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Financing the Responsible Mining of Critical Minerals Using Thematic Bonds: Roundtable Report

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The mining sector continues to face headwinds in attracting the necessary investments to meet the growing demand for critical minerals in clean energy technologies. To better understand the role thematic bonds can play in bridging at least part of the investment gap while furthering responsible mining,[1] Columbia University's Center on Global Energy Policy (CGEP) convened a roundtable on September 25, 2024, during New York Climate Week. This event brought together representatives from junior and major mining companies, financial institutions including investment banks and asset managers, multinational commodities companies, nongovernmental organizations (NGOs), consultancies, and think tanks.

To explore solutions that enhance miners' access to capital, the discussion addressed the following questions:

- How do **mining companies** evaluate the potential of thematic bonds?
- How do **investors and financial institutions** perceive thematic bonds versus conventional

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This event summary reflects the authors' understanding of key points made in the course of the roundtable. It does not necessarily represent the views of the Center on Global Energy Policy (CGEP). The piece may be subject to further revision.

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bonds from mining companies?

- What kind of **policy measures**, if any, could support mining companies' issuance of thematic bonds?

This roundtable report summarizes the discussion and the key insights that emerged from it.

Lack of Standardization in Responsible Mining Criteria a Hurdle

Roundtable participants largely concurred that the absence of clear definitions and harmonized standards for responsible and sustainable mining—across environmental, social, and governance (ESG) criteria, decarbonization pathways, or timelines—poses financing challenges for the sector, including in issuing and investing in thematic bonds.

An investment banker underscored that inconsistent standards around the pace and degree of decarbonization needed to meet mid- to long-term climate targets and how these should differ based on a company's focus (e.g., pure-play critical minerals or diversified mining portfolios) make it challenging to assess whether mining companies are setting impactful sustainability goals and making substantive progress toward them.

According to several participants, a significant challenge is how to balance climate-related goals with broader ESG objectives. For example, one investment banking participant highlighted that it is not clear whether waste management and community engagement considerations should outweigh climate goals for an issuer. An institutional investor suggested that integrating these considerations alongside decarbonization targets would create a more holistic approach to responsible mining. There was a consensus that some form of guidance on the priority criteria for responsible mining would be useful. Some said policymakers could play that role of "juror."

There were also discussions on the efficacy of existing sustainability benchmarks in defining sustainable and responsible mining efforts. An investor suggested forming a coalition of miners in collaboration with investors to develop tailored, science-based recommendations and key performance indicators (KPIs) for the critical minerals mining sector. An NGO representative pointed to the Initiative for Responsible Mining Assurance (IRMA) as a standard designed for this purpose, though a veteran investor noted that IRMA is considered a stringent standard that not many mining companies or projects have used so far. It was noted that the new consolidated standard from the International Council on Mining and Metals—not yet published at the time of the roundtable—should be explored for commonalities. A commodities trader emphasized that ultimately some degree of pragmatism and flexibility should be integrated into these existing standards to facilitate capital flows. These differing stakeholder perspectives could further complicate the ambition of defining clear KPIs and projects suitable for thematic bond financing.

Mixed Sentiment on Thematic Bonds' Potential

An investment banker noted that bonds are fundamentally assessed on their economic merit, with green or other climate finance labels not necessarily altering their appeal. Thematic bonds, they added, will not attract new capital if the existing investor pool is already engaged with conventional mining bonds. Similarly, a consulting company representative observed that having multiple KPIs as part of sustainability-linked bonds can be challenging and confusing to navigate.

An asset manager countered this notion, suggesting that thematic bonds serve a larger purpose: they are valuable not only for their financial returns but also for their ability to direct capital toward responsible mining projects that advance the energy transition. The same participant asserted that there is a growing investor interest in transition finance, noting that thematic bonds offer transparency and signal an issuer's commitment to sustainability, thereby attracting investments aligned with climate objectives.

Several participants also highlighted the potential signaling benefits for miners from an equity perspective. Thematic bonds can essentially designate assets as "green," helping to enhance the reputation of mining companies and potentially reduce their cost of equity. A major mining company executive emphasized that thematic bonds, beyond reputational benefits, now drive more meaningful impact as sustainability practices in the sector improve. The executive added that thematic bonds help reinforce issuers' sustainability practices and commitments, aligning internal priorities toward shared sustainability goals and strengthening their ESG profile. However, an investment banker noted that miners will likely engage in this practice only to the extent necessary to obtain "positive virtue" signals in the market, rather than creating meaningful impact and acquiring access to an additional pool of ESG investors.

An investor stated that, regardless of whether a "greenium"—bonds trading at a premium, allowing the issuer to potentially realize cost savings when selling the bond —currently exists, thematic bonds can help issuers align with sustainability targets as standards evolve. They added that utilizing Sustainable Finance Disclosure Regulation Article 8 and Article 9 guidelines can enhance transparency and credibility, potentially generating above-market returns and attracting greater investor appeal.

One investor acknowledged that investing in critical minerals, particularly in emerging markets and developing economies (EMDEs), carries inherent and heightened risks that deter investment in the sector. Similarly, an investment banker observed that stringent environmental regulations in regions like Europe have constrained the mining sector and heightened reputational scrutiny, creating additional hurdles for securing investment. They argued that there is limited benefit for investors to be first movers in the thematic bonds market for critical minerals, and suggested that loans offer a more favorable entry point.

Another investment banker highlighted that misalignment between financial institutions' internal sustainability strategies and certain mining activities presents challenges for placing bonds in the sector. For example, many financial institutions implement policies restricting investments tied to fossil fuel production, which can hinder companies that mine both coal and critical minerals from securing funding. Even with financing options like use of proceeds (UoP) bonds, designed to allocate capital exclusively to specific sustainable projects, financial institutions remain cautious due to the fungibility of funds. This could allow capital intended for sustainable initiatives to inadvertently support fossil fuel activities, raising concerns about increasing exposure to reputational risks and carbon lock-in—a continued dependency on fossil fuel energy systems. These concerns complicate stakeholder engagement for financial institutions.

A major mining company representative acknowledged that thematic bonds have the potential to attract additional investments for some mining issuers. They also indicated that, given the banking sector's climate policies and financed emission targets, securing financing may become increasingly difficult, although this has not been their experience thus far. This is particularly notable as this commenter's company plans to increase coal production, contrasting with the strategic direction of most of its peers.

An investor suggested that UoP bonds are a viable tool for attracting investments in responsible critical minerals mining, but issuers need to receive adequate support, including technical backing to obtain second-party opinions (SPOs). They noted that the lack of clarity surrounding the scoring and evaluation processes of SPO providers, along with mixed feedback and a lack of consensus in rating miners' ESG profiles, raises concerns about the potential arbitrariness in assigning scores. This ambiguity impacts investors' ability to accurately assess ESG risks associated with issuers, while simultaneously making it difficult for issuers to understand which considerations to prioritize.

Another asset manager noted that investors who prioritize goodwill will seek opportunities to invest in responsible mining activities, regardless of market conditions. They elaborated that in their view, thematic bonds serve as a conduit for investment, as they offer transparency and provide evidence of capital deployment toward achieving sustainability targets. Thematic bonds are particularly impactful in EMDEs, this participant said, as they enhance sustainability-minded investors' understanding of a company's commitments. The lack of strong governance in some of these countries can be made up by factoring sustainability commitments into the bond's covenants.

A representative from a commodity company also raised the question of whether existing thematic bond types suffice or if there is a need for a new instrument type for the industry. Green, sustainability, and sustainability-linked bonds are well understood, but stringent sustainability criteria can create problems due to the exposure of some of the mining companies to fossil assets. Transition bonds could help fund projects that are not fully green, but they are less well-defined; this participant said the International Capital Market Association needs to provide guidance principles—similar to the one released for green enabling projects[2]—to add credibility for broader acceptance of these bonds by investors. The participant concluded that while there may be merit in thinking about a new, apt label for the sector, it will further crowd an already busy space and hurt the instrument's use, as an issuer may not be able to group multiple types of projects into one framework.

Junior Miners Face Capital and Compliance Barriers

A contributor from a junior mining company disclosed that access to capital is particularly challenging for them due to factors unique to their business model and operations. Junior miners are often in the early stages of exploration and development without an established cash flow, which heightens the real and perceived risks of these projects, making them less attractive to investors. Mining is also a capital-intensive industry, requiring substantial upfront investment for equipment, permits, and development, with long lead times before revenue generation. The participant said that junior mining companies, once permitted, still typically need three years to bring a mine to production, resulting in low and uncertain revenues over an extended period.

The junior mining company participant continued that this mismatch between the timing of financing needs and cash flows makes it difficult to secure debt financing, as lenders may demand higher interest rates and shorter repayment terms to offset the risk. Indeed, a combination of factors, including their business model and revenue structure, makes thematic bonds more suited to major mining companies. The participant stressed that there is insufficient equity and concessional funding from entities like the US Department of Energy to help de-risk the funding of projects at this early stage.

A veteran investor highlighted that capital markets have tightened for junior miners due to factors such as technology adoption, climate considerations, and China's influence on price, as the country can flood the market with a large supply of critical minerals. Addressing the underlying issues that lead to these financial challenges is crucial, especially for relatively small markets.

The investor added that junior miners involved in greenfield projects also often lack an ESG track record, making it challenging to demonstrate their ESG credentials or determine which ESG considerations to prioritize. Due to these challenges, thematic bonds may be better suited for expansion projects rather than exploration and development in mining. One participant noted that larger and more established mining companies will find it easier to meet ESG compliance and reporting requirements, which can be quite challenging to achieve even with adequate resources. The participant added that while junior miners could also gain reputational benefits from demonstrating a commitment to sustainable and responsible mining practices, it remains uncertain whether their efforts would yield commensurate economic rewards.

Supportive Policies Could Promote Responsible Mining Through Thematic Bonds

One investor highlighted the importance of understanding what stakeholders, such as governments and ESG investors, value and prioritize in responsible mining practices. This insight is essential to incentivize more responsible extraction of critical minerals, enabling issuers and stakeholders to recoup benefits. They suggested that the issuance of thematic bonds would be more widespread if investors were incentivized, for instance, by receiving tax relief for buying these bonds. This would enable issuers to price their bonds more competitively. Governments and regulators could introduce other forms of policies, subsidies, and access mechanisms contingent on sustainability standards to facilitate miners' access to capital while encouraging responsible mining practices.

A consultancy company representative said subsidies could be contingent upon meeting certain sustainability standards. For example, tax credits from the Inflation Reduction Act could help create a price differential for minerals that qualify for such credits. A major mining company suggested introducing a similar price differential for low-carbon critical minerals, which could incentivize issuers to invest in decarbonization efforts even if the thematic bond does not trade with a greenium. Currently, for example, nickel produced outside Indonesia has much lower carbon intensities than that produced within the country, but there is no differentiation in prices on exchanges, and car companies are not willing to pay a premium for lower-carbon nickel. A representative of a junior miner also suggested the possibility of floor/ceiling offtake contracts to minimize price volatility and provide assurance to mining companies.

An NGO representative suggested that blended finance approaches—which rely on public concessional funding to attract private capital—could be used to de-risk projects, especially in EMDEs. For example, having multilateral development banks or development finance institutions involved in market development could help reduce political risks with these partners. Another suggestion was for governments to deploy mechanisms for turning at least part of mining companies' capital expenditures into operational expenditures with some form of a perpetual bond. This approach could support mining companies by spreading the cost of capital expenditures over time, offering greater financial flexibility and easing the burden of large, upfront investment costs. Finally, the participant put forward the idea of the government acting as a buyer of last resort and creating a reserve similar to the strategic petroleum reserve for oil.

A representative from a major mining company mentioned a need for permitting reforms, as permits can take a long time, adding to the project life and complicating legal procedures. The participant shared, for example, that their company had faced significant barriers in accelerating capital deployment in the US: permitting alone can take up to 20 years, which, compounded by legal challenges, tax changes, and other regulatory hurdles make these investments less attractive, especially for projects that typically span 15 years.

Another major mining company representative suggested that compliance with sustainability-linked KPIs, company performance, and competitive advantages must work in tandem. If compliance leads to fundamental process changes that introduce competitive advantages—such as sustainability metrics facilitating faster permit approvals—thematic bonds can play a pivotal role in driving investments into the sector.

Overall, there was broad agreement within the group on the need to continue investigating ways to grow the use of thematic bonds within the sector, as such bonds could address financing needs and motivate miners to adopt more sustainable practices.

Notes

1. Gautam Jain, Tom Moerenhout, and Preetha Jenarthan, "Thematic Bonds Can Help Increase Investment in Responsible Mining of Critical Minerals," Center on Global Energy Policy, Columbia University, September 23, 2024, https://www.energypolicy.columbia.edu/publications/thematic-bonds-can-help-increase-investment-in-responsible-mining-of-critical-minerals/.

2. International Capital Market Association, "Green Enabling Projects Guidance," June 2024, https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-enabling-projects-guidance/.

About the Authors

Preetha Jenarthan serves as the primary manager for commercialization workstreams for the Carbontech Development Initiative. She was a Sustainability and Sustainable Finance professional within the Banking sector with prior experience in decarbonization and energy transition strategy, research, climate risk, climate policy, project management, and client and stakeholder engagement.

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Tom's research expertise and practical engagements focus on geopolitics, political economy, and international economic law. Tom's main expertise lies in the role of trade, investment, and industrial policies of relevance to the energy transition, the sustainability dimension of economic globalization, and the economic development of resource rich countries. He has published extensively on sustainable development and energy policy reforms in developing and emerging economies, specifically on energy subsidies, critical minerals, and electric mobility.

For over 12 years, Tom has been responsible for conducting strategic research and market intelligence for governments and development practitioners. In recent years, he has provided in-country support to energy and development policy reforms in India, Nigeria, Lebanon, Egypt, the US, Iraq, Iraqi Kurdistan, Morocco, and Jordan. Tom has worked closely with various organizations such as the World Bank, OECD, OPEC, IRENA, UNEP, ADB, GIZ, Bill and Melinda Gates Foundation, Nestle, and Greenpeace.

Tom holds two master's degrees and a PhD at the Graduate Institute of International and Development Studies in Geneva. Prior to joining Columbia University, he was a visiting fellow at the LSE Department of Government and an Aramco-OIES fellow at the Oxford Institute for Energy Studies. In 2015-2016 he was a Fulbright fellow at Columbia University. In his free time, Tom enjoys reading, good food, football, skiing, and chess.

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He has co-authored publications in the Journal of Derivatives, the Journal of Banking and Finance, the Journal of Applied Probability, Probability in Engineering and Informational Science, and the International Journal of Production Economics. He has also contributed chapters for the 2020 and 2021 Cornell EMI Annual Reports.

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