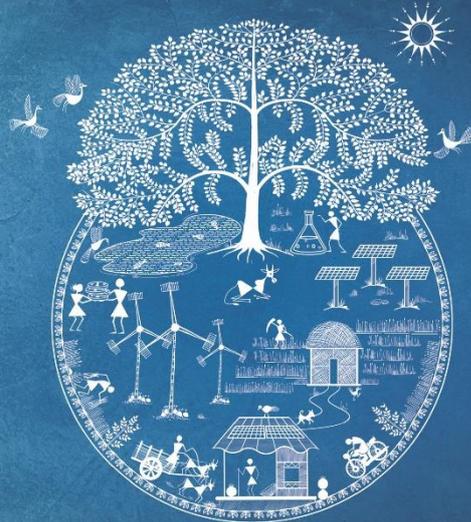




# WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2023

MAINSTREAMING SUSTAINABLE DEVELOPMENT  
AND CLIMATE RESILIENCE FOR COLLECTIVE ACTION

February 22-24, 2023  
New Delhi



## Critical Minerals and Materials: Managing Supply Chain Constraints

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### THEMATIC TRACK SUMMARY

Venue: Jacaranda II

Date: 23<sup>rd</sup> February, 2023

Time: 11:30 AM - 1:00 PM (IST)

#### Suggested Citation

World Sustainable Development Summit (2023), Critical Minerals and Materials: Managing Supply Chain Constraints, Thematic Track Summary (Rapporteur: Khushi Gupta), New Delhi: The Energy and Resources Institute.

## Actionable Messages

**Message 1:** India can look to form a strategic alliance with Indonesia and Brazil through the platform of G20 who have a better manufacturing capacity of minerals, so the competitive advantage is not lost, particularly in the automobile sector.

**Message 2:** There is a need to ensure adequate and timely investment in diversified sources of supply. Also, scaling up recycling and promoting technological innovation can pave a long way in reducing the demand of critical minerals.

**Message 3:** There is a need to scale up battery recycling by working on different challenges such as skilling of workers in the recycling space. There is a need to carry the informal sector along in the process.

**Message 4:** It is crucial to bring all the recyclers together on a single platform to initiate the recycling of critical metals at a global scale. India, evidently, has gaps in mining and exploration which must be bridged.

## Narrative

The thematic track session titled “Critical Minerals and Materials: Managing Supply Chain Constraints” was conducted as part of the World Sustainable Development Summit (WSDS) - the annual flagship initiative of The Energy and Resources Institute (TERI). The aim of the session was to critically explore the future demand of critical minerals and how the constraints in the supply chain can be removed to meet the burgeoning demand across different sectors. The moderator for the session was **Mr. Ajay Shankar, Distinguished Fellow at TERI**. Discussions on various topics unfolded, which included: challenges in the path of supplying the critical minerals with increasing geopolitical issues.

**The session started with the keynote address by Mr. Siddharthan Balasubramania, Principal Strategist, Climate Works Foundation** who talked about batteries used in those components of electric vehicles (EVs) and the minerals used in photovoltaic cells or the advanced battery; all need rare minerals and metals. He said, the supply of these material minerals has to be seamless to meet India's laudable ambitious climate goals in terms of the renewable energy capacity or the electrification of transportation, and recently advanced battery storage – goals which directly support energy security and the climate agenda. He highlighted that India is the third largest light vehicle manufacturer in the world and very likely the way EV will take off and may become a significant exporter of electric two-wheeler; so, it is an important issue which must be addressed. He also said, at the global level, as the host of the G20 and the host of the clean energy ministerial, India is well positioned to be the voice of the Global South to flag the resource security and critical mineral security as important concerns.

**Following the keynote address, the first speaker of the session was Ms. Amrita Dasgupta, Energy Analyst, International Energy Agency**, leading the work on critical minerals, said, the world will need a lot more electric vehicles, wind turbines, solar panels, electricity transmission and distribution lines. This obviously implies that there will be a lot more demand for the minerals and metals that go into these technologies. For example, lithium, nickel, cobalt, manganese, and graphite which are crucial to battery performance, longevity, and energy density. Then there is Rare Earth elements that are required for permanent magnets which are used in wind turbines, the sheer size of the future solar markets that's anticipated also means there will be plenty of additional demand for silicon silver and copper, and finally the expansion of electricity grades for the infrastructure of a cleaner and more electrified system will need a huge amount of copper and aluminium. Therefore, many of the technologies that we need for a clean energy future will require significantly more minerals than their fossil fuel-based counterparts. She said, the demand for lithium is 40 times higher today than it was in 2014. There is a need for an increase in the resilience of supply chains. And to improve market transparency, regular market assessments and periodic stress tests can help policymakers and governments to identify possible weak points to evaluate the potential impacts and then devise the necessary response.

**The second speaker Dr. Amrita Goldar Senior Fellow, International Council for Research on International Economic Relations**, listed out on some metals which are common for India and globally and are deemed critical. She pointed out that the fact is supply is very highly concentrated in a few regions and countries; so, there are obviously a lot of risks as far as sourcing these metals from other countries is concerned because of the volatile world situation. She argued that recycling might be a surer option in terms of international trade in critical raw materials (CRM). However, the major challenge recyclers are facing is that the recycling market for lithium-ion batteries is very small and they are all working mostly in the informal sector.

**The third speaker Ms. Swati Dsouza, Programme Head India ZEV Centre, University of California Davis** said, the electric vehicles' demand is bound to increase and so will the demand for critical minerals for battery manufacturing. Batteries used in EVs, and grid uses most of the critical minerals, which is why, there is a need to develop strategies to meet the rising demand. There is a need to improve the supply infrastructure so that recycling can happen at a local level. For example, there is a need to form a strategic advantage or an alliance through

our trade agreements based on bilateral agreements with Indonesia and Brazil. Also, she mentioned that there is a need for stronger policies to underpin our supply chains without which we will lose our competitive advantage in the automobile sector.

**The fourth speaker Dr. Rajesh Chadha, Senior Fellow, Centre for Social and Economic Progress** started by referring to an article which said, 'mine the gap' (urban mines) which emphasized on the need to extract the waste and hence, recycling is identified as the first important thing to build strong supply chains. The next important thing is to access the criticality of the critical minerals so they can be prioritized accordingly. Also, imbibing good global practices for recycling can help ensure resilient critical supply.

**The fifth speaker Bhuwan Purohit, Executive Director, Corporate Strategy & Planning, Rubamin Pvt. Limited,** talked about the business point of view of the recyclers. He talked about the power of zero and said this facility is a hydrometallurgy facility which recovers all these critical metals without any waste, meaning, they have zero discard to landfill and zero water discharge from the facility. He said, about 70% of the cost of the battery is due to the high cost of such critical metals. He also pointed out that India is 100% import dependent on lithium, cobalt, and nickel i.e., all critical metals. Currently, India is exporting Black Mass which contains all the three critical elements. In his concluding remarks, he said, India evidently has gaps not just in reserves but in mining technology or exploration technology which must be addressed on priority.

## Making Words Count @WSDS 2023

“	<p>As the world move towards green energy, “critical minerals play a critical role”.</p> <p style="text-align: right;"><b>Mr. Ajay Shankar</b> <i>Distinguished Fellow, TERI</i></p>
“	<p>While there are recent risks and disruptions from supply chain, we must remember it should not affect our climate goals. We need to develop a global cooperative framework. And all the excitement of new discoveries in metals and minerals cannot undermine the goal to keep people’s welfare as our foremost priority.</p> <p style="text-align: right;"><b>Mr. Siddharthan Balasubramania</b> <i>Principal Strategist, Climate Works Foundation</i></p>
“	<p>The demand for critical minerals like cobalt and nickel is going to increase multi-fold in the energy sector. There are disruptions in supply value chain and hence there is a need to ensure adequate and timely investment in diversified sources of supply. Scaling up recycling and promoting technological innovation can pave a long way in reducing the demand of critical minerals by almost 10% by 2030.</p> <p style="text-align: right;"><b>Ms. Amrita Dasgupta</b> <i>Energy Analyst, International Energy Agency</i></p>
“	<p>There is a need to scale up battery recycling by working on different challenges, majorly, skilling of workers in recycling space. Major recycling costs almost 40% accounts for collection of waste and transportation; hence, they need more policy support. Even though there are polices, there is still a glaring gap of skilling workers. There is a need to carry the informal sector along in the process. G20 can be a platform to advocate the role of circular economy and “Remake in India” in this realm.</p> <p style="text-align: right;"><b>Dr. Amrita Goldar</b> <i>Senior Fellow, ICRIER</i></p>
“	<p>Electric vehicles’ demand is bound to increase and hence the demand for critical minerals for battery manufacturing. Batteries used in EVs, and grid uses most of the critical minerals and therefore there is a need to develop strategies to meet the demand. India can look to form strategic alliance with Indonesia and Brazil through the platform of G20 who have better manufacturing capacity of minerals, so we do not lose our competitive advantage in the automobile sector.</p> <p style="text-align: right;"><b>Ms. Swati Dsouza,</b> <i>Programme Head India ZEV Centre, University of California Daviser</i></p>
“	<p>Assessing the criticality of minerals should be prioritized because unless we know what is least, more and most critical, it becomes difficult to deliver fruitful policies. Resilient access to critical minerals is required for low carbon technologies in line with COP26 commitments. There is a need to prioritize the exploration of critical mineral blocks.</p> <p style="text-align: right;"><b>Dr. Rajesh Chadha</b> <i>Senior Fellow, Centre for Social and Economic Progress</i></p>
“	<p>“Power of Zero” is a hydrometallurgy technology which helps recycle minerals with “Zero Waste” which must be adopted on a larger scale. The important point is to bring all the recyclers together on a single platform to initiate the recycling of critical metals at a global scale. India, evidently, has gaps in mining and exploration which must be bridged.</p> <p style="text-align: right;"><b>Mr Bhuwan Purohit,</b> <i>Executive Director, Corporate Strategy &amp; Planning, Rubamin Pvt. Limited</i></p>