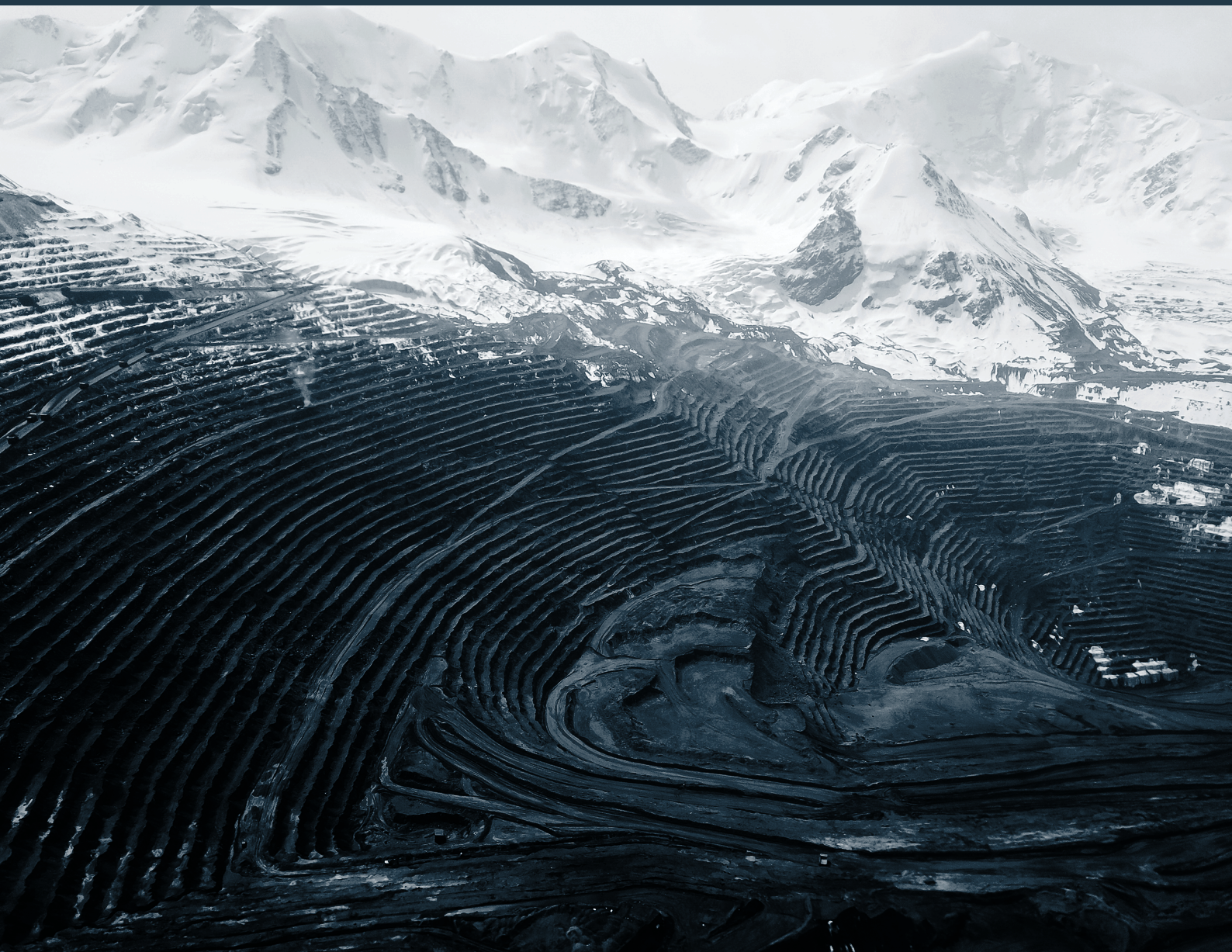




Strategic Security Analysis

Securing the New Resource Frontier: Critical Minerals in an Era of Great-Power Rivalry

Miras Zhiyenbayev





The Geneva Centre for Security Policy

The Geneva Centre for Security Policy (GCSP) is an international foundation that aims to advance global cooperation, security and peace. The foundation is supported by the Swiss government and governed by 55 member states. The GCSP provides a unique 360° approach to learn about and solve global challenges. The foundation's mission is to educate leaders, facilitate dialogue, advise through in-house research, inspire new ideas and connect experts to develop sustainable solutions to build a more peaceful future.

Strategic Security Analyses

The GCSP Strategic Security Analyses series publishes short papers that address a current security issue. These papers provide background information about the theme, identify the main issues and challenges, and propose policy recommendations.

This series is edited by Dr Jean-Marc Rickli, Head of Global and Emerging Risks.

About the author

Miras Zhiyenbayev currently serves as Advisor to the Chairman of the Board for International Affairs and Initiatives at Maqsut Narikbayev University (MNU) in Astana, Kazakhstan. His work analyses the agency of middle powers in shaping international norms and navigating great-power competition. He is the author of *Widening the Scope: How Middle Powers Are Changing Liberal Institutionalism* (KazISS, 2023). Prior to his current position, he was Senior Fellow and founding Head of the Foreign Policy and International Studies Programme at the MNU's Maqsut Narikbayev Institute for Networking and Development, which was the first university-based think-tank in the region. From 2022 to 2024, he served as a Leading Expert (Leading Research Fellow) at the Kazakhstan Institute for Strategic Studies, the nation's pre-eminent think-tank, which operates under the auspices of the President of the Republic of Kazakhstan and is recognised as the top think-tank in Central Asia.

ISBN: 978-2-88947-329-8

© Geneva Centre for Security Policy, September 2025

The views, information and opinions expressed in this publication are the author's own and do not necessarily reflect those of the GCSP or the members of its Foundation Council. The GCSP is not responsible for the accuracy of the information.

Cover photo: collab_media , Envato Elements



Key points

- Critical minerals have become the 21st-century “oil”. Lithium, cobalt, rare earths, and other inputs for clean energy, semiconductors, and defence systems are now explicit levers of state power, as shown by China’s 2024–2025 export controls and the scramble by the United States and its allies to secure alternative supplies.
- Geology drives geopolitics. These minerals are geologically fixed and highly concentrated (e.g. 70% of cobalt supplies come from the Democratic Republic of the Congo (DRC), while >80% of rare earth refining occurs in China), thrusting mostly developing producers into the centre of great-power rivalry and exposing consumers to single-point failures.
- Diversification is stalling. Despite headline strategies, the top three countries now hold 86% of global refining capacity (up from 82% in 2020) and 77% of mining output. High capital costs, long lead times, and price volatility keep new entrants and new regions out of the market.
- Chokepoints create security risks. Export bans, accidents or conflict at any dominant node could trigger price spikes of 500–10,000%, derail the energy transition and disrupt defence supply chains. Local instability, corruption and resource nationalism in producer states amplify this threat.
- Mineral competition is spilling into conflict zones. Examples range from Africa Corps-guarded mines in insurgency-afflicted African countries¹ to rare earth fields in Kachin state amid Myanmar’s civil war and mineral-rich territories in war-torn Ukraine, illustrating how control of mineral deposits can fuel proxy struggles and interstate tensions.
- Middle powers are emerging as swing players in the competition for critical minerals. Countries such as Kazakhstan, Indonesia, and Brazil use “multi-alignment” policies to host multibloc investment, dilute monopolies, and promote rules-based trade – potentially protecting themselves from great-power coercion and promoting the diversification of critical minerals supply chains.



Control over critical mineral flows is increasingly seen as a source of strategic advantage – or, conversely, strategic peril if you lack such controls.

Introduction

The intensifying competition between major powers is extending into a new strategic domain: critical minerals. In an era of electrification and high-tech innovation, materials like lithium, cobalt, rare earth elements, and other critical minerals have become essential economic and security inputs. The topic is especially relevant currently, with a series of recent events underscoring the geopolitical salience of mineral supply chains, e.g. in late 2024² and early 2025,³ China imposed export controls on materials like gallium, germanium, and other rare earth metals in apparent retaliation against US trade measures. Although far from household names, these materials are fundamental to modern economies: they are the keys to technologies ranging from electric vehicle batteries and wind turbines to semiconductors and fighter jets.⁴ Beijing's move, ostensibly framed as an "energy security measure", was widely interpreted as a strategic riposte to US trade actions. In Washington, policymakers and industry leaders bluntly accused China of weaponising its dominance in rare earth supplies.⁵ The incident underscored a dawning reality for the 21st century – access to critical minerals has become a lever of geopolitical power.

This Strategic Security Analysis (SSA) argues that critical minerals have emerged as a new frontier of great-power rivalry, one that carries profound implications for international security. Much like oil shaped the grand strategies and conflicts of the 20th century, elements like lithium, cobalt, nickel, and the group of minerals known as rare earths are now poised to influence global power dynamics in the 21st century. The United States, China, and other major powers are manoeuvring to secure these resources amid the transition to clean energy and advanced technologies. The competition is evident in recent export controls and in massive investment initiatives on multiple continents. The US government has scrambled to incentivise domestic mining and forge supply partnerships with allies,⁶ while China has doubled down on its overseas mining investments and tightened its grip on the downstream processing of critical minerals.⁷ Clearly, control over critical mineral flows is increasingly seen as a source of strategic advantage – or, conversely, strategic peril if you lack such controls.

Unlike semiconductors or other manufactured goods, minerals come from the ground in specific places – often developing countries or non-aligned regions such as parts of Africa, Latin America and Central Asia. This geographic concentration creates vulnerabilities: supply chokepoints can be controlled or disrupted, and resource-rich developing states may become arenas for proxy great-power competition or coercion. The SSA explores how such dynamics pose new security risks, from supply disruptions that could cripple clean energy transitions to political instability and conflict in mining regions. Recent assessments by institutions like the International Energy Agency (IEA) and Stockholm International Peace Research Institute (SIPRI) have warned that diversification efforts are not keeping pace with demand – in fact, the IEA's *Global Critical Minerals Outlook 2025* report finds that supply chains have grown more geographically concentrated in recent years.⁸ The SSA will integrate these findings to demonstrate the failure (so far) of diversification strategies and the resulting strategic peril of dependencies on chokepoints.



Geopolitical vulnerabilities of fixed mineral deposits

At the heart of the critical minerals challenge is a simple geological fact: these resources are not distributed evenly around the globe. They are concentrated in certain places – often in countries that until recently played only minor roles in geopolitical affairs. This territorial fixedness of mineral deposits is creating new geopolitical fault lines.

Many critical minerals are indeed clustered in developing or non-aligned countries. For example, the DRC produces around 70% of the world's cobalt,⁹ an element vital for high-performance batteries, while a “lithium triangle” formed by Bolivia, Argentina and Chile holds over half of known lithium reserves.¹⁰ Rare earth elements, despite their ubiquity in end-use applications, are mined and refined overwhelmingly in China, while some reserves are located in countries like Myanmar and Vietnam.¹¹ Major powers are already jockeying for position in these regions, offering investment, infrastructure and sometimes security assistance in exchange for reliable access to critical minerals. China's Belt and Road Initiative, for instance, has heavily targeted mining sectors in Africa and Latin America, using state-backed loans and companies to lock in supply deals.¹² For their part, Western countries are initiating partnerships and dialogues with African, Asian, and South American nations (the US-led Mineral Security Partnership is one such effort),¹³ although often with an emphasis on environmental and governance standards. The risk is that this competition for influence could exacerbate local frailties. As a recent SIPRI report noted, “resource competition between the [great] powers in [third-party] states ... could be destabilizing if not carefully managed”,¹⁴ especially where governance is weak. We have seen troubling examples: in several African countries, private military contractors linked to major powers (e.g. the Africa Corps from Russia) have provided regimes with security in mining areas as a form of quid pro quo for access to gold and minerals,¹⁵ but often fuelling conflict and carrying out human rights abuses.

Another related vulnerability is resource nationalism. Sensing their newfound leverage, many resource-rich states are asserting greater control over critical minerals, sometimes in ways that disrupt global markets. Indonesia, for example, has banned exports of raw nickel ore since 2020 to force companies to invest in local processing,¹⁶ and is also coordinating with other nations on policies to increase bargaining power over nickel prices. Several Latin American countries, including Chile and Mexico, have floated or enacted measures to nationalise lithium extraction or heavily tax mineral exports.¹⁷ From the perspective of these countries, such moves are an understandable bid to capture more value domestically and avoid the historical pattern of simply exporting raw materials. Yet, as the previously mentioned SIPRI report observes, widespread restrictive measures can also contribute to “global price volatility and heightened trade and political tensions”.¹⁸ In other words, while developing states seek a fairer deal for their resources, a byproduct can be tighter markets and friction with consuming nations that fear supply cut-offs.

Finally, the fixed nature of mineral deposits raises the spectre of territorial disputes and conflicts. Natural resources have long been triggers for wars – from disputes over oil fields to diamond-fuelled civil wars. Could critical minerals spark similar strife? This is not a far-fetched idea. In Eastern Europe, Russian forces in the ongoing war in Ukraine have seized or targeted areas known to contain lithium, titanium and other mineral deposits. Some analysts have pointed out that control of Ukraine's mineral-rich Donbas region and other territories is an economic bonus (if not a primary driver) of the war.¹⁹ In Asia, the race for undersea minerals lurks in the background

While developing states seek a fairer deal for their resources, a byproduct can be tighter markets and friction with consuming nations that fear supply cut-offs.



of South China Sea disputes, where rare earth elements and cobalt-rich ferromanganese nodules are believed to lie beneath contested waters.²⁰ The inherent immobility of mineral deposits means that geography can become destiny: regions that once held little strategic value can overnight become highly critical and contested.

The territorial concentration of critical minerals is creating a new map of geopolitical importance – one dotted with locations that are both prized and precarious. Developing states rich in minerals have more agency than ever; indeed, many have “more power today than ever before”²¹ due to great-power demand for their mineral resources, but they also face the challenge of navigating great-power rivalry without losing sovereignty or stability.

Developing states rich in minerals have more agency than ever; ... but they also face the challenge of navigating great-power rivalry without losing sovereignty or stability.

Chokepoints and the failure of diversification

When policymakers talk about critical minerals security, one word comes up again and again: *diversification*. This idea is straightforward – to reduce vulnerability, countries should have multiple sources for supplies of these minerals, avoiding over-reliance on any single supplier or nation. Yet in practice the critical minerals supply chain has been moving in the opposite direction.

According to the IEA’s latest analysis, the past few years have only tightened the chokehold of a few key players: “**Diversification is the watchword for energy security, but the critical minerals world has moved in the opposite direction in recent years, particularly in refining and processing**”.²² Between 2020 and 2024, growth in the refined output of critical minerals was overwhelmingly dominated by the leading suppliers. For example, Indonesia emerged as a nickel refining powerhouse (thanks to major Chinese-backed investments in Indonesian smelters), and China expanded its already-formidable lead in refining cobalt, graphite, and rare earth elements. By 2024, the IEA notes, on average the top three countries with refining capacity held 86% of global market share – up from an already high 82% in 2020.²³ In some markets, the dominant player’s grip is staggering. China alone accounted for approximately 90% of the growth in the refined supply of key minerals in the 2020-2024 period, and it now controls about 80% of the world’s refining capacity for battery-grade graphite and rare earth elements, as well as over 60% for materials like lithium and cobalt.

Mining is slightly more diversified than refining, but it too has seen concentration increase in many cases. The IEA finds that from 2020 to 2024, the share of the top three countries that mine major energy transition minerals rose from 73% to 77%.²⁴ The DRC, for example, solidified its dominance in cobalt mining; Indonesia did the same in nickel extraction; and China continued to lead in rare earths and graphite mining. An instructive exception has been lithium: new producers like Argentina and Zimbabwe entered the scene, lowering the top three share slightly. But even where more mines are opening, the downstream bottleneck often persists – typically, the ore from these new mines still flows to the same refining hubs (commonly China), because this is where processing capacity is to be found. Kazakhstan’s experience exemplifies this pattern: despite ramping up rare earth mining and increasing output nearly fivefold between 2020 and 2024, Kazakhstan exported 100% of its rare earth ore to China in 2023 and 2024 due to the lack of local processing facilities or Western offtakers.²⁵



Diversification is widely pursued, but not yet attained ... the failure so far is not for lack of trying, but due to structural challenges in costs, time, and coordination.

Why has diversification been so difficult to achieve, despite broad agreement on its importance? Several factors stand out:

- Mining and refining projects are capital intensive, technically complex, and slow to come online. Many proposed projects in “diverse” locales (e.g. a rare earth mine in Greenland or a lithium brine deposit in Nevada) have languished due to environmental opposition (legal requirements, activists), financing hurdles, or delays in the issuing of permits. Meanwhile, incumbent producers (often state-linked enterprises in places like China) have forged ahead, benefitting from economies of scale and government support. The result is a classic path dependence: new supply tends to emerge where capacity already exists.
- New projects in other regions often face costs about 50% higher than incumbent producers. There are several reasons: infrastructure may be lacking in frontier areas; workforce skills and supply chains for equipment might need to be built from scratch; and incumbent countries like China have mastered the art of low-cost (if sometimes environmentally costly) refining. These cost gaps mean that, without subsidies or guaranteed contracts, many diversification projects struggle to compete. A case in point is battery-grade graphite: although African countries like Mozambique have ample resources, China’s integrated supply chain and lower costs still allow it to supply the lion’s share of purified graphite to battery makers. Firms will default to cheaper suppliers unless policy measures or other factors level the playing field.
- The past two years have seen wild swings in mineral prices. Such volatility is a nightmare for investors considering multibillion dollar mines or refineries. A sudden price drop (as happened with lithium in late 2023) can render a prospective project unviable overnight. This especially affects new entrants and diversified locations, which typically have higher break-even costs. Thus, diversification stalls because the market alone is not incentivising it adequately.
- While many governments have unveiled critical mineral strategies, there has been a lag in translating plans into on-the-ground projects. The result is a gap between rhetoric and reality; and in the meantime, China’s head start has grown. This is not to say diversification efforts have failed entirely; rather, they have not kept pace with the extent of the problem. Initiatives often suffer from underfunding or the not-in-my-backyard syndrome that delays mining in democracies, whereas the concentration of refining in the developing countries continues relatively unimpeded.

The consequence of these factors is a world where chokepoints abound in critical mineral supply chains. Whether it is China for rare earth magnets, Indonesia for nickel matte, or the DRC for cobalt ore, a disruption in any of these hubs could reverberate globally. Therefore, diversification has become a kind of holy grail that is widely pursued, but not yet attained. The failure so far is not for lack of trying, but due to structural challenges in costs, time and coordination. The current trajectory, however, leaves the world in a precarious position: lots of eggs in very few baskets.



Security risks of mineral resources control

The strategic rivalry over critical minerals is not playing out in a vacuum: it carries tangible security risks that affect global stability. These risks range from sudden supply disruptions that can cripple industries, to political and social turmoil in nations that hold these resources, to possible escalation into interstate conflict.

Perhaps the most immediate risk is that of a supply shock – a sudden cutoff or shortfall of critical mineral supplies that cascades through the global economy. Whether the disruption comes from deliberate action (like an export ban) or unforeseen events (natural disaster, accident, labour strike), the impact can be severe. The IEA’s “N-1” (or resilience) analysis, excluding the top supplier, dramatises this: for key battery component metals and rare earths, by 2035 non-China supplies would meet only about half of demand if China were removed from the equation.²⁶ In other words, a loss of Chinese output (due to a trade war, conflict, internal issues or some other factor) would leave an unbridgeable gap.

What happens when such a gap appears? Prices skyrocket and downstream industries falter. We have a real precedent: when China merely *hinted* at restricting rare earth exports around 2010 (and did quietly cut off shipments to Japan), global rare earth prices exploded by over 500-1,000% for some elements.²⁷ Manufacturers of high-performance magnets, electronics and defence components scrambled to obtain what little supply they could find on spot markets. The price spikes eventually subsided after the crisis (and after countries tapped into alternate sources and some recycling), but this took months – which is plenty of time to cause serious economic stress. Such cost surges could significantly slow the adoption of electric vehicles and renewable energy, setting back climate change-related goals. They could also hit consumer prices and industrial competitiveness: for instance, a prolonged cobalt or nickel shortage would drive up the cost of everything from smartphones to jet engines, potentially fuelling inflation and eroding growth. In strategic terms, one country’s stranglehold on supply can become another country’s economic chokepoint – a vulnerability that adversaries might seek to exploit.

Another cluster of risks centres on the internal stability of countries that produce critical minerals. As demand and revenues rise, so can the stakes and tensions over who benefits. Many mining regions are in countries with weak governance, high inequalities or histories of conflict. A sudden inflow of mining investment and money or, conversely, a fight over control of lucrative mining sites can (and in many cases will) trigger unrest or corruption, undermining stability. For example, the DRC’s cobalt riches have entangled local politics with multinational interests, contributing to corruption at the highest levels and occasionally fuelling conflict in mining areas.²⁸ In Myanmar, control over rare earth mines in Kachin state has become a contested issue amid the broader civil conflict, and local militias, the military junta, and foreign business interests all vie for the profits, with horrific environmental damage as a byproduct.²⁹

Environmental degradation from poorly governed extraction operations is a direct security risk, not a parallel concern. It operates through three channels. Firstly, local livelihoods and people’s health are hit by water contamination, deforestation, and toxic waste, which erode state legitimacy and feed mobilisation by militias and organised crime, resulting in firms becoming targets for blockades, kidnappings, and sabotage. Secondly, cross-border pollution along

Perhaps the most immediate risk is that of a supply shock – a sudden cutoff or shortfall of critical mineral supplies that cascades through the global economy.



While purely economic wars do not always turn kinetic, the interdependence entangling rivals can be double-edged – as interdependence frays, it removes a buffer that previously disincentivised conflict.

shared rivers and airsheds internationalises disputes – inviting sanctions, border closures or retaliatory export controls that tighten global markets. Thirdly, chronic ecological damage raises the risk of disasters like tailings failures, landslides or floods that disable roads and power supply networks, interrupt production, threaten communities, and displace local people into contested areas. These pathways make “cheap” extraction expensive, and today’s environmental, social and governance (ESG) shortcuts become tomorrow’s instability premium. Strengthening environmental oversight, community-benefit agreements and transparent remediation finance is therefore not ancillary to mineral security – it is core risk mitigation.

SIPRI’s overview cautions that major power strategies to “secure minerals may come at the expense of local communities or the environment”, and that poor governance could be exploited in this process.³⁰ This is essentially what we have seen with the activities of the Africa Corps in Central and West Africa: regimes under internal threat have given mining concessions (gold, diamonds) to foreign security contractors in exchange for help in quelling opposition – a toxic trade-off that fuels abuses, including human rights abuses, and long-term instability.³¹

Political instability is not only a humanitarian concern, but a security one for supply chains: mines cannot operate safely in war zones, and companies will withdraw if risks become too high. The extreme case is when instability graduates into state failure or conflict, potentially cutting off output entirely (as happened in Ukraine’s critical industries when Russia invaded, or when civil war closed down production in parts of Africa). Each such incident tightens the global supply and can force other countries into frantic competition over remaining sources, potentially creating a vicious cycle of contestation.

The overarching worry is that the tug-of-war over critical minerals could escalate into direct conflict between states. This could happen in various ways. One scenario is great-power confrontation arising from a trade war that spirals out of control: imagine a cycle of tit-for-tat export bans and sanctions (e.g. China bans rare earth exports; the United States responds with high tech sanctions; China then blockades shipments of other minerals, etc.) leading to a severe breakdown in relations or even military posturing to secure resource supply lines. While purely economic wars do not always turn kinetic, the interdependence entangling rivals can be double-edged – as interdependence frays, it removes a buffer that previously disincentivised conflict. We have already seen a dramatic shrinking of space for multilateral compromise, and if countries start viewing access to mineral supplies as a zero-sum game, they might act more aggressively to ensure that access.

Another pathway to conflict could be local or regional wars in resource-rich areas that draw in outside powers. If, say, a region with significant mineral deposits declares independence or experiences a coup, the great powers might be tempted to intervene (directly or via proxies) to secure favourable control. Historically, resources often lurked behind military interventions – from Iraq’s invasion of Kuwait in 1990 to ongoing foreign involvement in the DRC’s wars.

Control over critical minerals carries multifaceted security risks – economic shocks that can undermine stability, internal strife in producer regions and heightened potential for international conflict or coercion. These risks underscore why “critical” is an apt term: it is not just about economic importance, but critical vulnerabilities in our security fabric. In the worst case, unchecked rivalry for minerals could lead to a fracturing world, with supply crises and conflict reminiscent of the darkest chapters of 20th century resource wars. However, an equally important part of this story is how these outcomes might be averted. And here we turn to a somewhat unexpected set of actors who could make a difference: the world’s middle powers.



Middle powers: balancers and bridge builders in a mineral-intense world

Middle powers
... converts
connectivity and
strategic autonomy
into leverage –
acting as a swing
stabiliser that can
broker deals, de-
risk supply chains,
and set standards
without imposing
hegemony.

In a leaderless, uncertain world order where US hegemony has waned, middle powers have gained relative freedom of manoeuvre. A middle power is best defined horizontally, not by size, but by position and behaviour: a state situated between great powers that wields outsized influence by bridging rival blocs, convening coalitions, and shaping rules in specific niches.³² It converts connectivity and strategic autonomy into leverage – acting as a swing stabiliser that can broker deals, de-risk supply chains, and set standards without imposing hegemony. Great-power competition can actually enhance middle powers' leverage: great powers may court the same country for allegiance or access, allowing that country to extract better terms or to refuse to take sides altogether.³³

Kazakhstan exemplifies the middle power approach in the context of the increasing competition over critical minerals. Geographically wedged between great powers, Kazakhstan has mastered a multivector foreign policy over the past three decades. This means it simultaneously maintains robust relations with China, the United States, Europe, Russia and other players. Rather than see this as an unsustainable process of fence sitting, Kazakhstan has made it an art form of strategic autonomy. The logic is clear: keep all the major powers invested in Kazakhstan's stability and success, so none has an incentive to undermine that stability and success and all have a stake in preventing any one power's dominance over the country. In practice, Kazakhstan might buy high-speed trains from China, welcome European mining investors, allow Russian as an official language and participate in Russian-led economic blocs, and simultaneously host US-backed education programmes and NATO peace conferences.

In the rare earth and critical minerals arena, Kazakhstan is doing precisely this. It has courted Western companies to develop its newly discovered rare earth reserves (signing memorandums with European and US firms),³⁴ while also continuing to do business with Chinese entities. President Kassym-Jomart Tokayev has openly called critical minerals Kazakhstan's "new oil" and has inked dozens of agreements with European partners like Germany to explore for and process these resources.³⁵ Yet he has been careful to signal that Kazakhstan's partnership with the West to exploit its minerals will not come at the expense of its relations with China or Russia. Essentially, Astana wants to position itself as a reliable partner to all – a neutral ground where multi-aligned mineral diplomacy can take place.

Beyond Kazakhstan, other middle powers can de-risk critical minerals by filling complementary niches along the supply chain. Producer anchors such as Australia, Canada, Chile, Argentina, Brazil, South Africa, and Namibia expand primary supply and export governance through long-duration offtakes, transparent royalties regimes, and systems for issuing permits that balance speed with standards, which in turn attract private capital and build redundancy. Processing and technology-finance hubs, notably Japan, South Korea, and the Nordic states, stabilise the midstream through cathode and anode, alloy, and magnet production, supported by export credits, guarantees, and buyer-anchored contracts that reduce single-point dependency. Value-capture climbers like Indonesia use policy tools to localise refining and precursor production, increasing non-Chinese throughput even when upstream ore remains geographically concentrated. Corridor conveners such as Türkiye (and, in terms of phosphates, Morocco), connect producers to demand centres through logistics integration, standards interoperability, and dispute-resolution capacities that lower cross-border risk premiums.



Middle-power architecture adds optionality across ore extraction, processing, components production, and transit, making the system harder to coerce and quicker to recover from disruptions.

These roles also buffer shocks and diffuse norms. Strategic stockpiles and coordinated offtakes in Northeast Asia and Europe smooth price spikes; recycling and substitution R&D led by Japan, South Korea, Australia, and the Nordics reduces demand pressure on the scarcest inputs; and shared ESG baselines, including auditable supply-chain due diligence, tailings and water safeguards, and community-benefit frameworks, raise such baseline levels without excluding developing producers. Taken together, this middle-power architecture adds optionality across ore extraction, processing, components production, and transit, making the system harder to coerce and quicker to recover from disruptions, and situating Kazakhstan's multi-aligned strategy as one vital node in a broader, interoperable network.

Of course, middle powers face a delicate task. They must avoid overplaying their hand or provoking the great powers. If a middle power is seen as being too cozy with one great power, it may invite punitive action from another. If it tries to form an independent bloc to counter both, it might be viewed as a threat. The aim is to be indispensable to all sides, but controlled by none. Achieving this is easier said than done, but many middle powers have honed their diplomatic balancing skills precisely in order to survive and thrive in this way. Middle powers bring a dose of pragmatism and cooperative instinct that are badly needed in the critical minerals sphere. They are not blind to the dangers of great-power rivalry – indeed, they often have the most to lose if it spirals out of control, because their economies and security could be trampled in the crossfire. Thus, they have incentives to steer the narrative toward win-win solutions and guide international relations away from zero-sum confrontations toward a more balanced, fairer order. In the context of critical minerals, this means championing policies that ensure access for all, development for resource-rich nations and cooperation on managing market volatility or scarcity.



Conclusion

The security of critical minerals is ultimately the security of interdependence done right.

The competition over critical minerals is often framed as a zero-sum conflict, yet it need not be. With targeted policy and coordinated execution, what could be a flashpoint can become a platform for shared security and growth. The practical path towards this runs through middle powers. Producer anchors, processing and tech-finance hubs, value-capture climbers, and corridor conveners can operationalise de-risking by coordinating offtake and strategic stockpiles; co-financing non-Chinese midstream capacity (cathodes, anodes, alloys, magnets) through export-credit and development finance institution guarantees; launching interoperable traceability and due-diligence baselines; and establishing early-warning, “N-1” stress testing, and emergency-sharing protocols for disruptions. Middle-power corridors should pair logistics integration with dispute-resolution mechanisms and cross-border standards to lower risk premiums, while recycling and substitution R&D compacts reduce pressure on the scarcest inputs. Emerging producers can be supported with fast-track permit issuing toolkits, ESG capacity-building and community-benefit frameworks that attract private capital without sacrificing safeguards.

Great powers and international institutions have a clear enabling role: back-stop offtake-linked project finance with blended instruments, align standards to avoid regulatory fragmentation, and refrain from coercive export controls that amplify volatility. A time-bound window of incentives for diversified processing combined with coordinated public procurement can crowd in private investment at scale. The era of critical mineral geopolitics is already here. But choosing cooperation over confrontation – through a middle-power architecture that adds redundancy at the levels of ore extraction, processing, components production and transit – will make the energy transition a source of stability rather than strain. The security of critical minerals is ultimately the security of interdependence done right.



Endnotes

- 1 The Africa Corps was previously known as the Wagner Group.
- 2 G. Baskaran and M. Schwartz, “China Imposes Its Most Stringent Critical Minerals Export Restrictions Yet Amidst Escalating U.S.-China Tech War”, Center for Strategic and International Studies, 4 December 2024, <https://www.csis.org/analysis/china-imposes-its-most-stringent-critical-minerals-export-restrictions-yet-amidst>.
- 3 G. Baskaran and M. Schwartz, “The Consequences of China’s New Rare Earths Export Restrictions”, Center for Strategic and International Studies, 14 April 2025, <https://www.csis.org/analysis/consequences-chinas-new-rare-earths-export-restrictions>.
- 4 Pacific Coastal and Marine Science Center, “Potential Uses of Rare Earth Elements Found in Marine Minerals”, US Geological Survey, accessed July 2025, <https://www.usgs.gov/media/images/potential-uses-rare-earth-elements-found-marine-minerals>.
- 5 A. Camba, “A Federal Critical Mineral Processing Initiative: Securing U.S. Mineral Independence from China”, War on the Rocks, 14 April 2025, <https://warontherocks.com/2025/04/a-federal-critical-mineral-processing-initiative-securing-u-s-mineral-independence-from-china/>.
- 6 B. Allan et al., “Friendshoring Critical Minerals: What Could the U.S. and Its Partners Produce?”, Carnegie Endowment for International Peace, 3 May 2023, <https://carnegieendowment.org/research/2023/05/friendshoring-critical-minerals-what-could-the-us-and-its-partners-produce?lang=en>.
- 7 K. van Veen and A. Melton, “Rare Earth Elements Supply Chains, Part 1: An Update on Global Production and Trade”, Executive Briefing on Trade, United States International Trade Commission, December 2020, https://www.usitc.gov/publications/332/executive_briefings/ebot_rare_earths_part_1.pdf.
- 8 IEA (International Energy Agency), *Global Critical Minerals Outlook 2025*, May 2025, <https://www.iea.org/reports/global-critical-minerals-outlook-2025>.
- 9 R. Deberdt and J. DiCarlo, “DRC is the World’s Largest Producer of Cobalt – How Control by Local Elites Can Shape the Global Battery Industry”, The Conversation, 4 September 2024, <https://theconversation.com/drc-is-the-worlds-largest-producer-of-cobalt-how-control-by-local-elites-can-shape-the-global-battery-industry-236205>.
- 10 S. Lakeman, “Lithium Triangle Supply Chains”, *Nature Energy*, Vol.10(1), 28 January 2025, pp.6-7, <https://doi.org/10.1038/s41560-024-01673-w>.
- 11 Mining Technology, “China Currently Controls Over 69% of Global Rare Earth Production”, 18 January 2025, <https://www.mining-technology.com/analyst-comment/china-global-rare-earth-production/>.
- 12 C.N. Wang, *China Belt and Road Initiative (BRI) Investment Report 2024*, Green Finance & Development Center, 27 February 2025, <https://greenfdc.org/china-belt-and-road-initiative-bri-investment-report-2024/>.
- 13 US Department of State, “Minerals Security Partnership”, <https://www.state.gov/minerals-security-partnership>.
- 14 J. Zhou and A. Månberger, *Critical Minerals and Great Power Competition: An Overview*, SIPRI, October 2024, <https://doi.org/10.55163/WEMJ9585>.
- 15 C. Doxsee et al., “Central African Republic Mine Displays Stakes for Wagner Group’s Future”, Center for Strategic and International Studies, 3 July 2023, <https://www.csis.org/analysis/central-african-republic-mine-displays-stakes-wagner-groups-future>.
- 16 H. Palaon and R. Walker, “Glimpse into Indonesia’s Nickel Policy”, The Interpreter, August 2024, <https://www.lowyinstitute.org/the-interpreter/glimpse-indonesia-s-nickel-policy>.
- 17 UNCTAD (United Nations Conference on Trade and Development), “Chile Launches a New National Strategy for Lithium”, Investment Policy Monitor, 20 April 2023, <https://investmentpolicy.unctad.org/investment-policy-monitor/measures/4305/chile-launches-a-new-national-strategy-for-lithium>.
- 18 Zhou and Månberger, 2024.
- 19 R. Muggah and R. Rohozinski, “The Mineral Wars – How Ukraine’s Critical Minerals Will Fuel Future Geopolitical Rivalries”, *Horizons*, Vol.29, Center for International Relations and Sustainable Development, 2025, <https://www.cirsd.org/en/horizons/horizons-winter-2025-issue-no-29/the-mineral-wars>.
- 20 T. Burgers and S.N. Romaniuk, “Rare Earths in the South China Sea: Adding Fuel to the Geopolitical Fire”, *The Diplomat*, 9 November 2023, <https://thediplomat.com/2023/11/rare-earths-in-the-south-china-sea-adding-fuel-to-the-geopolitical-fire/>.
- 21 M. Zhiyenbayev, “Pax Americana Is Over – Middle Powers Must Shape What Comes Next”, *Astana Times*, 23 May 2025, <https://astanatimes.com/2025/05/pax-americana-is-over-middle-powers-must-shape-what-comes-next/>.
- 22 IEA, 2025; original emphasis.
- 23 Ibid.
- 24 Ibid.
- 25 M. Zhiyenbayev, “How Kazakhstan Can Anchor a Resilient RareEarth Supply Chain for the West”, *New Atlanticist*, 3 June 2025, <https://www.atlanticcouncil.org/blogs/new-atlanticist/how-kazakhstan-can-anchor-a-resilient-rare-earth-supply-chain-for-the-west/>.
- 26 IEA, 2025.
- 27 F. Els, “CHARTS: Rare Earth Export Restrictions, Price Spikes and the Risks of Demand Destruction”, *Mining.com*, 5 February 2024, <https://www.mining.com/featured-article/charts-rare-earth-export-restrictions-price-spikes-and-the-risks-of-demand-destruction/>.
- 28 O. Ojewale, “Rampant Cobalt Smuggling and Corruption Deny Billions to DRC”, Institute for Security Studies Africa, 18 June 2024, <https://issafrica.org/iss-today/rampant-cobalt-smuggling-and-corruption-deny-billions-to-drc>.
- 29 M.F. Martin, “Update on the Armed Resistance in Myanmar’s Kachin State”, Center for Strategic and International Studies, 17 July 2024, <https://www.csis.org/analysis/update-armed-resistance-myanmars-kachin-state>.
- 30 Zhou and Månberger, 2024.
- 31 Doxsee et al., 2023.
- 32 M. Zhiyenbayev, “Middle Powers, Not Great Ones, Shaping the New World Order”, *Asia Times*, 2 June 2025, <https://asiatimes.com/2025/06/middle-powers-not-great-ones-shaping-the-new-world-order/>.
- 33 M. Zhiyenbayev, “Middle Powers and the West”, In-Depth Briefing No. 79, Centre for Historical Analysis and Conflict Research, August 2024, <https://chacr.org.uk/wp-content/uploads/2024/08/IDB-79-Middle-Powers-and-the-West.pdf>.
- 34 EEAS (European External Action Service), “EU and Kazakhstan Take the Next Step in Their Cooperation on Critical Raw Materials”, 4 April 2025, https://www.eeas.europa.eu/delegations/kazakhstan/eu-and-kazakhstan-take-next-step-their-cooperation-critical-raw-materials_en.
- 35 A. Meir Khanova, “Can Central Asia Secure Growth with Rising Critical Minerals Investments?”, *Carnegie Politika*, Carnegie Endowment for International Peace, 27 January 2025, <https://carnegieendowment.org/russia-eurasia/politika/2025/01/central-asia-crm-offers?lang=en>.

Building Peace Together

Geneva Centre for Security Policy

Maison de la paix

Chemin Eugène-Rigot 2D

P.O. Box 1295

1211 Geneva 1

Switzerland

Tel: + 41 22 730 96 00

Contact: www.gcsp.ch/contact

www.gcsp.ch

ISBN: 978-2-88947-329-8



GCSP
Geneva Centre for
Security Policy