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ICRA's CLIMATE SERIES

Mining and energy transitions

Demand for critical minerals for clean energy to increase multi-fold; domestic production & bilateral ties to ensure consistent supply

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CLIMATE CHANGE

The biggest crisis of our time

India lacks reserves for critical minerals for clean energy and depends on imports for the same. Demand for these reserves is set to surge amidst the evolution of climate policies.

Though the GoI is taking steps to ensure stable supply, faster pace of strategic partnerships and domestic production may help meet demand in the near future.

- Requirement of some of the minerals such as nickel, cobalt, lithium, rare earth elements (REE), copper, graphite and manganese for producing clean energy is 3-6 times more than conventional methods. For instance, minerals required for an electric car are 5-6 times more than a conventional car. Similarly, minerals required for a solar project are 3-4 times more than a thermal project.
- The International Energy Agency (IEA) has anticipated that the requirement for these critical minerals will surge by 20-40 times in the next two decades depending upon the evolution of climate policies, choice of technology adopted and policy support by the Government.
- India has reserves and production share of some of the minerals like copper, graphite, manganese and REE. However, it is not self sufficient in these minerals. Imports of these metals increased by a CAGR of 20% between FY2019-FY2023.
- For other critical minerals such as lithium, nickel and cobalt, India is 100% dependent on imports. Imports for these minerals rose at a CAGR of 11% between FY2019-FY2023.
- These critical minerals are geographically concentrated in a few locations. Due to high capital expenditure and complex technology needed, the production share of these critical minerals is highly skewed towards a few countries.
- Seven countries (Congo, Indonesia, Russia, Australia, Chile, China and Brazil) account for ~65% of the production of these critical minerals.
- A reliable supply chain will help support India's sustainable economic growth while achieving the climate goals.
- Simultaneously, the Government of India (GoI) is taking steps for ensuring consistent supply for critical minerals. One such step is the auction of 20 blocks of critical and strategic minerals. However, extraction of minerals will take a minimum of 10-15 years. Further, the GoI's other efforts are currently at their initial stages.
- In a nutshell, stable supply of minerals will depend on how fast GoI builds up the supply chain for these minerals, whether through investing in its own domestic production or through strategic global trade partnerships.



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