

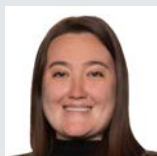
# The battle for critical minerals

Growing competition for critical minerals threatens to exacerbate negative climate, human rights, and biodiversity impacts. Dana Barnes and Elissa El Moufti explore the need for enhanced transparency to promote responsible practices and minimise the risks to companies and investors.

## Setting the scene

The low-carbon transition will in part be made possible by a shift from fossil fuel dependency to clean energy technologies such as electric vehicle batteries and wind turbines, for which critical minerals are an essential input. However, building these clean energy technologies can be more mineral intensive.<sup>1</sup> Because of this, it is important for stakeholders to understand how the inputs required for the development of clean energy technologies may exacerbate negative environmental and social impacts. The growing demand for critical minerals for the energy sector, amidst competition from the consumer electronics sector for smartphones and televisions,<sup>2</sup> has prompted nation states and global companies to eye deep-sea mining and polar regions, raising biodiversity concerns and geopolitical tensions.

For further information, please contact:



**Dana Barnes**  
Themes: Human Rights,  
Executive Remuneration



**Elissa El Moufti**  
Themes: Climate Change,  
Human Rights

As demand for electric vehicles and other clean technologies accelerates, the race to secure supplies of lithium, nickel and cobalt is intensifying. These minerals are deemed 'critical' for the transition to a low carbon economy, but with China currently dominating critical mineral processing, other countries are scrambling to catch up.

According to the International Energy Agency's Stated Policies Scenario (SDS), it is estimated that the world is on track to double its overall mineral requirements for clean energy technologies by 2040.<sup>3</sup> Under this scenario, the transport and utilities sectors will see the biggest critical mineral demand. Lithium demand is expected to grow by over 40 times by 2040, with graphite, cobalt, and nickel following in that order.<sup>4</sup> To meet demand for wind turbine blades and solar power, more iron and aluminium will also be required.<sup>5</sup>

Tech companies have already started to think about the impact of critical mineral availability. This is because the failure to secure a reliable supply may hamper production, or expose the company to sudden price increases for vital minerals.

<sup>1</sup> How does the environmental impact of mining for clean energy metals compare to mining for coal, oil and gas? | MIT Climate Portal.

<sup>2</sup> The Role of Critical Minerals in Clean Energy Transitions – Analysis – IEA; and What you need to know about critical minerals and climate change – ABC News (go.com).

<sup>3</sup> Executive summary – The Role of Critical Minerals in Clean Energy Transitions – Analysis – IEA.

<sup>4</sup> Executive summary – The Role of Critical Minerals in Clean Energy Transitions – Analysis – IEA.

<sup>5</sup> Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf (worldbank.org).

For example, when supply is concentrated in politically unstable areas it can lead to business disruption, impacting revenue streams. Companies may face unexpected costs when switching materials during production, and higher insurance premiums as insurers reconsider the risks. Planning becomes more complicated as the availability of minerals changes. We recommend that companies, with board oversight, establish strong risk management systems that include mineral dependency metrics for relevant business units, ensuring that financial models consider extreme but possible disruption scenarios.

Some companies are also cognisant of the broader risks to which they may be exposed. For example, Hewlett Packard Enterprises has changed its critical minerals policy into a responsible minerals sourcing policy, with the inclusion of a human rights lens.

### What makes a mineral critical?

The classification of a mineral as critical relates to how essential it is for a product or the needs of an economy, its impact on national security, the risk to the supply chain, and the lack of an adequate substitute. This can vary by geography and may change over time. For example, the US, EU, Japan, India and Australia identify different minerals as critical.<sup>6</sup> A more universal list reflective of global demand and supply, and based on global clean technology needs, would include lithium, copper, nickel, manganese, cobalt, chromium, molybdenum, zinc, rare earth metals, and silicon.<sup>7</sup>

### Where to find critical minerals

A mineral intensive future will require more mining and processing capacity to fill the growing demand.<sup>8</sup> The extraction of these minerals is spread across a range of countries including Australia, the Democratic Republic of the Congo (DRC), Indonesia, Chile and China. But a significant majority of critical minerals processing takes place in China, including some 60-70% of global lithium and cobalt processing, and an estimated 60% of nickel processing. China is also home to 90% of rare earth metal processing.<sup>9</sup>

This skewed global supply chain has spurred many developed economies to develop national critical minerals strategies based on geopolitical concerns and future energy needs. The US and Canada have entered a global partnership to secure critical minerals that are essential for clean energy technologies,<sup>10</sup> while the EU and other countries have formed the Minerals Security Partnership.<sup>11</sup>



Many demand-side companies are taking unprecedented steps to secure critical minerals for their products. This is changing the traditional supply chain for minerals sourcing, with demand-side companies becoming directly involved in the mining of minerals. For example, as part of its EV strategy, General Motors has invested millions of dollars in partnership with Control Thermal Resources to extract lithium from the Salton Sea Geothermal Field in Imperial, California.<sup>12</sup> Tesla directly sources minerals from miners beyond third-party suppliers.<sup>13</sup> And German car manufacturers Volkswagen and Mercedes-Benz have secured access to critical minerals via a memorandum of understanding with the Canadian government.<sup>14</sup> This is creating new opportunities for companies, but also presents new areas of risk.

Miners are also responding to the shift in demand – energy transition minerals already account for a significant share of production at Vale and BHP. And South32, an Australia-based mining company, sold its last coal asset in 2024 to focus its business strategy solely on critical minerals.<sup>15</sup>

### How clean is clean tech?

The increase in demand for critical minerals, if not properly executed, could have negative environmental impacts. These include increased greenhouse gas emissions, biodiversity loss and land use change, water stresses and pollution. Mining and processing activities generate a significant amount of waste, some of which are hazardous to human health and may impact local communities. There are also other potential negative social impacts, such as corruption and human rights issues, including the use of forced labour and the infringement of indigenous peoples' rights.<sup>16</sup>

<sup>6</sup> Critical Minerals | American Geosciences Institute.

<sup>7</sup> Executive summary – The Role of Critical Minerals in Clean Energy Transitions – Analysis – IEA.

<sup>8</sup> The reinvention of the mining industry | PwC.

<sup>9</sup> Executive summary – The Role of Critical Minerals in Clean Energy Transitions – Analysis – IEA.

<sup>10</sup> U.S. and partners enter pact to secure critical minerals like lithium | Reuters.

<sup>11</sup> <https://www.state.gov/minerals-security-partnership/#Framework>.

<sup>12</sup> GM moves to secure critical U.S.-sourced lithium for electric vehicles (cnbc.com).

<sup>13</sup> Tesla explains its approach to sourcing lithium, nickel, and cobalt directly from mines in impressive detail | Electrek.

<sup>14</sup> Agreement with German automakers 'unprecedented' for Canada, says auto industry insider | CBC News.

<sup>15</sup> <https://www.reuters.com/markets/commodities/australias-south32-sells-flagship-illawarra-project-165-bln-2024-02-28/>.

<sup>16</sup> Sustainable and responsible development of minerals – The Role of Critical Minerals in Clean Energy Transitions – Analysis – IEA.

## Financially connected engagement themes for the metals and mining sector

Engagement Theme	Financial Connections
<b>Climate Opportunities</b>	<ul style="list-style-type: none"> <li>Developing and expanding production capacity in metals and minerals critical to energy transition enabling technologies may impact the value of a company's assets and its capital expenditure – additionally this could impact the cost structure.</li> <li>Realising energy transition related tailwinds as a growth driver could expand pricing power and top line growth.</li> </ul>
<b>Supply Chain Rights</b>	<ul style="list-style-type: none"> <li>Supply chain concerns could cause companies to shift certain elements away from problem areas. This could impact the cost of goods sold and operating expenses.</li> <li>Supply chain issues could also introduce legal, regulatory, and licence to operate risks. This could result in fines, legal expenses, and access to certain suppliers – all impacting expenses.</li> </ul>
<b>Anti-Bribery and Corruption</b>	<ul style="list-style-type: none"> <li>Bribery and corruption issues could introduce legal, regulatory, and licence to operate risks. This could result in fines, legal expenses, and access to certain suppliers – all impacting expenses.</li> </ul>
<b>Pollution</b>	<ul style="list-style-type: none"> <li>Changing products and operating practices to curb pollution issues in operations could change the value of certain assets and require additional capital investment.</li> <li>Pollution issues could introduce legal, regulatory, and licence to operate risks. This could result in fines, legal expenses, and the ability to operate in certain locations.</li> </ul>
<b>High Geographic Risks</b>	<ul style="list-style-type: none"> <li>Companies could see their ability to sell into certain key markets hampered by geopolitical activities such as tariffs or supply levers. This could manifest itself in a more limited demand, and by extension revenue, in certain key markets.</li> <li>If the ability to operate in certain geographies is hampered by tariffs or permitting issues, this could impact the value of assets in those geographies and potentially result in additional capital expenditure to expand production elsewhere.</li> </ul>

Source: Federated Hermes Financial Connectivity.

NB: To clarify the financial relevance and investment connectivity of sustainability themes, the Federated Hermes Responsible Investing Office developed a proprietary analytical framework that evidences how various sustainability themes directly connect to traditional accounting metrics.

Table compiled by Luke Fleisch, ESG Analyst, FHI.

## Deep-Sea Mining



**As demand for critical minerals increases, mining is shifting from land to the seafloor despite research suggesting that deep-sea mining could severely harm marine biodiversity and ecosystems.<sup>17</sup> Deep-sea mining, or the process of extracting and excavating mineral deposits from the deep seabed, is already underway between the coasts of mainland Norway, Svalbard and Greenland. Wider-scale deep-sea mining in international waters could commence as soon as 2026.<sup>18</sup>**

The lack of knowledge concerning the potential harm associated with deep-sea mining exposes companies and financial institutions to significant policy, regulatory, and reputational risks. There is considerable uncertainty surrounding the economic viability and outcomes of deep-sea mining.<sup>19</sup> In 2023, Federated Hermes Limited joined other financial institutions, representing over US\$3.5tn in assets, in signing a joint statement urging governments to

protect the ocean and not proceed with deep-seabed mining until the risks are comprehensively understood, and alternatives fully explored.<sup>20</sup>

Through its engagement, EOS is asking companies to publicly disclose their exposure to deep-sea mineral extraction and mined minerals in their production and supply chains, and to ensure that they responsibly source all raw materials.

In 2024 we recommended support for shareholder resolutions on sourcing minerals from deep-sea mining filed at auto manufacturers General Motors and Tesla. We believed that a commitment to a moratorium on deep-sea mining or clarification of the companies' positions would signal the importance of supply chain oversight as vehicle electrification accelerates.<sup>21</sup> Many electric vehicle manufacturers have already signed up to the moratorium.<sup>22</sup>



**Joanne Beatty**  
Theme co-lead: Natural Resource Stewardship

<sup>17</sup> [Leading financial institutions call on governments to not permit deep-sea mining - Finance for Biodiversity Foundation.](#)

<sup>18</sup> [World Oceans Day: It's time to take action | Federated Hermes Limited.](#)

<sup>19</sup> [Leading financial institutions call on governments to not permit deep-sea mining - Finance for Biodiversity Foundation.](#)

<sup>20</sup> [Global Financial Institutions Statement to Governments on Deep Seabed Mining - FFB Foundation - 19July2023.docx.](#)

<sup>21</sup> [Disputes proliferate in fractious vote season | Federated Hermes Limited.](#)

<sup>22</sup> [Endorsers | WWF Deep Sea Mining.](#)



## Our engagement

EOS has been engaging on minerals since 2017, when we focused on responsible cobalt sourcing. Since then, we have developed a dialogue with companies along the supply chain and across multiple sectors, including technology hardware and equipment, transportation, and the mining sector.

In North America, we have begun engaging with technology companies such as Micron, Hewlett-Packard Enterprise and Dell Technology to understand how they have assessed the growth opportunities in this space, and the risks around potential supply chain disruptions. We are currently asking companies to publish critical mineral focused responsible sourcing policies.

Vehicle manufacturers such as Ford and General Motors have joined the Initiative for Responsible Mining Assurance (IRMA) to ensure that environmental and social standards are met throughout their supply chains. We encourage other automakers in our engagement programme to do the same.

We are also exploring different investor initiatives or other third-party and collaborative platforms to support our discussions with companies on critical minerals. In 2024, EOS endorsed the Dutch Association for Sustainable Development (VBDO) statement on responsible nickel supply chains in Indonesia. This highlights investor concerns on biodiversity loss, deforestation, water and air pollution, high greenhouse gas emissions, and Indigenous Peoples' and local community rights.

We want to see the critical minerals value chain demonstrate progress in the following areas:

## Transparency and disclosures

- We want companies to improve their due diligence best practices, their assurance process and their transparency in relation to critical minerals sourcing, and their application. We note the importance of better disclosures and the use of reputable third-party frameworks or endorsements as integral in addressing some of the social and environmental concerns that pose reputational and operational risks to companies.
- The Responsible Minerals Initiative, including its global standard for all minerals and ESG standard for mineral supply chains, the OECD Due Diligence Guidance, the Climate-Smart Mining Initiative, and the Initiative for Responsible Mining Assurance (IRMA) offer universal and consistent resources that can help companies to manage and address some of these issues (see box).

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## Management of socioeconomic environmental risks

- On the supply side, we encourage companies to demonstrate better risk management in relation to activities in geographical hot spots with high social and environmental risks, including biodiversity and land use impacts, water use and contamination, and human rights.
- To achieve wider access to markets, companies should demonstrate high ethical standards and behaviours that are consistent with anti-corruption practices, and we encourage multinational mining and processing companies to embrace responsible tax practices. Human rights groups have underlined the risks of forced labour and other abuses within the critical minerals supply chain.<sup>23</sup>
- On the demand side, we would like to see transport, utilities and technology companies focusing on product stewardship to ensure supply chain environmental and societal risks are minimised for companies and investors.
- We also encourage companies to minimise the risk of human and labour rights violations across their supply chain through appropriate monitoring, the protection of workers' rights, and the provision of effective remediation if abuses are identified.
- We encourage companies to develop products and systems that support reuse and recycling to minimise waste and additional land use impacts. Leveraging recycling programmes and secondary minerals may be necessary to streamline production and reduce costs.

## Social licence to operate

- Companies should demonstrate their commitment to strong community relations and maintain their social licence to operate. Mining companies should seek consent from Indigenous Peoples before proceeding with projects and this should be reflected in their policy statements. Free, prior, and informed consent (FPIC) commitments offer a standardised framework for companies and minimise material risks for investors.

<sup>23</sup> Fighting the US Increase in Child Labor: Daily Brief ([hrw.org](http://hrw.org)).

## Best practice frameworks and standards



### VBDO Nickel Supply Chain Initiative

The Investor Initiative on Responsible Nickel Supply Chains is a collaborative engagement, investor-led and supported by civil society groups. This initiative recognises the pivotal role that nickel will play in the clean energy transition, and is working to reduce the environmental and social impacts associated with nickel mining.<sup>24</sup> EOS has signed up to this initiative.

### The Initiative for Responsible Mining Assurance (IRMA)

The IRMA standard offers the only independent, third-party assessment of industrial-scale mine sites for all mined materials that is governed equally by the private sector, local communities, civil society, and workers.<sup>25</sup> While EOS is not a member of IRMA, it is supported by some of our clients, and we see the value in the organisation's work to reduce risk in all areas of the supply chain. We encourage interested supply-side companies to assess their operations against the IRMA standard, and ask downstream companies to encourage their suppliers to do so.

### Investor Statement on Section 1502 of the US Dodd-Frank Act

In 2017, in response to the US President's executive order to repeal section 1502 of the Dodd Frank Act, which requires US companies to report on how they manage the risk of conflict minerals in their value chains, we signed an investor statement to protest against the repeal. The enactment of the rule has helped to improve the management of difficult supply chains and human rights risks, particularly in the Democratic Republic of the Congo (DRC). Serious abuses of human rights still occur in conflict mineral supply chains and the repeal of the law may result in fewer attempts to resolve these.

### PRI collaborative engagement on Responsible Cobalt Sourcing

In 2017-2019 EOS participated in a PRI-supported collaborative engagement on Responsible Cobalt Sourcing. We visited mining sites in Kolwezi in the DRC to meet local stakeholders and help inform our engagement approach.

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## Outlook

As the demand for minerals continues to grow, against the backdrop of a changing geopolitical landscape, it is imperative that companies in each affected sector understand and prepare for the potential risks. In 2025, we will continue to focus our supply-side engagements on the minimisation of environmental and social risks through strong governance structures.

On the demand side, we will target the transportation, technology hardware and equipment, and utilities sectors. These companies are most directly impacted by changes in their supply pipelines and are already beginning to think about how to mitigate supply chain impacts.

<sup>24</sup> [More investors join as Investor Initiative on Responsible Nickel Supply Chains has kicked-off - Dutch Association of Investors for Sustainable Development.](#)

<sup>25</sup> [Home - IRMA - The Initiative for Responsible Mining Assurance.](#)



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