

Quad and Beyond

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Quad and Beyond: Diversifying Global Mineral Supply Chains

Context:

Critical minerals such as **rare earth elements (REEs)**, **lithium**, and **cobalt** are essential for the functioning of high-end technologies including **electric vehicles (EVs)**, **semiconductors**, **aerospace systems**, and **clean energy solutions**.

Currently, **China controls a dominant share** of the global mining, refining, and processing of these critical minerals.

Amid rising **geopolitical tensions**, **economic coercion risks**, and **supply chain disruptions**, the **Quad countries—India, Australia, Japan, and the US—have launched the Quad Critical Minerals Initiative** to secure and diversify these supply chains.

Quad Foreign Ministers' Meeting - Washington, DC

- The **second Quad Foreign Ministers' Meeting** was held in **Washington, DC**.
- Ministers reaffirmed their cooperation in four priority areas:
 - **Maritime and transnational security**
 - **Economic prosperity and supply chain security**
 - **Critical and emerging technologies**
 - **Humanitarian assistance and disaster relief**
- The ministers **condemned the Pahalgam terror attack** and called for bringing the perpetrators and their backers to justice.

Launch of Quad Critical Minerals Initiative

- The **Quad Critical Minerals Initiative** was officially launched to:
 - Build **resilient and diversified critical mineral supply chains**
 - Reduce overdependence on **China** for essential minerals
 - Promote **e-waste recycling**, and
 - Encourage **private sector investments**
 - The initiative complements efforts to secure raw materials required for green technologies and defence manufacturing.
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Maritime and Logistics Cooperation Announced

- Key announcements included:
 - **First Quad Indo-Pacific Logistics Network** field training exercise to be held later this year
 - Launch of the **Quad Ports of the Future Partnership** in **Mumbai**
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China's Dominance in Critical Minerals

- China currently controls:
 - Over **60% of global rare earth mining**
 - More than **85% of global rare earth refining and processing capacity**
- China is the world leader in **NdFeB magnet production**, used in:

- **EV motors, power steering, jet engines, and wind turbines**
 - While rare earths are globally available, China has built unmatched **processing efficiency and scale**
 - **Japan has revived its processing sector** through policy support, but **India and the US** still rely heavily on Chinese exports
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Geopolitical Tensions and Supply Chain Barriers

- In retaliation to **US tariffs (Trump era)**, China imposed:
 - **Bureaucratic barriers** to export critical minerals
 - **Restrictions on heavy rare earths** and other high-tech materials with dual-use military potential
 - These steps raised fears of **economic coercion and price manipulation**
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Impact on India's EV Sector

- **India's growing EV industry** is facing supply delays due to:
 - China's refusal to approve **critical mineral export applications** from Indian automakers
 - China's **end-user certificate requirements** and **local government endorsements**, ensuring minerals aren't used for military purposes
- China is now pushing foreign automakers to:
 - Import **entire electric motor assemblies** instead of just magnets
- While lobbying efforts by companies like **Volkswagen** have succeeded, **Indian firms lack similar influence**

G7 Foundation Behind Quad's Push

- The initiative builds upon the **G7 Critical Minerals Action Plan** (announced in Canada), which India endorsed
 - Key commitments under the G7 plan:
 - Partnering with **emerging and developing countries** to diversify supply
 - Promoting **local value addition**
 - Supporting the **World Bank-led RISE (Resilient and Inclusive Supply Chain Enhancement)** initiative
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India's National Critical Mineral Mission

- The **Ministry of Mines, Government of India**, has launched the **National Critical Mineral Mission** with an outlay of **₹16,300 crore**
 - Key focus areas:
 - **Exploration** of domestic reserves
 - **Overseas acquisition** of strategic minerals
 - **Research and Development (R&D)**
 - **Recycling and recovery from e-waste**
 - India has sought **RISE funding support** for this mission
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India's Mineral Diplomacy and Strategic Alliances

- In **June 2023**, India joined the **Minerals Security Partnership (MSP)** led by the US

- MSP includes all **G7 countries** along with **Australia, South Korea, Finland, and Sweden**
- In **February 2025**, during PM Modi's US visit, India and the US signed the:
 - **TRUST (Transforming Relationship Utilizing Strategic Technology) initiative**
- Objective of TRUST:
 - Joint collaboration in **extraction and processing technologies**
 - Focus on **lithium, rare earths**, and other critical minerals



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