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EDITORIAL ANALYSIS

The Hidden Costs of the Critical-Minerals Boom

DOWN TO EARTH

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CURATED & WRITTEN BY

**Bharat Choudhary**

UPSC Educator & Content Creator

[linkedin.com/in/epicbharat](https://www.linkedin.com/in/epicbharat)

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The Hidden Costs of the Critical-Minerals Boom

 **Down to Earth** 18 June 2026 **GS3**

Source: ujyari.com — researched, fact-checked & UPSC-mapped



INTERVIEW ANGLE

"The energy transition needs critical minerals, but mining them carries heavy water and human-rights costs. How should India balance security of supply with a just transition?"

Source: [Original editorial](#)  [Down to Earth](#)

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WHY THIS MATTERS NOW

The world cannot decarbonise without [critical minerals](https://ujyari.com/terms/critical-minerals/) (<https://ujyari.com/terms/critical-minerals/>). Nickel, cobalt, copper and lithium are the raw materials of batteries, grids and renewable hardware. But a new investor report on Asia's mining boom warns that the rush to extract them is generating significant water-stress, heatwave and human-rights risks, and that mining companies' real-world practices lag well behind their stated policies. For India, which has launched an ambitious drive to secure these minerals, the report is a timely caution that supply security and sustainability must be pursued together.

THE CRUX IN 60 WORDS

A new investor report finds Asia's nickel, cobalt and copper boom exposes investors to water-stress, heat and human-rights risks. Under a 4.3 degree Celsius scenario, about 140 of 297 assets face high water stress by 2055. Miners have policies on paper but lag on implementation and mine-closure. India's critical-mineral strategy must build in safeguards and a just transition.

THE ISSUE, DECODED

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ELEMENT	WHAT IT IS	WHY IT MATTERS
Critical minerals	Nickel, cobalt, copper, lithium and others essential to clean energy	Indispensable inputs for batteries, grids and renewables
Water-stress risk	Mining competing with farming and drinking water in dry regions	About 140 of 297 assets face high water stress by 2055 under high warming
Policy-practice gap	Miners' written commitments outrun actual implementation	Safeguards on paper do not protect water or communities on the ground
Mine-closure planning	Rehabilitation (https://ujjiyari.com/vocab/rehabilitation/) and aftercare once mining ends	Weak planning leaves long-term liabilities for ecosystems and people

THE ANALYSIS: THE GREEN TRANSITION'S EXTRACTIVE UNDERSIDE

- 1 Decarbonisation** (<https://ujjiyari.com/vocab/decarbonisation/>) **has a dirty start.** The minerals that enable clean energy are mined in ways that can deplete water and harm communities, concentrating the harm at the supply chain's origin.
- 2 Paper policies are not protection.** The report's central finding is implementation failure: companies adopt commitments but do not act on them.
- 3 Water is the binding constraint.** In water-stressed regions, mining competes with agriculture and drinking supply, a conflict set to sharpen as warming intensifies.
- 4 Closure is an afterthought.** Weak mine-closure and rehabilitation planning shifts long-term costs onto communities and the environment.

DATA AND INSTITUTIONS VAULT

Khanij Bidesh India Limited, a joint venture to acquire critical-mineral assets abroad.

India's strategy to secure supply, processing and recycling of critical minerals.

the principle that the burdens of moving to a low-carbon economy should not fall disproportionately on vulnerable workers and communities.

roughly 140 of 297 assets studied face high water stress by 2055 under a 4.3 degree Celsius warming pathway.

include lithium, cobalt, nickel, copper and rare earths.

THE DEBATE

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The argument for prioritising supply: Minerals are indispensable to decarbonisation and to **strategic autonomy** (<https://ujjiyari.com/terms/strategic-autonomy/>). With supply chains concentrated in a few countries, the immediate priority must be securing access, with environmental management handled in parallel.

The argument for embedding safeguards first: A transition that depletes water and displaces communities simply relocates harm. Building safeguards in from the start is cheaper and more legitimate than retrofitting them after damage is done.

The balanced verdict: Security and sustainability are not opposed. The countries and firms that pair reliable supply with credible water, heat and rights safeguards will be the most resilient. India should make safeguards a feature of its mineral strategy, not a constraint upon it.

HOW TO THINK ABOUT THIS (TRANSFERABLE SKILL)

Trace costs across the whole life cycle and the whole supply chain. A technology that is clean at the point of use, like an electric vehicle, may carry heavy costs at the point of extraction. The transferable skill is refusing to judge sustainability at a single stage, and instead following the harm upstream and downstream.

DIAGRAM-IN-WORDS

Clean-energy demand -> mineral boom -> water stress + heat + rights risk -> weak closure
-> long-term community liability

A just approach rewires the chain: mineral demand -> safeguarded extraction -> water
stewardship + consent + credible closure -> durable, legitimate supply

THE WAY FORWARD

- 1 **Embed water stewardship** into mining approvals, prioritising water-stressed regions and competing local needs.
- 2 **Close the policy-practice gap** by tying approvals and finance to verified implementation, not just stated commitments.
- 3 **Mandate** (<https://ujjiyari.com/vocab/mandate/>) **credible mine-closure plans** with funded rehabilitation from the outset.
- 4 **Adopt a just-transition framework** that secures consent and benefit-sharing for mining-affected communities.

5 **Align KABIL and the National Critical Mineral Mission** with these safeguards so that overseas acquisitions and domestic mining meet a single high standard.

THE TAKEAWAY BOX

Use in GS3 environment answers on the energy transition, critical minerals, just transition and sustainable mining.

“A green transition built on extractive harm is a contradiction.”

KABIL, National Critical Mineral Mission, critical minerals list, the 140 of 297 assets water-stress figure under a 4.3 degree Celsius scenario.

Intergenerational (<https://ujijari.com/vocab/intergenerational/>) and inter-community equity in distributing the costs of decarbonisation.

Connects to past GS3 questions on mining, environmental clearances and sustainable development (<https://ujijari.com/terms/sustainable-development/>).

India’s EV and battery push, lithium discoveries, recycling and circular-economy policy, and global mineral supply-chain geopolitics (<https://ujijari.com/vocab/geopolitics/>).

Sources: *Down to Earth* (<https://www.downtoearth.org.in/>), *PIB* (<https://pib.gov.in/>)

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KEY ARGUMENTS AT A GLANCE

 Ujjayanti Current Affairs · ujjayanti.com · Free Daily Current Affairs for UPSC & State PCS

The critical-minerals boom needed for clean energy carries hidden water, heat and human-rights costs, and miners' on-paper policies far outrun their actual practice.

 **SUPPORTING**

- A new investor report finds Asia's nickel, cobalt and copper expansion exposes investors to water-stress, heatwave and human-rights risks.
- Under a high-warming scenario, around 140 of 297 assets studied face high water stress by 2055, yet implementation of safeguards lags policy commitments.
- Mine-closure planning and rehabilitation remain weak, leaving long-term environmental and community liabilities.

 **COUNTER**

Some argue that minerals are indispensable to decarbonisation, so the priority must be securing supply, with environmental concerns managed afterward.

 **WAY FORWARD**

Embed water, heat and rights safeguards and credible mine-closure plans into India's critical-mineral strategy through KABIL and the National Critical Mineral Mission, with a just-transition framework for affected communities.


MAINS ANSWER FRAMEWORK

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QUESTION

"The critical-minerals boom essential to the energy transition carries hidden environmental and social costs." Discuss India's strategy and the just-transition challenge. (250 words)

INTRODUCTION

The clean-energy transition runs on critical minerals such as nickel, cobalt, copper and lithium. But a new investor report on Asia's mining boom carries an uncomfortable message: the very materials meant to decarbonise the economy are being extracted in ways that strain water, expose workers to extreme heat and risk the rights of local communities.

BODY

The report finds that miners increasingly have environmental and social policies on paper, but lag badly on implementation. Under a high-warming scenario of around 4.3 degrees Celsius, roughly 140 of 297 assets studied face high water stress by 2055, in regions where mining competes directly with farming and drinking-water needs.

Heatwave exposure threatens both productivity and worker safety, while weak mine-closure and rehabilitation planning leaves long-term liabilities for communities and ecosystems. For India, which is racing to secure critical minerals through KABIL and the National Critical Mineral Mission, this is a direct warning.

Security of supply cannot mean importing or reproducing extractive practices that deplete water and displace people. The just-transition principle, that the costs of decarbonisation must not fall on the most vulnerable, applies as much to mining communities at the start of the supply chain as to coal workers at its end.

India's strategy must therefore treat water stewardship, heat resilience, community consent and credible closure planning as core to mineral security, not as compliance afterthoughts.

CONCLUSION

A green transition built on extractive harm is a contradiction. India can lead by making critical-mineral security and a just transition mutually reinforcing, embedding safeguards before the boom locks in its hidden costs.


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