil Security –** Oil remains as important consumption; doubled to **243 MT (FY26)**.
    - Strategic Petroleum Reserve capacity – **11.8 MT (approved)**.

Vulnerabilities

- Import dependence may cause **supply disruptions and geopolitical**

risks, similar to fossil fuels.

Recommendations

- Accelerate **domestic exploration, processing, recycling, and manufacturing**.
- Diversify import sources and build **strategic partnerships**.

Reference

Down to Earth | Renewable Energy