

ENERGY TRANSITION

Critical minerals and India's role in securing a low carbon global economy

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Demand for critical minerals is projected to grow exponentially. Image: Getty Images.

Anil Agarwal

Executive Chairman, Vedanta Group

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- Demand for critical minerals needed to support a net-zero future is set to grow exponentially.
- Securing sustainable supply chains has never been more important to the global community.
- With its untapped resources, India is uniquely placed to support the transition to a low carbon global economy.

Access to an uninterrupted supply of critical minerals such as copper, lithium, nickel, and cobalt, and future metals like aluminium, zinc and silver, are essential to the global economy successfully embracing and transitioning to a low carbon future. Consequently, securing such deposits at home or ensuring the unhindered access to such deposits across friendly resource-rich nations is integral to the long-term energy security efforts of nations around the world.

The demand for these critical and future metals and minerals is

projected to grow exponentially over the coming years as each country pursues its net-zero objectives. As McKinsey [reports](#), the demand for all critical metals is expected to outpace absolute historical growth in the coming decade, with the demand for copper especially leading the race. While this trend is likely to result in short-term measures like resource nationalism gaining popularity, the more sustainable and long-term answer to this dilemma perhaps lies in the ambit of greater cooperation and collaboration amongst countries that are best placed to work together to unlock and secure such resources.

Have you read?

- [Securing critical minerals for energy transition requires collective action](#)
 - [What are critical minerals - and why are they key to a greener future?](#)
 - [Why understanding mineral associations is key to managing the critical minerals supply gap](#)
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According to the International Energy Agency ([IEA](#)), today's combined market size of key energy transition minerals is set to more than double to \$770 billion by 2040. Meanwhile, an analysis by BloombergNEF ([BNEF](#)) states that the world could require 3 billion metric tonnes of such metals and minerals between 2024 and 2050 to build out low-carbon solutions such as electric vehicles, wind turbines and electrolyzers, as well as the infrastructure to support future generations. That number rises to 6 billion tonnes to reach net-zero in 2050.

Critical minerals: supply and demand issues

So, how do we solve this supply and demand dilemma? While many see this as a challenge, I see this as a huge opportunity for all of us.

Firstly, we must urgently secure and direct further investments into the sector. The most developed economies around the world have grown to where they are today on the back of a strong and robust critical minerals and natural resources sector. Consider the US, Europe, Russia, the Middle East or Australia. While the sector has seen several large investments in the recent past, the [global mining industry](#) will need approximately \$2.1 trillion in fresh investment by 2050 to meet the net-zero demand for raw materials.

These investments will also need to be supported by progressive policy and regulatory environments that allow for easy access to land and licenses, incentivize the use of world-class technologies that support sustainable mining practices, permit self-certification of operations, and ensure an equitable distribution of returns.

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Secondly, there is a strong need to support and secure the development

of robust and reliable supply chains. The world is already responding to this need with the recent establishment of the US-led [transnational Minerals Security Partnership](#) (MSP), which strive to promote responsible growth across the critical minerals sector via a shared commitment to high environmental, social and governance (ESG) standards, sustainability, and shared prosperity. The MSP already has the [support](#) of 23 partners, including Australia, Canada, India, Japan, the UK and the EU, and has overseen the execution of multiple bilateral and multilateral partnerships that are focused on enabling access to these resources or securing them for the future. Continued collaboration in this way will put us on a stronger footing to meet demand.

Alongside this, efforts to recycle and innovate are also vital as we seek to ease strains on supply. [BNEF](#) expects output from secondary sources to become an integral part of the supply chain for energy transition metals, with the added benefit of lowering the lifecycle emissions of supply. In this global quest, India stands as a key player and a clear partner of choice.




India's untapped critical minerals

While India is blessed with vast mineral reserves, only about 20% of India's geological wealth has been explored to date, thereby presenting an exciting opportunity to global investors and partner countries. To name just two **critical minerals**, India has approximately 163.9 million tonnes of copper reserves, and approximately 44.9 million tonnes of cobalt ore resources, both of which – if unlocked in a timely, efficient and sustainable manner – could provide a much-needed boost to global supplies. India is also already **pioneering ways** to ensure recycled metals are part of the value chain, as evidenced by the government's recent mandate that all new non-ferrous products must contain 5% recycled content from the beginning of the financial year 2027-28.


Additionally, India's Ministry of Mines announced earlier this year that it plans to earmark about half of its planned domestic exploration projects to critical minerals such as graphite, molybdenum, nickel, cobalt, lithium and potash. Another important initiative is the National Critical Minerals Mission launched in 2024 which is aimed at reinforcing India's critical mineral value chain across all stages – from exploration and mining to beneficiation, processing, and recycling of end-of-life products. This initiative is designed to ensure self-sufficiency in fulfilling the industrial demands for critical minerals.




These measures, as well as India's stable government, progressive policies around the sector and in welcoming foreign direct investment in general, rapidly developing infrastructure, growing middle class, robust manufacturing ecosystems, and wealth of talent, position the country as

a significant destination and partner to global players and countries seeking to explore or secure their critical mineral supply chains. As the world's largest democracy and soon to be third largest economy, India has multiple reasons to seize the opportunity to help shape the future of the low carbon economy. As the world turns to India and India turns to the world, shouldn't you?




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