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## 2. Reshaping Mineral Markets for Global Trade

*Authored by Solange Harpham and Brenda Yeong, edited by Ludivine Wouters*

An initiative of the



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### Summary:

Mineral markets present unique challenges due to their size, lack of transparency, and complex trade practices. Despite growing demand, the market for transition minerals remains relatively small and fragmented, with limited liquidity and transparency. Market concentration among a few key players exacerbates vulnerabilities to geopolitical shocks and export restrictions. To address these challenges, this paper suggests enhancing transparency through international cooperation, regulating mid-stream commodity trading, and revitalizing international trade governance amidst dispute settlement challenges.

### 2.1. Mineral Markets and their Complexities

Commodity markets are often dominated by a few large, interconnected participants, which makes them susceptible to rapid shock propagation. However, the lack of transparency in some of these markets, particularly those involving critical minerals, limits the ability of authorities and counterparties to detect and assess emerging risks. Not only does this increase the vulnerability of certain minerals to supply shocks, it also creates systemic risk: past disruptions have highlighted how vulnerabilities within commodity markets and interconnections with the wider financial system could amplify macroeconomic shocks [1].

#### Challenges and Dynamics in the Minerals Market: Size, Transparency, and Trade Practices

Despite the increasing demand for transition minerals, **their market size remains small**, especially compared to other commodities. For example, global crude steel production in 2022 was 1,885 million tons [2], compared to copper at 22 million tons [3], nickel at 3.3

million tons [4], cobalt at 0.19 million tons [5], and lithium at 0.15 million tons [6]. This is further exacerbated by the heterogeneity of mineral products: chemical compositions, purity and quality, highly dependent on seller processes and buyer specifications, are rarely fungible.



Minerals can be subject to (in order of increasing transparency): (1) producer pricing, through direct negotiation with buyers, (2) agency-reported pricing, particularly in illiquid markets, and (3) exchange pricing, where prices are discovered by buyers and sellers on a regulated marketplace, which entails more liquidity.

With the exception of copper and nickel which are mature markets, most transition minerals are not traded on established exchanges due to their limited volumes and liquidity, leading to a **lack of transparency on production, inventories, prices and sale conditions**. Trading is largely done through Over the Counter (OTC) transactions, generally through private, opaque, long-term offtake agreements, allowing buyers to secure future supplies at an agreed price, and sellers to secure funding for project development. The volume of minerals available for spot trading is thus very small - only 10-20% of production supply is available outside of such contracts, typically to account for production fluctuations [7].

**Commodity traders** play a key role in creating a market for specialty mineral products such as lithium, graphite, manganese and rare earths, connecting producers and consumers and informing parties on market context. Price reporting agencies such as Benchmark Minerals, Fastmarkets and Argus provide highly-recognized benchmark prices, but even those do not necessarily allow for smooth indexed pricing, considering product specificity, information asymmetry and imbalance of bargaining power in most trades.

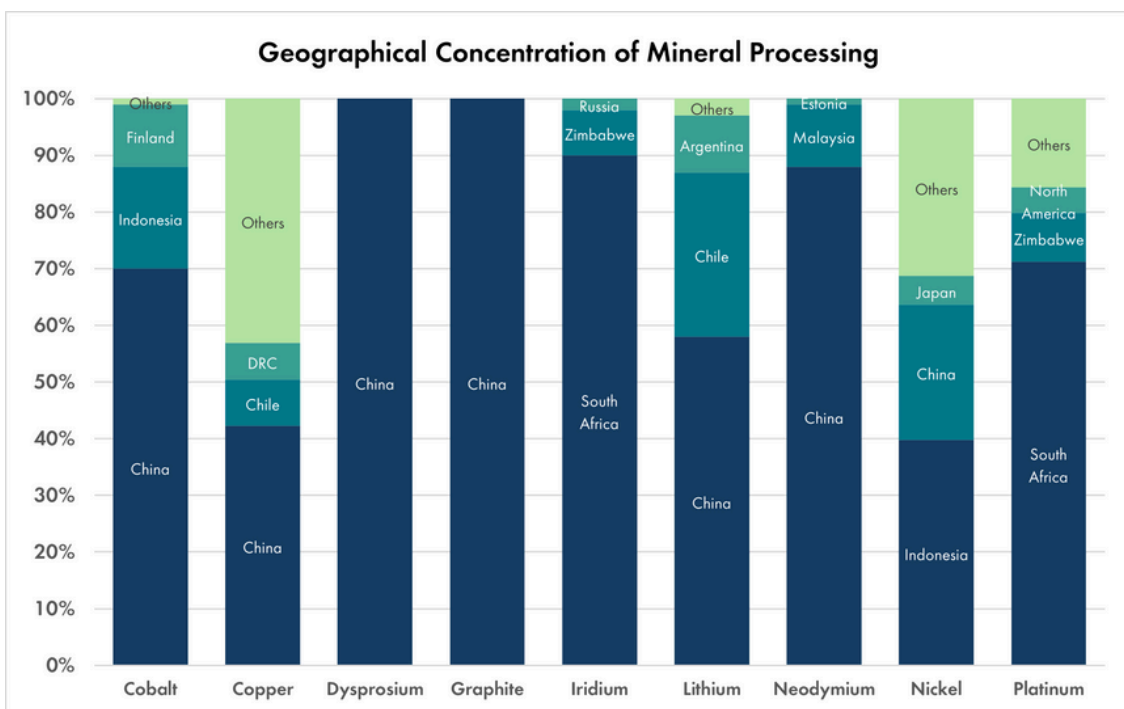
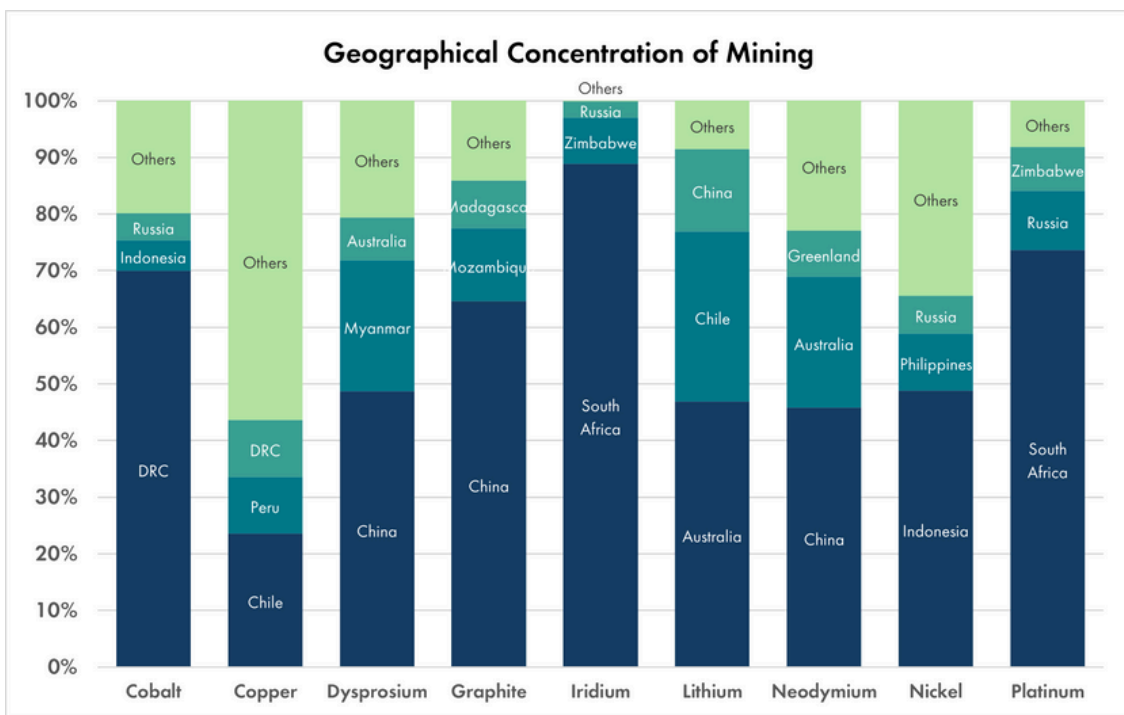
### High Market Concentration and Geopolitical Vulnerabilities in Transition Minerals Markets

A second challenge for transition minerals markets is their **high market concentration**. The industry is dominated by a handful of large



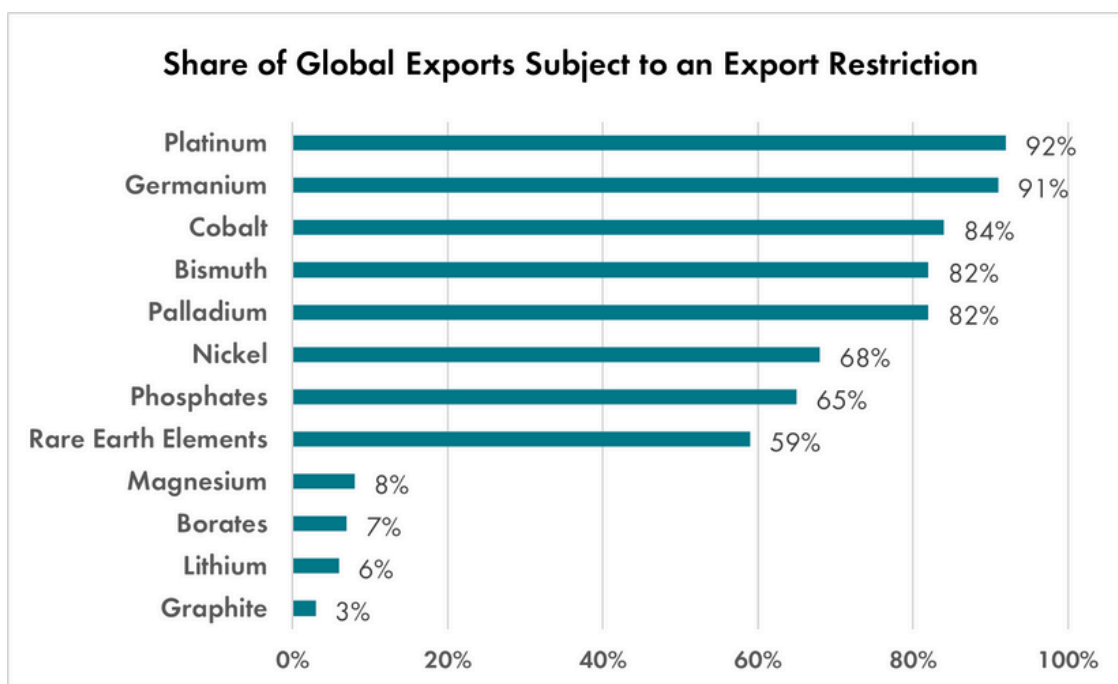
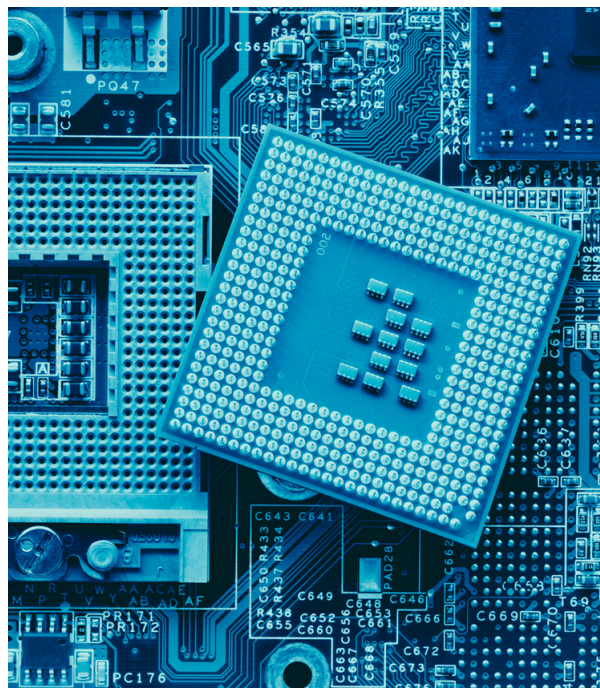
multinational corporations and state-owned enterprises, such as Glencore in cobalt and nickel, with market shares of 22% and 13% respectively, and Albermarle (21%) and Sociedad Química y Minera de Chile (SQM, 19%) in lithium [8].

Markets are also **highly geographically concentrated** - in 2023, the Democratic Republic of Congo produced 70% of the global cobalt supply, Indonesia produced 49% of global nickel, China produced 49% of global dysprosium and 46% of global neodymium, and Australia produced 47% of global lithium. This geographical concentration is even more pronounced in refining and processing, with China accounting for 100% of dysprosium, 88% of neodymium and 70% of cobalt processing [9].



Source: "Geopolitics of the Energy Transition: Critical Materials" by Van de Graaf et al. (2023)

As a result, market leaders have **significant market power and influence over prices and quantities** available, and **transition minerals are therefore vulnerable to shocks, particularly on the geopolitical front**. According to the OECD, export restrictions have grown more than five-fold from January 2009 to December 2020, and about 10% of global exports of transition minerals by value faced at least one export restriction measure [10]. Chinese export controls on gallium and germanium, in response to American and European chip export restrictions, have resulted in a 44% increase in gallium ingot prices and a 9% increase in germanium ingot prices [11]. Such supply uncertainties and price volatility further reduce the liquidity and transparency of minerals markets.



Source: "Geopolitics of the Energy Transition: Critical Materials" by Van de Graaf et al. (2023), adapted from Kowalski & Legendre (2023) and the OECD Inventory of Export Restrictions on Industrial Raw Materials

Resource-rich nations may implement export restrictions to enhance value addition by prohibiting the export of raw materials and

encouraging domestic processing of extracted minerals. However, achieving the desired results requires enabling conditions that may be

difficult to achieve. For instance, Indonesia implemented a ban on nickel ore exports in 2020 which resulted in significant increase in its processing capacity because operators leverage captive coal resources for cheap power, while Zimbabwe prohibited raw lithium exports in 2022, subsequently expanding the ban to include all raw base mineral ores in 2023, with no clear industrialization outcomes to date. [See Discussion Paper on “Creating and Leveraging Opportunities for Resource-Rich Countries”]

### The Role of Derivatives Markets in Trading Transition Minerals: Benefits and Challenges

Some minerals, due to their tangible nature and the absence of standardization, find their trading ground not in traditional markets but in derivatives markets. Derivatives represent an underlying reference entity: one example of this

is a “futures” contract, obligating the purchase and delivery of an asset at a predetermined price on a future date.

While many other transition minerals do not have derivatives markets, demand is increasing. The London Metal Exchange introduced copper in 1877, and began trading nickel in 1979, cobalt in 2010, and lithium in 2021. In September 2022, the Singapore Exchange launched a set of battery raw materials derivatives, including contracts for cobalt metal, cobalt hydroxide, lithium carbonate and lithium hydroxide. While trading volumes are small – no cobalt, cobalt hydroxide or lithium carbonate futures were traded in April 2024, and only nine lithium hydroxide futures were traded [12] – market participants have been optimistic about the development, and it is expected that such derivatives markets will develop over time as well as include more complex products.

	FY2024 Q2	FY2024 Q3	Feb. 2024	Mar. 2024	Apr. 2024	FYTD 2024	CYTD 2024
SGX FM Cobalt Hydroxide CIF China Futures	0	0	0	0	0	0	0
SGX FM Cobalt Hydroxide CIF China Swaps	0	0	0	0	0	0	0
SGX FM Cobalt Metal In-whs Rotterdam (Standard Grade) Futures	0	0	0	0	0	12	0
SGX FM Cobalt Metal In-whs Rotterdam (Standard Grade) Swaps	0	0	0	0	0	0	0
SGX FM Lithium Carbonate CIF CJK (Battery Grade) Futures	0	0	0	0	0	0	0
SGX FM Lithium Carbonate CIF CJK (Battery Grade) Swaps	0	0	0	0	0	0	0
SGX FM Lithium Hydroxide CIF CJK (Battery Grade) Futures	18	30	30	0	9	57	39
SGX FM Lithium Hydroxide CIF CJK (Battery Grade) Swaps	0	0	0	0	0	0	0
<b>Total</b>	<b>18</b>	<b>30</b>	<b>30</b>	<b>0</b>	<b>9</b>	<b>69</b>	<b>39</b>

Source: “Market Statistics Report” by the SGX Group (2024)

## 2.2. Pathways to an Open Market for Transition Minerals: Strategies for Promoting Transparency and Cooperation in Mineral Trading

There have already been calls to address information uncertainty and asymmetry in critical minerals markets globally, through *inter alia* refinement of trade codes, use of “materials passports” and international collaborations, including across disparate trading blocs [13].

### Promoting Transparency in Transition Mineral Markets

Encouraging actors to transition from private long-term contract and trades to established marketplaces requires international collaboration to improve accessibility and reliability of trading data. An international centralized platform such as the OECD’s Global Forum on Transparency and Exchange of Information for Tax Purposes could be instituted, facilitating information sharing and verification and associated to an annual report such as the IEA Critical Minerals Market Review launched in 2023. These instruments would have to gather wider membership than OECD countries and offer technical assistance and capacity building to those States which have difficulty assessing their resources and their trade flows.

The members could collaborate to **require the public disclosure of mineral production, trade and revenue data to enable monitoring and cross-verification as per the EITI standard** which requires the mandatory disclosure of payments made by companies to governments. This would entail developing standardized reporting templates and digital platforms for sharing mineral trade data between countries and establishing multi-stakeholder monitoring mechanisms involving governments, companies and civil society to scrutinize mineral flows and

trades [14].

### Enhancing Transparency and Regulation in Mid-Stream Commodity Trading

Mineral supply chains are particularly opaque at the mid-stream point, where commodity traders are at play. Commodity trading is a largely opaque sector with little public disclosure of information, involving multiple actors orchestrating transactions across borders. This complexity makes it difficult to trace the provenance of minerals and ensure comprehensive due diligence, particularly for commodity traders operating across borders. This lack of transparency makes it challenging for regulators to monitor activities and identify potential risks or wrongdoing. The commodity trading industry has traditionally been secretive and resistant to enhanced transparency and regulatory measures that could impact its profitability and operating models [15].

To improve the regulation of commodity traders in opaque mineral supply chains, several measures could be implemented. First, due diligence should be mandated through binding regulation, as is increasingly the case in the European Union through supply chain legislation (Corporate Sustainability Due Diligence Directive) and critical mineral and technology regulation (Critical Raw Materials Act, Battery Regulation). Currently, the OECD Due Diligence Guidance for Responsible Mineral Supply Chains is voluntary for many traders outside certain jurisdictions. Due diligence obligations could be imposed by expanding on and/or generalizing the requirement of supply chain due diligence in key mineral markets, including mandating third-

party audits and verification at “choke points” such as refineries and smelters [16].

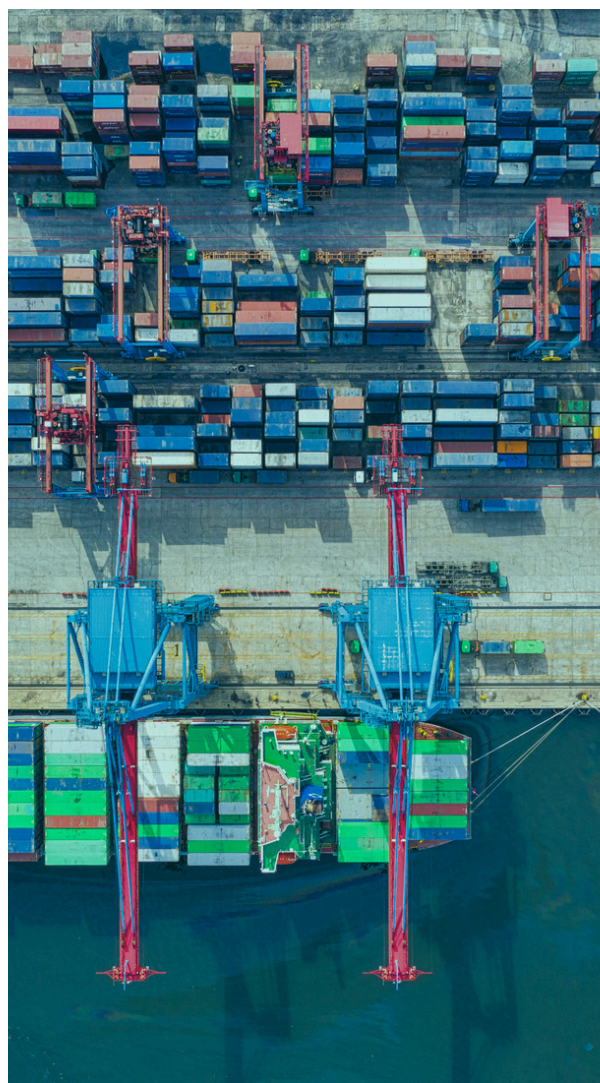
To enhance transparency and traceability, **commodity traders could be required to disclose payments, contracts, beneficial ownership information, and supply chain due diligence reports.** This increased transparency would help identify risks such as corruption, money laundering, and conflict financing. Furthermore, oversight and monitoring mechanisms for OTC trades conducted by commodity traders would need to be strengthened.

Finally, **cross-border collaboration** would be essential to harmonize regulations and data-sharing standards for transition mineral trading activities. Such collaboration would prevent regulatory arbitrage and improve monitoring across borders.

### Revitalizing International Trade Governance: Strategies Amidst Dispute Settlement Challenges

On trade barriers and disputes, **the Appellate Body of the WTO’s dispute settlement mechanism, has been paralyzed** due to the United States blocking new appointments since December 2019. Without a functioning Appellate Body, the system cannot issue final, binding rulings that are enforceable. WTO members recognized the urgency of reviving the system at the 2022 Ministerial Conference, committing to have it “fully and well-functioning” by 2024. Intensive negotiations are ongoing through the “Molina Process” to unblock Appellate Body appointments. Additionally, over 50 WTO members, including the EU, have joined the Multi-Party Interim Appeal Arbitration Arrangement (MPIA) as a temporary alternative appeal mechanism until the Appellate Body is restored. The United States is not member of the MPIA and its effectiveness has been disputed.

Until the WTO’s dispute settlement mechanism is restored, a possible strategy to limit trade barriers while ensuring mineral producing nations profit from their resource wealth with be to support them in developing their processing industries. One example is the strategic partnership between the EU and Kazakhstan on sustainable raw materials, batteries and renewable hydrogen value chains, which will involve developing value chains, creating added value in the mining, processing, manufacturing and recycling sectors, and facilitating investments and funding opportunities [17]. In such partnerships, it is key that emphasis is put on transparency and avoiding trade distortion, and not simply on securing supply through exclusive agreements, as that would compromise the goal of improved market fluidity and transparency [see paper “Equitable Opportunities for Mineral-Rich Countries”].





## Notes

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