







Summary

Critical raw materials (CRMs) are increasingly central to national and global policy due to their essential role in the clean energy transition, digital infrastructure, and defence. However, CRM supply is often concentrated in geopolitically sensitive regions, exposing nations to strategic vulnerabilities. Furthermore, efforts to secure CRMs involve difficult dilemmas and tensions between several competing priorities. This has prompted a surge in national strategies and international initiatives on CRMs, though governance in this area remains fragmented and largely voluntary. This report summarises the main insights from the roundtable 'The politics of critical raw materials' held on May 12, 2025, at the Swedish Institute of International Affairs (UI). The roundtable convened experts from academia, government, industry, and civil society to explore CRM politics through three themes: interdependencies, governance, and human rights and environmental protection.



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Introduction

Critical raw materials (CRMs) have emerged as a central issue in national and global policy debates.1 They are essential materials for advancing clean energy technologies, digital infrastructure and modern defence systems. Governments are increasingly aware of their own dependence on a limited number of suppliers—often concentrated geopolitically sensitive regions-which exposes them to risks of disruption, price volatility, and strategic coercion. This has led to a proliferation of national strategies, international alliances. and policy frameworks aimed at securing access to these materials. However, the regulatory environment remains fragmented and largely relies on voluntary governance mechanisms.

The political salience of CRMs has intensified due to a combination of economic imperatives and security concerns. In particular, recent geopolitical developments have underscored the vulnerabilities in global supply chains and prompted governments to reassess their dependencies and strategic reserves. Taken together, these developments have elevated CRMs from a technical resource issue to a central matter of national and international policy. More concretely, the pursuit of CRM security is fraught with dilemmas and goal conflicts. Efforts to diversify supply and increase domestic extraction often clash environmental protection, indigenous rights, and local community interests. Mining operations—especially in regions with weak governance—can lead to deforestation, water contamination, biodiversity loss, and long-term ecological degradation. Moreover, the extraction and processing of CRMs are frequently associated with labour rights violations, unsafe working conditions, and the displacement of local populations. In some cases, CRM extraction and supply chains raise serious ethical and human rights At the international level, competition for access to CRMs can strain diplomatic relations and undermine global cooperation with respect to sustainability and climate goals. The push for circular economy solutions—such as recycling and further material substitution—raises questions about technological feasibility, economic viability, and regulatory alignment.

Thus, the current debates surrounding CRMs multidimensional, are encompassing: geopolitics, global governance, environmental sustainability, human rights, and economic development. As countries navigate these complex dynamics, there is a growing risk of political misalignments and suboptimal trade-offs. Tensions can manifest both locally, through the environmental and social impacts of extraction. and

energy, defence, or digital technologies, and when its supply is exposed to significant risks, including geopolitical instability, environmental constraints, market concentration, or regulatory uncertainty. Importantly, criticality is not a static attribute but a dynamic assessment that evolves with technological change, policy priorities, and shifts in global trade patterns.

¹ The concept of 'criticality' in raw materials is inherently shaped by political, economic, and strategic considerations. While specific definitions vary across national and institutional contexts, most frameworks converge on two principal dimensions: the material's economic importance and the vulnerability of its supply. A raw material is deemed critical when it is indispensable to key industrial sectors, such as



internationally, as states compete for access and control over these vital resources. Balancing the demand for CRMs with the protection of human rights and the environment in a difficult geopolitical context is an increasingly daunting task. As this report explores, the governance of CRMs is not merely a technical challenge but also a complex political balancing act. It requires the navigation of competing priorities and goal conflicts, the management of trade-offs, and the fostering of collaboration across sectors and borders. Understanding the evolving role of CRMs in national and global politics is essential for crafting policies that are both resilient and responsible.

This report summarises the main insights from the roundtable 'The politics of critical raw materials' held on May 12, 2025, which was organised as part of the Mistra Mineral Governance Programme² and brought together representatives from academia, civil society, government, and industry. The report builds on the contents of the discussions and highlights the key dilemmas and questions that emerged. The roundtable was organised around three central themes for understanding the complex political landscape of CRMs, each introduced by an expert on the topic: new interdependencies Swedish (Niklas Rossbach, Defence University and UI); governance (Roman Vakulchuk, Norwegian Institute of International Affairs); and human rights and environmental standards (Maria-Therese Gustafsson, Stockholm University). In the following, we summarise the main points of the presentations and share the central insights from the subsequent discussion.³ The roundtable and the report adopt a holistic approach to CRM politics in an attempt to capture some of the main issues that shape future decision-making. The aim is to help direct attention and debates toward constructive solutions.

1. Critical Minerals and New Interdependencies

Niklas Rossbach, Swedish Defence University and UI

The role that CRMs play in geopolitical rivalries and international politics has received much attention in academic and policy circles. The first presentation raised a set of fundamental questions for understanding the geopolitics of CRMs. These relate to the shifting patterns of critical raw material trade, including the causes of this shift; the potential consequences of the accelerating interest in CRMs; and potential responses of Sweden and the EU. Different ways to analyse this shift were also discussed, in terms of both analytical frameworks and concrete policy choices.

Is the era of globalisation over?

The renewed focus on resources within international politics may signal a broader shift from an era of globalisation to an era of geopolitical tensions. On a global scale, the increasing reluctance to buy from certain low-cost producing countries, such as China,

² The roundtable was organized by Mistra Mineral Governance partners, namely, the Global Politics and Security Programme at UI and Stockholm University.

³ The conversation was held under Chatham House Rule; therefore, no comment is attributed to any participant.

signals a decline in trust in these suppliers. This shift is likely to continue and contribute regionalization—either accelerated geographically or politically—compared with the era of globalisation, in which trade patterns have been defined by market logic. Unlike manufacturing, mining geographically fixed, which means that new flows of raw materials are likely to form between key CRM producers and consumers. By extension, these flows may also form the basis of new forms of security cooperation and lead to the redrawing of the geopolitical map.

The strategic importance of critical minerals stems not only from their technical properties but also from the shifting global context in which access to these resources is increasingly uncertain. This new era is shaped by rising geopolitical tensions and intensifying technological rivalry across both civilian and military domains. To make sense of this shift, analytical frameworks must go beyond market dynamics and incorporate economics, international relations, and security theory. Some existing theories, such as geoeconomics, may be useful. Another approach may be to make historical analogies with similar commodities, such as oil.

Redefining 'access' and who pays for it

An important consideration when analysing this shift is how key concepts, such as the notion of 'access', are defined. If access is framed in terms of ensuring resilience in times of crisis or war, it becomes primarily a matter of national security. If, on the other hand, the need for access is tied to maintaining competitiveness in a global market, it becomes a shared responsibility

between states and businesses. This distinction has significant policy implications, as it helps determine who should bear the financial burden of measures such as stockpiling and supply chain risk management.

In many countries, recent developments indicate that access to CRMs has become a national security issue, with combined elements of hard and soft security. In practice, this implies shared costs and responsibilities across governments, businesses, and taxpayers. However, we should refrain from treating ongoing development as a gradual, one-way trend. There will be sharp turns—ebbs and flows—as well as unforeseen crises. As such, any meaningful analysis must include scenario planning and potential trade-offs.

Options for the EU and Sweden

Given these shifting dynamics, how should countries, such as Sweden, or trade blocs, such as the EU, navigate a changing geopolitical landscape? Along with 'home shoring', which is the idea that industrial robots in the developed world can replace low-cost workers in developing countries, the risk of the rise of stronger regional trading blocs, and increased geopolitical threats to nations' supply security, the need for these essential metals will restructure key dependencies between nations. New flows of strategic resources will eventually result in new strategic partnerships. The need for reliable exporters of strategic resources will contribute to the reworking of dependencies between nations.

The pressure from friends and allies on countries, such as Sweden, which could

produce more of these strategic resources is likely to increase. By increasing domestic extraction, Sweden could become more strategically relevant, but it could also face new security risks, such as hostile foreign investments or sabotage. Consequently, Sweden must move beyond the stove-piped focus on economic issues to realize that strategic resources intersect with national considerations, security including international aspect, i.e., the consequences of Swedish decisions for other countries and their populations. Moreover, Sweden must ask what its best options are for securing swift increases in and access to these strategic resources and whether it should seek to achieve only supply security or increased production of these resources in the EU, to be used as a European (or Swedish) bargaining geopolitical chip. Another concern is that Europe may be lagging behind in terms of the shift in mindset among security experts and policy makers, as suggested by the response to the US-Ukraine minerals deal. For example, would it be in the EU's interest to secure access to future mining in Greenland? The responses to these issues will shape Sweden's future role in the CRM market—and by extension, geopolitics—assuming that a functioning global market does not return.

Roundtable discussion summary:

Framework of analysis

The discussion kicked off with questions on how to understand and best analyse CRM politics, particularly geopolitical analysis. The participants warned that CRMs should not be treated as a single, uniform category, as they differ greatly in terms of their technical characteristics, accessibility, and market behaviour. These differences have direct implications for the geopolitical considerations regarding each material. For example, while some minerals can be easily stored, others cannot, which shapes the broader strategic assumptions surrounding them.

In addition, the participants warned against simplifying the complexity of current CRM supply chains. For example, there is a risk in treating the entire supply chain as a single, coherent system and viewing China as dominating the system entirely. perspective overlooks the fact that China itself depends on imports of raw materials for its refining processes—a critical yet sometimes overlooked aspect with significant geopolitical implications. Moreover, while the EU is investing significantly in R&D, particularly in recycling, technology alone is not enough. Even with the necessary technology, institutions, infrastructure, and policy frameworks are needed to enable practical implementation at scale.

The conversation moved on to the importance of understanding the political context and broader geopolitical assumptions. In this context, participants agreed that it is relevant to discuss what globalisation looks like today. However, rather than viewing globalisation as an era that has ended, it was suggested that we have entered a new phase of globalisation one increasingly defined by strategic dependencies. Regardless of which view is correct, it was noted that geoeconomics and its accompanying concepts offer a useful perspective for analysing trade patterns in the 2020s and beyond.



The role of China

While some parts of the conversation were quite conceptual, others were more practical and focused specifically on China's role in the context of shifting interdependencies. Several participants noted that China's current dominance is the result of decades of market dynamics that Western actors have largely accepted, which makes it difficult to reverse this position now that security interests have changed. The comments also addressed recent developments in China's strategic behaviour, particularly significant restrictions on public access to data related to domestic mining and extraction. Such data were identified as essential for anticipating China's next moves. especially in light of concerns that the country could increasingly weaponize its dominance in CRMs and move up the value chain by internalizing production. A parallel was drawn to how the threat of Russia weaponizing energy dependence previously underestimated.

Finally, Sweden's role in this transformation was discussed. The participants, academics and practitioners, noted that the knowledge and technical expertise of the Swedish mining cluster should not be underestimated. This capacity, several noted, could serve as strategic leverage in both ongoing and future negotiations.

2. Critical Minerals and Governance

Roman Vakulchuk, The Norwegian Institute of International Affairs

The presentation and discussion of this theme addressed the evolving global governance landscape surrounding CRMs, with particular emphasis on how different stages of the supply chain are regulated. Issues such as indigenous rights, recycling and responsible sourcing were examined as part of an ongoing effort to map current and historical governance mechanisms. A central question guiding the presentation was whether this governance landscape is shaped primarily by geopolitical interests or by other forms of logic.

Global governance initiatives: Scope and evolution

The governance of critical minerals is not a new phenomenon. In fact, the first multilateral initiatives with three or more actors were established in the 1970s, well before the current transition from fossilbased to renewable energy. Whereas early efforts focused primarily on trade and resource coordination, the scope of CRM governance has since expanded to include such sustainable issues mining, standards, environmental and social responsibility. According to recent data, there are currently 122 CRM-related governance initiatives globally, which is a relatively high figure compared with the figures for other governance areas, such as climate governance, which often converge around a single agreement, such as the Paris Agreement.

Most of the above-mentioned initiatives are nonbinding and fall into two main categories: first, principles and voluntary standards, which constitute the largest group; and second, associations, partnerships, and NGOs, which promote specific norms and require members to adhere to them. Currently, nearly all major international organizations have established some form of CRM governance unit. However, many of these initiatives are duplicative, and they often invest in similar types of activities, which may lead them to compete for resources in the future.

Governance gaps and observations

Further, many of the identified initiatives are designed to address individual minerals rather than the CRM sector as a whole. Established metals, such as cobalt and copper, receive greater attention, whereas newer materials, such as rare earth elements (REEs), receive less governance focus. Regarding thematic governance areas, initiatives are often related to supply chains, industry development, and responsible mining practices.

A significant transparency gap was also noted across the value chain. Transparency is generally greater at the early stages of the value chain, exploration and mining, and it diminishes as materials move up the chain through processing, refining, and manufacturing. There is limited coordination on transparency throughout the whole value chain; in fact, only two initiatives specifically look at how to improve communication across the value chain to promote less mining and more recycling. Finally, human rights considerations are still marginal across most initiatives.

Who leads and why?

The actors behind CRM governance initiatives were also considered. Most initiatives are started by individual countries, primarily Western states, and there is a correlation between governance initiative leadership and the presence of transnational mining companies based in those countries. Interestingly, China has been relatively passive in the space of global CRM governance, especially in relation to other governance areas, where China is taking the lead. Only three Chinese-related initiatives were identified, and all were driven by private companies, not state actors.

Roundtable Discussion Summary:

Governance architecture

The roundtable participants delved into the question of the political feasibility of CRM governance, particularly at the global level. Many pointed to the current global political context, which militates against overarching governance architecture in this area. Another issue was how to draw lessons from other governance regimes. Here, the parallel to climate governance was discussed, as was whether climate governance offers a useful point of departure for CRM governance given the very different characteristics of the issues. Instead, it may be more suitable to draw lessons from other resource regimes, e.g., forest or historical mineral regimes, for the design of CRM governance.

In general, the participants agreed that many questions remain regarding CRM governance, such as whether it should be unified across all CRMs or differentiated by mineral type and whether regulation should



target the full value chain or be segmented by stages.

The participants also noted the general fragility of governance mechanisms, which reflects broader challenges within the fragmented international liberal order. For example, one example highlights how cooperative mechanisms quickly broke down during the COVID-19 pandemic and raises the question of whether it is worth building new governance mechanisms instead of relying on and expanding existing ones. Another participant questioned the effectiveness of a global forum for CRM given China's dominance, which could enable China to take disproportionate role in shaping governance in the future. This concern was echoed later, when one participant pointed to the risk of China overregulating to its advantage.

There is a question of whether the absence of governance mechanisms in certain areas of CRMs should necessarily be interpreted as 'governance gaps' or rather as an indication that this area is functioning well even without formal governance structures. Although frequencies do not explain everything, areas that currently lack governance also appear to function poorly.

Inclusion/representation

Discussion turned to the issues of inclusion and representation in the governance of CRMs. Notably, most governance initiatives are currently led by OECD countries, whereas the vast majority of future mining initiatives are most likely to take place in developing countries. Therefore, participants emphasised that future governance initiatives should strive to be more rooted in

local conditions. Notably, none of the top 47 strategic projects identified by the European Commission—and therefore set to be fast-tracked—are located outside Europe. In contrast, the EU's deepening strategic partnerships with countries such as Kazakhstan and Uzbekistan were highlighted as more promising developments in terms of inclusion.

The participants also highlighted examples of actors which could play a greater role in future CRM governance, such as the African Union and the International Green Economy Association (IGEA)—a Chinese-based but nonstate-affiliated organization that may offer a more sustainable way of engaging with China. The possibility of establishing a dedicated International Renewable Energy Agency (IRENA) for CRMs was also raised.

3. Critical Minerals and Human Rights

Maria-Therese Gustafsson, Stockholm University

This presentation and subsequent discussion highlighted the growing focus on human rights and environmental concerns in debates on CRMs. Across the world, increased extraction generates conflicting goals across various policy realms and political scales. Intensified extraction has often contributed to exacerbating environmental injustices and climate vulnerability at extraction sites. However, the European Union has recently adopted a series of policies aimed at both securing access to CRMs and ensuring that extractive



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activities have minimal impacts on human rights and the environment.

What causes these conflicts?

In many cases, tensions arise between affected communities and governments or companies due to the overexploitation and degradation of land-based resources (such as land and water), exclusion from decisioninadequate making processes, and compensation. Moreover, extractive activities can create or intensify conflicts or within communities exacerbating local grievances and increasing competition over scarce resources. These dynamics are likely to materialise in countries regions with weak governance structures, where poor regulatory infrastructure makes it environmental and human rights abuses to go unaddressed. In such contexts, CRM mining risks contributing to what is commonly referred to as the resource curse, where resource-rich countries experience slow development due to poor governance of their natural resources.

Even when state capacity is high, the extraction of CRMs can to environmental degradation, negative on local communities, potentially fuel conflict. Water scarcity is a particularly acute issue, as mining operations consume substantial amounts of water. Furthermore, climate change may act as a threat multiplier in this regard, as many countries rich in CRMs are not only heavily economically dependent on mining but also highly vulnerable to the broader impacts of climate change.

As extraction increases. social and environmental challenges linked to CRM extraction are likely to intensify in the coming years and create significant trade-offs between achieving environmental goals or extraction needs. meeting Indigenous peoples are likely to be disproportionately affected. Research shows that almost twothirds of future CRM deposits are located on indigenous lands (Owen et al. 2022). Against this backdrop, there is growing pressure for stronger social and environmental safeguards that could hold multinational companies accountable for the socioenvironmental impacts of their business activities.

Governance and regulatory gaps

Historically, the extraction of CRMs has to a large extent been governed by voluntary initiatives led by the mining companies themselves. While voluntary standards have contributed to spreading norms about responsible business conduct, they have often proven too lax to prevent, mitigate, and remediate human rights violations and environmental degradation. Moreover, the majority of CRM deposits are located in jurisdictions with poor political conditions and governance. In the EU, existing transnational policies governing CRM supply chains, such as the CRM Act and the Batteries Regulations, have largely focused on supply security, whereas socioenvironmental safeguards remain weak. In this context, strengthening socioenvironmental safeguards in the governance of CRM supply chains is critical.

Due diligence and CRM: HREDD framework

There has been a recent wave of binding laws adopted that build on a human rights and

environmental due diligence (HREDD) approach. These laws represent a regulatory innovation that many people within policymaking circles, civil society and industry hope will help mitigate the impacts associated with increased CRM extraction. HREDD laws are based on voluntary soft law standards, such as the UN Guiding Principles on Business and Human Rights and the OECD Guidelines. These laws impose binding obligations on large companies to assess and address risks throughout their supply chains.

Recent studies on CRM sector extraction show that while some companies have started to invest in due diligence processes, significant challenges remain, especially regarding questions of transparency and traceability. Furthermore, companies often rely heavily on voluntary mechanisms, such as codes of conduct, certifications, and self-assessments, which makes it difficult to hold companies accountable for negative impacts.

EU policy landscape and geopolitical tensions

With an increasing interest in both the competitiveness of European companies and increased geopolitical tensions at the EU level, efforts institutionalize to socioenvironmental safeguards, such as HREDD, in CRM supply chains are likely to be challenging. Companies tend to view these regulations as obstacles rather than safeguards. The EU Commission has recently presented an omnibus proposal, the Omnibus Package, which aims to harmonize and simplify three pillars of the EU Green Deal: the CSDDD (concerning sustainable due diligence), the CSRD (the Reporting Directive) and the Taxonomy Regulation (a

classification system for sustainable economic activities).

While the aim of the proposal is to increase competitiveness by simplifying procedures, in practice, it weakens regulatory intensity by important removing enforcement mechanisms, such as civil liability, and limiting HREDD obligations to the first tier of the supply chain. It is important to pay careful attention to the role of China and the U.S., which could significantly influence the possibility of implementing stringent HREDD legislation in the EU. For example, the Trump administration has recently announced that it will try to undermine the implementation of the CSDDD.

To conclude, as the global demand for critical raw materials continues to rise and the prospect of a diluted HREDD framework looms, the tension between securing supply and mitigating harm will only deepen. In this context, decision makers must ensure that HREDD remains embedded in CRM governance to establish a framework that supports a just and sustainable green transition.

Roundtable Discussion Summary:

Trade-offs

This discussion over these issues focused largely on the apparent trade-off between the urgent demand for critical minerals and the social and environmental harm that increased mining could cause. To maintain or even increase mining in a sustainable manner, the discussion focused on the real costs of such ventures, and some participants proposed financial mechanisms to mitigate these impacts. Among other ideas, creating

funds to siphon money from CRM projects to pay dividends or rents to local communities was suggested- Another suggestion was to establish consortia to invest in more environmentally friendly mining. Other participants argued that it is not possible to satisfy an ever-growing demand for CRMs and compensate for the harm of increased mining. Instead, they emphasised the importance of technological advances in areas such as recycling and substituting materials to reduce the need for expanded mining in the long term. Finally, it was concluded that although benefit-sharing mechanisms have been implemented in different contexts, some forms of damage cannot be meaningfully compensated for. Financial measures cannot always compensate for the long-term destruction that threatens livelihoods.

Regulatory focus

Whereas the first part of the discussion focused on trade-offs, the second part addressed issues of the regulatory design and implementation of ESG frameworks. For example, the participants reflected on whether the ownership structure or size of mines affects the quality of human rights and environmental due diligence. In response, it was highlighted that while large-scale infrastructure is often necessary, small, artisanal mines do exist. These mines are often subject to less regulatory pressure than larger mines, which are more exposed to public scrutiny. Furthermore, these are often associated with informality even criminality.

Other participants considered the feasibility of introducing new regulations, as these need to address both the political realities and the complexities of the transnational nature of CRM supply chains. Therefore, legislation would need to both accommodate contemporary policymakers and be applicable across jurisdictions, which raises the question of what can realistically be applied.

Overall, the discussion on this topic clearly highlights the need to better understand the trade-offs and the need for better solutions to manage them to prevent negative impacts on the environment and human rights. Taken together, the presentation and discussion showed that this will require not only political will and regulatory innovation but also increased coordination between governance levels and stakeholders to safeguard environmental and social interests amid rising geopolitical tensions.



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Concluding points

The roundtable discussions underscored the following:

- Critical raw materials (CRMs) are at the nexus of economic resilience, geopolitical strategies, and environmental and social responsibility.
- Global trade in CRMs is shifting from globalisation to regionalisation, driven by security concerns and declining trust in traditional suppliers. (*Geopolitical shift*)
- CRMs are increasingly viewed as critical to both economic competitiveness and national security and require coordinated and integrated policy approaches. (Strategic importance)
- Sweden and the EU may benefit from the adoption of holistic strategies that enhance domestic capabilities while considering new security risks and broader international impacts.
- CRM supply chains are diverse and interdependent; oversimplified narratives, especially regarding China's role, are misleading. (Supply chain complexity)
- Existing CRM governance is fragmented, with many overlapping, nonbinding initiatives that lack transparency, inclusivity, and coordination. (*Governance gaps*)
- CRM extraction is frequently associated with social conflict and environmental degradation, especially in weak governance contexts.
- Due diligence remains a challenge: voluntary frameworks still dominate but lack enforcement mechanisms, whereas EU regulations face industry resistance. (*Due diligence* challenges)
- Balancing rising CRM demand with environmental and social safeguards is complex; financial and technological solutions are proposed but not always sufficient. (*Trade-offs and regulation*)
- National strategies alone are insufficient; addressing CRM issues requires coordination across governance levels and international partnerships.
- Current governance initiatives often lack representation from developing countries and affected communities, which raises concerns about legitimacy and effectiveness.
- Sweden and the EU must take the lead in shaping more coherent, inclusive, enforceable, and forwards-looking CRM governance frameworks.

In the future, the demand for CRMs is expected to rise significantly, alongside growing geopolitical tensions. As goals related to national security, economic resilience, environmental sustainability, and human rights increasingly come into conflict, the policy dilemmas outlined in this report—and others—are likely to become even more pronounced. Addressing them will require sustained dialogue and coordination between public and private actors, both within and across borders, as well as between sectors. While this roundtable focused primarily on the mining and extraction phase, similar conversations will be useful throughout the entire value chain to build resilient, just, and sustainable supply systems.



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