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THE GEOPOLITICS OF CRITICAL MINERALS AND IMPLICATIONS FOR BRAZIL AND CANADA

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Executive Summary

Critical minerals have moved from the margins of industrial policy to the center of geopolitical competition. Cobalt, copper, graphite, lithium, nickel, and rare earth elements now underpin three overlapping national imperatives governments increasingly treat as strategic priorities, namely energy transition, digital infrastructure, and defense readiness. This competition has intensified as rivalry between the United States and China deepens, as China has demonstrated a willingness to use processing dominance as leverage, and as states construct bilateral and plurilateral arrangements intended to redirect mineral flows toward trusted partners.

Brazil and Canada occupy an important place in this emerging mineral order. They are not simply major suppliers of raw material. Both countries possess the requisite geological endowment, institutional capacity, and diplomatic positioning to influence how the Americas are integrated into the evolving global minerals economy. Canada brings broad extraction capacity across multiple strategic materials, growing ambition in midstream development, a whole-of-government policy approach that gained momentum during its 2025 G7 presidency, and a serious though still incomplete effort to incorporate Indigenous partnership into its development model. Brazil brings extraordinary reserves, a more assertive state industrial policy aimed at value chain upgrading, and a clear determination to avoid remaining a mere exporter of raw material to foreign processors.

Both countries face similar challenges when it comes to their position in the race to secure critical minerals. They must convert geological advantage into durable economic and geopolitical leverage in a context marked by fragmented markets, competing standards regimes, and growing great power pressure. That challenge is more demanding than public debate often suggests. China's dominance in processing is not explained primarily by subsidies or regulatory permissiveness. It is rooted in cumulative technological capability, proprietary process knowledge, and deep investments in specialized human capital that Western economies have allowed to erode over several decades. Closing that gap required sustained fiscal commitment at a scale and duration that no government has yet openly acknowledged.

This paper argues that the core bottleneck does not lie in extraction or even access to capital, though these are daunting challenges. It lies in midstream capability, especially refining, chemical conversion, and the skilled labor and process knowledge required to operate such facilities competitively in the face of Chinese competition. It examines the structural demand forces shaping the minerals landscape, the anatomy of supply chain vulnerability, the geoeconomic tools deployed by major powers, and the evolving geometry of critical mineral alliances and partnerships. It then assesses the strategic positions of Brazil and Canada, both separately and together.

The paper concludes with several options for bilateral and regional engagement. These include building a dedicated Canada-Brazil midstream corridor, aligning standards so they function across markets, elevating Indigenous and traditional community engagement from a compliance issue to a strategic differentiator, treating Mercosur as an industrial platform for critical minerals cooperation, deploying blended finance instruments that combine governance safeguards with demand certainty, investing in the wider regional infrastructure of minerals security, and developing a dedicated bilateral human capital program for critical minerals processing. None of this is inevitable. Both countries have announced mineral ambitions before and then allowed them to stall in bureaucratic sequencing, financing gaps, or electoral cycles. What is different now is the external pressure: rivals are not waiting, and the institutional infrastructure of mineral security is being assembled without them if they hesitate.

“Canada–Brazil bilateral and regional engagement includes building a dedicated midstream corridor, treating Mercosur as an industrial platform for critical minerals cooperation, and advancing further.”

Introduction

For most of the postwar period, raw minerals were treated mainly as commodities to be sourced through markets. Concentration of supply was a concern for industry specialists and, at times, for strategic planners, but it was not a central priority for heads of government or foreign ministers. That period has ended. The convergence of the green energy transition, digital infrastructure, and defense readiness has transformed critical minerals and rare earth elements into strategic assets whose supply security is now treated in ways typically reserved for food, water, or energy security.

Geopolitical and geoeconomic competition is hastening the scramble to secure critical mineral supply chains. China's dominance across midstream processing and refining, together with its demonstrated willingness to use that dominance as leverage, has accelerated efforts by many countries to redirect mineral flows toward trusted partners. These shifts are not only driven by market signals but also by export controls, investment screening, industrial subsidies, procurement policies, and a growing web of bilateral and plurilateral arrangements designed to shape who produces, processes, and trades with whom. The assumption of a single open global market is giving way to overlapping and competing blocs–none of them yet consolidated, all of them actively contested.

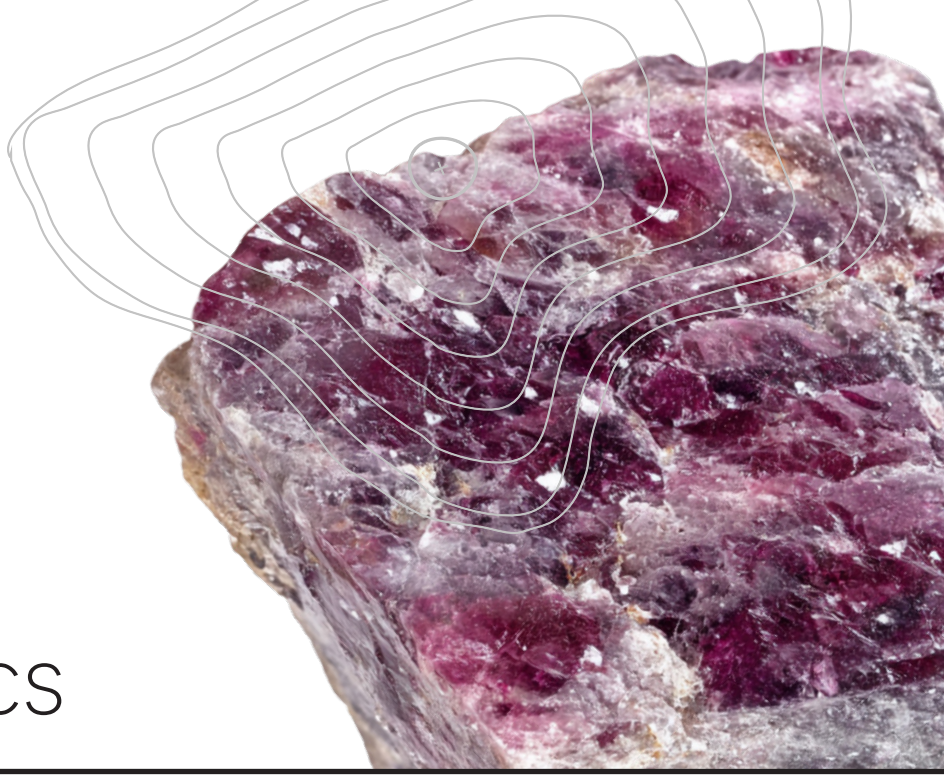
Brazil and Canada are two middle powers with the geological endowments, institutional capacities, and political positioning to shape how the Americas are integrated into this new minerals order. Yet deposits and diplomatic reach are necessary rather than sufficient conditions. The deeper challenge is whether either country can build and sustain processing industries that are technologically competitive, commercially viable, and staffed by workers with the specialized expertise that midstream critical minerals production requires. These are questions of industrial economics as much as geopolitics, and they require the same level of analytical consideration.

This paper advances three related claims. First, the critical minerals issue is being shaped less by geology alone than by control over processing capability, standards, and the institutions that govern market access. Second, Brazil and Canada are best understood not as parallel cases but as complementary middle powers that could exercise greater leverage through more structured cooperation. Third, many Western strategies still underestimate the significance of process technology, tacit knowledge, and operating economics in building viable alternatives to Chinese dominance.

The analysis presented in the paper unfolds against the backdrop of an increasingly volatile geopolitical environment marked by overlapping conflicts with systemic economic consequences. Russia's war in Ukraine, now entering its fourth year, and the 2026 war involving the U.S., Israel, Iran and the wider Middle East have together transformed supply chain risk from a background condition into a defining feature of the global economy. The disruption of energy corridors, particularly through the Strait of Hormuz, has triggered the largest oil supply shock in decades, with cascading effects across transport, manufacturing, and strategic industries (Muggah, 2026a, 2026b).

These conflicts are not isolated shocks. They interact directly with the political economy of critical minerals. The Iran war is disrupting shipping routes, freight systems, and energy inputs essential to mining and processing, while also driving price volatility across key industrial materials. At the same time, the Ukraine war continues to reshape defense demand, energy markets, and alliance structures, reinforcing the securitization of supply chains. Together, these conflicts are accelerating a structural shift: states are no longer relying on global markets alone to secure critical inputs, but are actively reorganizing supply chains around resilience, redundancy, and geopolitical alignment.

“In a volatile geopolitical environment, overlapping conflicts with systemic economic consequences have turned supply chain risk into a defining feature of the global economy.”



01.

Structural Drivers of Mineral Politics

Several structural forces are simultaneously transforming critical minerals into strategic assets. The first is the clean energy transition. Electric batteries, conductors, and magnets require large quantities of cobalt, copper, graphite, lithium, nickel, and rare earth elements (IEA, 2025). In material terms, low carbon systems are often far more mineral intensive than the fossil fuel systems they are intended to replace. The second force is digitization. Data centers, cloud infrastructure, semiconductors, artificial intelligence, and telecommunications all rely on strategic materials, even when the end products are often understood in immaterial terms. These systems require copper, gallium, and other specialized inputs whose availability has become more strategically salient. The third force is rearmament. The current wave of defense modernization across NATO, the Indo Pacific, and related security groupings is increasing demand for rare earth elements and other strategic inputs used in munitions, aircraft engines, guidance systems, and submarine cables (CSIS, 2025).

Another force has now become impossible to ignore, namely systemic geopolitical disruption. The interaction between large-scale conflicts is amplifying the mineral trilemma rather than merely adding another variable. The 2026 Iran war has exposed the fragility of maritime chokepoints and energy-dependent supply chains, with freight routes

disrupted, insurance costs rising, and key industrial inputs–from fertilizers to semiconductors–facing delays or shortages. Meanwhile, the Ukraine war continues to intensify demand for defense-related materials while constraining supply through sanctions, infrastructure damage, and market fragmentation. These overlapping shocks are reinforcing a common policy conclusion across major economies: access to critical minerals can no longer be treated as a function of market efficiency alone, but must be secured through strategic control over supply chains.

These forces are not unfolding sequentially. They are operating simultaneously, each with its own political economy, timeline, and tolerance for disruption. The result is a trilemma for governments, businesses, and societies. Governments are trying to decarbonize, digitize, and defend at the same time—and each objective raises the strategic significance of a shared set of materials whose extraction is geographically concentrated and whose processing remains overwhelmingly dominated by a single state. Meanwhile, the accelerating push to extract and process those materials is generating its own cascade of pressures: environmental degradation, social conflict over land and water, displacement of Indigenous and rural communities, and fiscal and governance demands that many producer states are poorly equipped to absorb.

China is the central fact of this landscape. It dominates not only the mining of selected materials but, more importantly, the midstream stages that transform ore into usable industrial inputs and the downstream development of technologies. To put this dominance in perspective, China accounted for approximately 91% of global rare earth separation and refining in 2024, along with 94% of sintered permanent magnet manufacturing (IEA, 2025a). Chinese firms also process most of the world's cobalt, lithium, and nickel at the purity required for battery applications. This position did not arise by accident. It emerged from sustained state strategy, patient investment, and the development of industrial systems that many Western markets deemed too risky, too costly, or too long-term.

China's willingness to exert its strategic dominance is no longer in doubt. In 2010, following the Senkaku Islands dispute, China sharply reduced rare earth exports in a move widely interpreted as retaliation against Japan, prompting a rapid reassessment in Tokyo (Terazawa, 2023; Kang et al, 2025). Between 2023 and 2025, export controls expanded from gallium and germanium to antimony, graphite, tungsten, and multiple categories of rare earths (Global Trade Alert, 2025; ORF America, 2025). Supply chain concentration is therefore not merely a commercial risk. It is a geopolitical instrument.

The United States has responded with an intensification of mineral diplomacy not seen in the post-Cold War era. A January 2026 White House proclamation under Section 232 linked processed critical minerals and derivative products to national security, signaling that tariffs, procurement rules, investment screening, and managed market access can all be used in this domain (White House, 2026). The Western Hemisphere is now being treated simultaneously as a supply base and as a strategic arena.

Brazil and Canada matter not only because of policy ambition but because of the scale and diversity of their mineral endowments. Brazil holds by far the world's largest niobium deposits, the second largest rare earth reserves, and major deposits of lithium, copper, manganese, cobalt, and graphite. Canada, for its part, is one of the world's most important mining jurisdictions and holds significant deposits and production capacity across lithium, nickel, cobalt, graphite, copper, uranium, potash, and a growing range of rare earth related projects. Taken together, the two countries combine geological scale, institutional capacity, and market relevance in ways that make them more than resource suppliers. They are potential system shaping actors in the emerging critical minerals order, especially if they can convert upstream strength into midstream capability and standards based market access.

“Brazil and Canada matter because of the scale and diversity of their mineral endowments. With geological scale, institutional capacity, and market relevance, they could shape the emerging critical minerals order—if they convert upstream strength into midstream capability and standards-based market access.”

02.

The Anatomy of Critical Mineral Supply Chains

Understanding the strategic stakes requires disaggregating the value chain. Vulnerabilities in extraction, processing, and manufacturing are not the same, and they call for different policy responses.

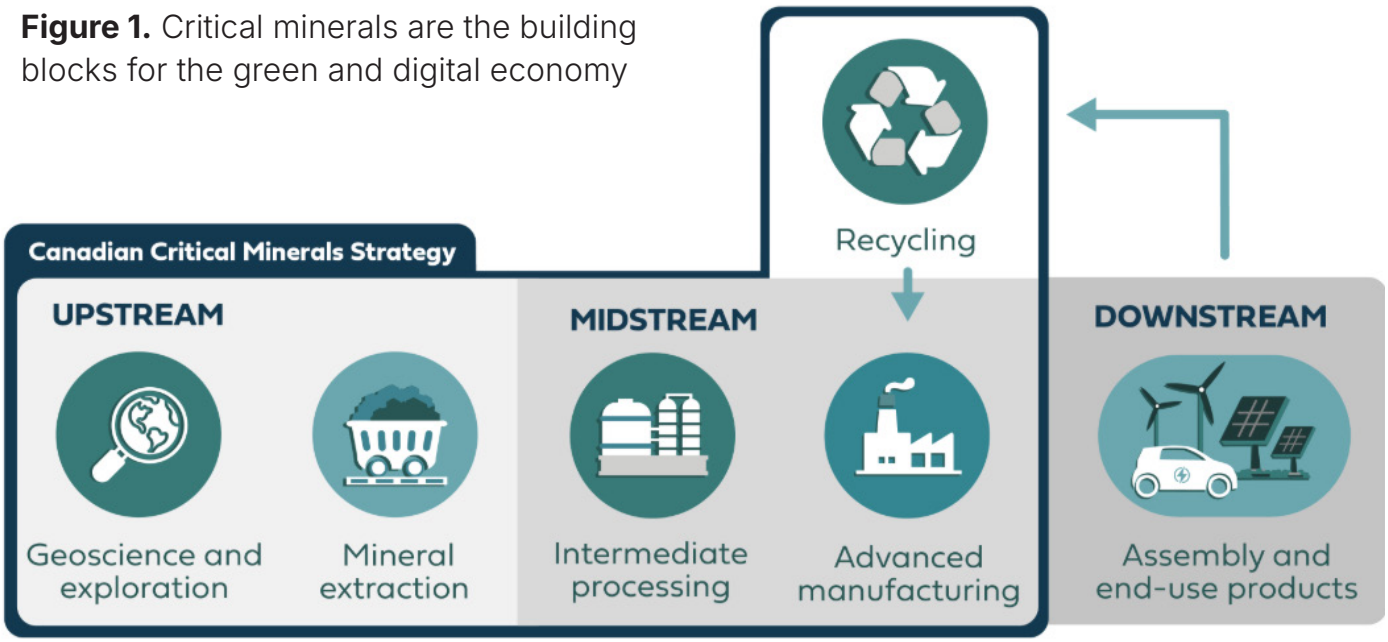
At the upstream stage, extraction is constrained by geology, infrastructure, permitting, social legitimacy, and finance. Across many materials, the Americas possess substantial reserves. The problem here is rarely geological scarcity in the strict sense. Instead, it is long lead times, complex permitting, infrastructure deficits, Indigenous rights processes, and the difficulty of securing bankable offtake arrangements. Even commercially attractive deposits often require a decade or more to reach production.

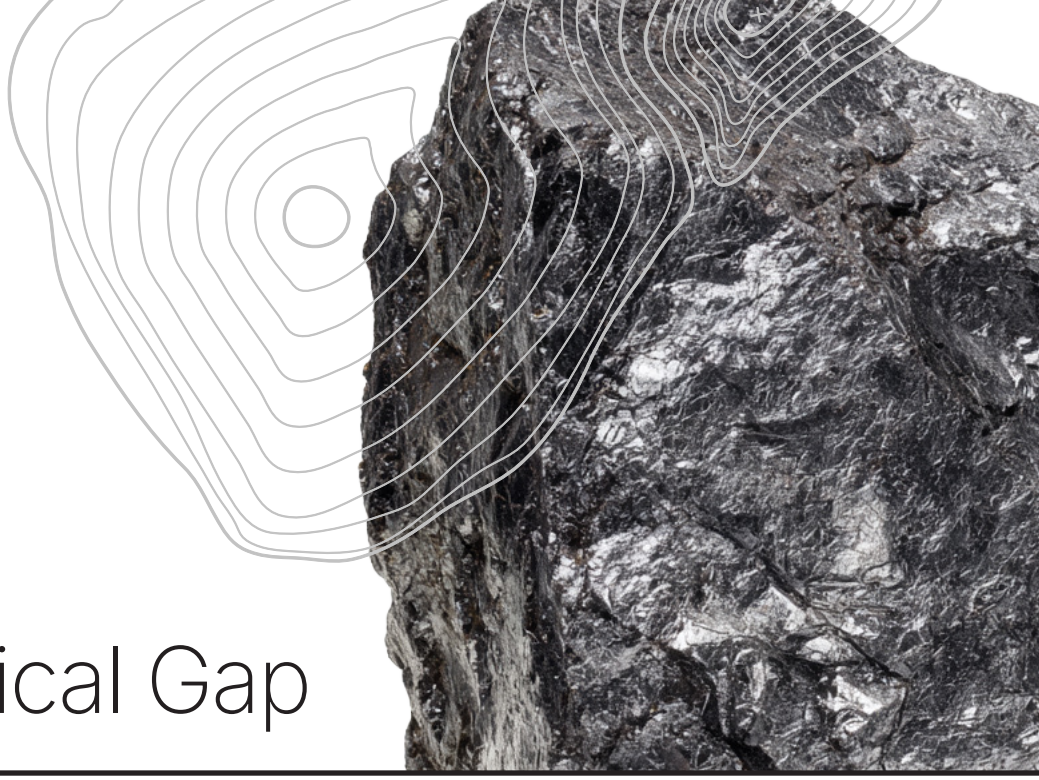
At the downstream stage, value is realized through magnets, batteries, motors, semiconductors, and related manufacturing. This is where industrial policy increasingly operates through market access requirements. The United States, the European Union, Japan, South Korea, and Australia are building policy frameworks that attach traceability, diversification, and governance criteria to access. Countries that cannot demonstrate responsible and diversified supply chains will face increasing difficulty entering the most valuable end markets.

The most acute bottleneck, however, lies in the middle of the chain. Midstream processing, which includes refining, chemical conversion, and the production of specialized intermediate inputs, is where strategic chokepoints are strongest. China's dominance at this stage reflects decades of cumulative investment in processing technology, infrastructure, and skilled labor. It cannot be replicated quickly. In some areas, especially rare earth separation, Chinese firms possess genuine technological advantages grounded in proprietary process knowledge and operational learning.[1] A greenfield rare earth separation plant in Brazil or Canada would face a substantial cost disadvantage relative to established Chinese incumbents. Similar constraints apply in lithium processing, nickel sulfate production, cobalt refining, and graphite purification (CSIS, 2025; IEA, 2025).

The principal obstacle facing Brazil, Canada, and many of their partners is not simply a shortage of minerals in the ground. It is the difficulty of building commercially viable midstream industries in sectors where China retains significant advantages in process knowledge, industrial experience, and operating cost. New mines without processing capacity do not eliminate dependency. They merely relocate the point of vulnerability from extraction to refining. New processing facilities without the required technology and workforce do not solve the problem either.[2] They move weakness from capacity to performance. Extraction is necessary, but it is not sufficient.

Figure 1. Critical minerals are the building blocks for the green and digital economy





03.

The Technological Gap

A common assumption in recent policy discussions is that stronger demand signals, more public capital, and clearer governance standards will be enough to generate competitive non-Chinese processing capacity within a strategically relevant time frame. That assumption deserves closer scrutiny. Indeed, many Western accounts attribute China's processing dominance to three factors. The first is state subsidy. The second is lax environmental regulation. The third is lower labor cost. Each factor has mattered at various moments, but none fully explains China's present position. A more persuasive explanation is cumulative technological capability.

Chinese rare earth processors, including major state linked firms, have invested over many years in solvent extraction optimization, continuous separation cascades, precipitation chemistry, energy recovery systems, and other process improvements that remain difficult to replicate at scale outside China. Much of this advantage is embedded not only in patents and equipment but in the tacit knowledge of experienced engineers and technicians. This matters because industrial performance in such sectors depends heavily on practical process control rather than on formal design alone.

The practical implication is a structural cost disadvantage for new entrants outside China. On current benchmarks, a greenfield rare earth separation facility in Canada or Brazil would likely operate at a substantial cost premium relative to Chinese incumbents. For some materials, such as those where energy represents a large share of production cost, Canada's hydroelectric advantage may narrow the gap. In rare earth separation, however, chemical process efficiency remains more important than energy price. The technology gap is therefore the dominant one.

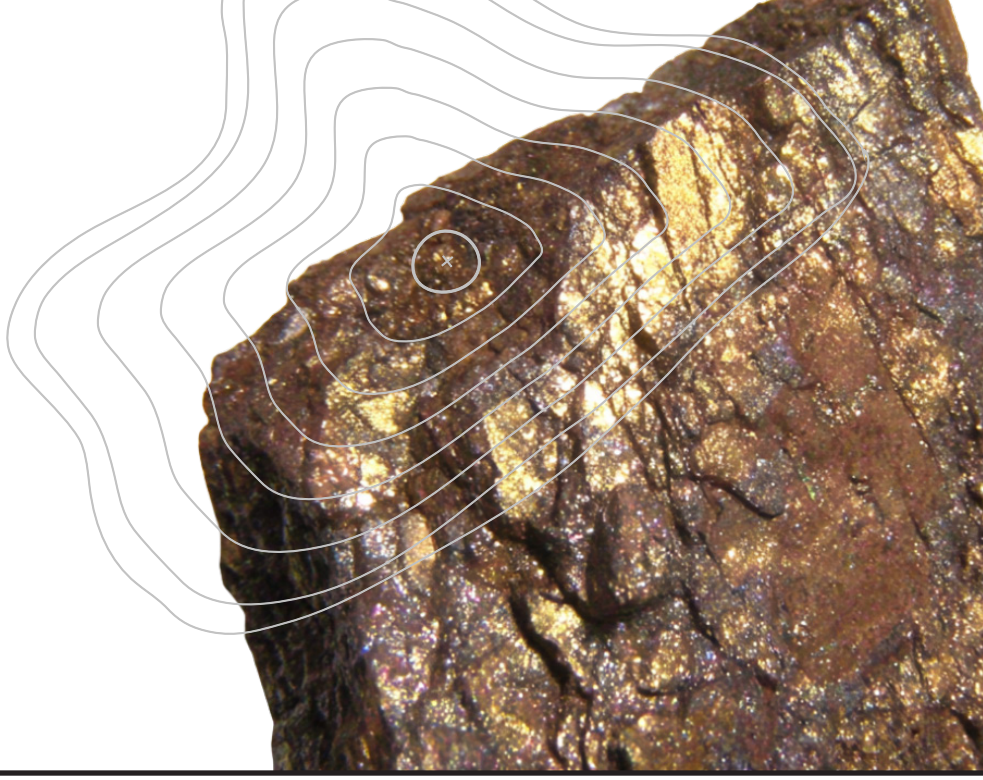
There are only a limited number of plausible pathways for closing this gap. One is to license Chinese technology, which Beijing is increasingly unwilling to permit and which would preserve strategic dependency. A second is to develop alternative process routes through sustained public research and development, a strategy that would require substantial investment over at least a decade. A third is to recruit Chinese trained or otherwise highly experienced engineers through targeted immigration and structured knowledge transfer, drawing in part on the small number of non-Chinese facilities operating at commercial scale.[3]

The financing tools currently being deployed mostly address capital formation rather than operating performance. Equity from Canada's Critical Minerals Sovereign Fund, concessional finance from the Brazilian Development Bank (BNDES) and the Brazilian Innovation Agency (Finep), U.S. International Development Finance Corporation (DFC) financing, and co investment from the U.S. Department of Defense all reduce the cost and risk of building facilities. They do not directly solve the question of whether those facilities can sell into real markets at prices that are competitive with Chinese products. And this distinction is crucial. A facility can be built with public support and still remain commercially fragile. Standards-based markets may allow responsible producers to capture some premium. Yet a governance premium is not the same as cost parity. A likely premium of 5 to 15% does not bridge an operating cost disadvantage of 20 to 40%. Standards help create access. They do not by themselves guarantee industrial viability.

For this reason, the missing instrument in much of the current allied toolkit is not another capital vehicle. It is some form of per unit operating support, whether in the form of production tax credits, minimum price guarantees, or tariff arrangements that raise the landed price of Chinese product. The Inflation Reduction Act came closest to this logic.[4] It is now under revision. Canada has not fully filled that gap. Brazil has not filled it either. Until one or both governments commit more explicitly to durable operating support, the commercial viability of non Chinese processing at scale will remain uncertain.

04.

Human Capital Gap



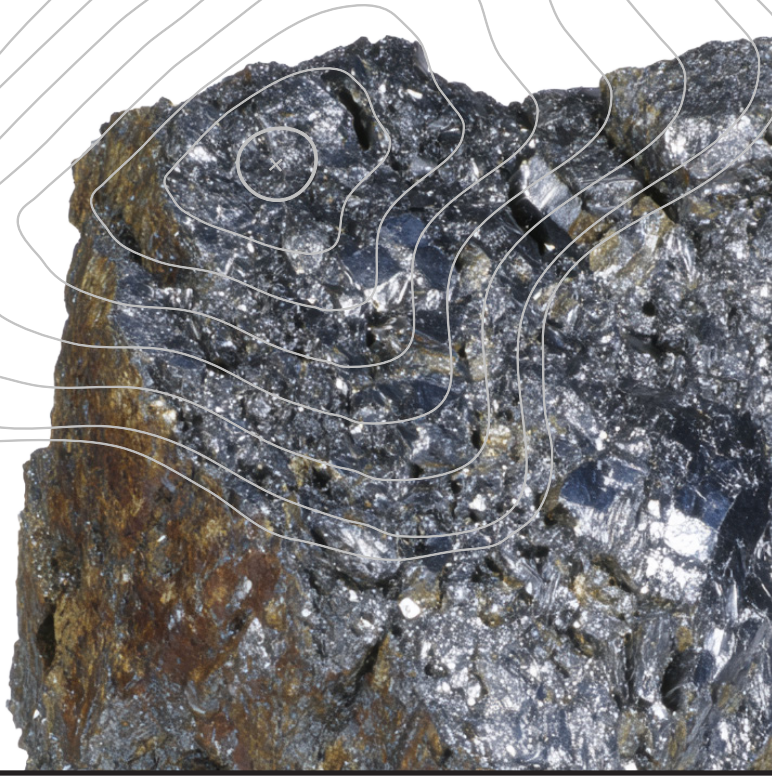
The technology gap also has a human dimension that policy frameworks often understate. Midstream industries depend on a relatively narrow but highly specialized set of skills. These include hydrometallurgy, solvent extraction, process chemistry, recovery optimization, and plant level troubleshooting. Such capabilities are not built quickly. Canada retains substantial expertise in metallurgy and mining engineering, albeit less so with respect to rare earth processing.[5] Brazil has strong technical institutions and significant industrial depth. Yet in both countries the bench of engineers and technicians with direct experience in advanced rare earth separation and related chemical processing remains thin when measured against the requirements of commercial scale operation.

This is not only an educational issue. It is also institutional and cumulative. Expertise of this kind develops through repeated operation, process adjustment, and the internal transmission of practical knowledge across teams and generations. Once such activity has been offshored for decades, rebuilding it becomes slow and difficult. Three decades of offshoring midstream activity to China produced a generational gap in Western hydrometallurgical engineering that cannot be closed by capital deployment alone. A serious critical

minerals strategy must therefore place human capital at the center of the analysis. Graduate programs, vocational training, targeted immigration pathways, credential recognition, secondments, and industry linked curricula are not secondary additions. They are foundational to industrial competitiveness.

A structured Canada Brazil human capital initiative focused on critical minerals processing would therefore be a strategic rather than marginal intervention. It could include joint graduate programs, technical exchanges, vocational curricula, fast-track credentialing for process engineers with relevant operational experience, secondments to operating facilities, structured knowledge transfer arrangements with selected companies, and coordinated recruitment of highly specialized process engineers. The point is not simply to produce more training. It is to rebuild the institutional conditions of industrial learning.

“A serious critical minerals strategy must put human capital at its core. Graduate programs, vocational training, targeted immigration pathways, credential recognition, and industry-linked curricula are not secondary—they are the foundation of industrial competitiveness.”



05.

Geoeconomic Instruments

The toolkit being deployed by major powers to shape critical minerals supply chains has expanded substantially since 2022, moving well beyond traditional trade and investment policy. Specifically, export controls have shifted from an exceptional measure to a routine instrument of supply chain statecraft. China's escalating controls across 2023 to 2025 have been matched, imperfectly but directionally, by U.S. controls on advanced semiconductor technology. The interaction of these regimes is creating de facto technological decoupling in strategic materials, as Chinese-origin processing technology becomes increasingly difficult to access for actors within the U.S. alliance framework (Global Trade Alert, 2025).

Investment screening has intensified across the G7 and G20. Canada's Investment Canada Act has been used to block or condition Chinese investment in critical mineral companies, following similar moves in Australia, Germany, and the United States. Ownership of upstream assets by Chinese state-linked entities can translate into leverage over supply regardless of where those assets are physically located. Brazil has been more cautious, reflecting its historically neutral posture toward great-power competition.

Investment screening is increasingly central to critical minerals and rare earths because ownership, control, and influence over mines, processing facilities, logistics, and long-term offtake arrangements can generate strategic leverage even where production formally remains in market economies. In this sense, screening is not a general argument against foreign capital, but a selective tool for determining whether foreign investment expands domestic capability or entrenches external control over sensitive value chains. Canada has moved much further in this direction.[6] Canada's deficit is that its regime still operates largely on a reactive, case-by-case basis and is better developed at blocking problematic acquisitions than at shaping preferred ownership structures, protecting processing know-how, or coordinating investment rules with allies.

Brazil's approach remains more permissive and less institutionalized. Official policy emphasizes openness to foreign investment in critical minerals, especially where it supports technology transfer and value-chain upgrading, but Brazil does not yet have a dedicated national-security screening regime for critical minerals comparable to Canada's.[7] The result is not an absence of oversight, but the absence of a targeted framework for distinguishing between commercially useful participation and strategically problematic control over deposits, processing capacity, infrastructure, or exclusive offtake. A balanced recommendation for both countries would be to combine openness with transparent selectivity: Canada should refine and coordinate its screening architecture, while Brazil should establish a tailored review mechanism for critical minerals and rare earths focused on strategic assets, midstream processing, and long-term supply dependence rather than broad protectionism

Industrial subsidies and procurement rules have been transformed, particularly since January 2025. In the United States, the IRA's clean energy provisions now face repeal or modification, and the climate rationale has been stripped away. What has replaced it is a security-first architecture built around executive authority such as orders accelerating domestic mining, Section 232 investigations into copper and processed critical minerals, and a DFC redirected toward allied supply chain projects (White House, 2026, 2025a, 2025b). The EU's Critical Raw Materials Act, by contrast, retains its structured demand targets and single-source concentration thresholds, a more stable framework for partner countries seeking long-term market access. This divergence between an unstable U.S. framework and a more durable EU one is strategically significant for both Brazil and Canada.

What no allied government has yet addressed systematically is the distinction between capital formation and operating economics. Sovereign funds, development finance, and co-investment reduce the cost of building processing facilities. They do not bridge the operating cost gap between Western and Chinese processors in commercial markets. Per-unit production support–tax credits, minimum price guarantees, or tariff equivalents–remains the missing instrument in the allied toolkit, and its absence is the most significant gap between stated ambition and practical commercial viability.

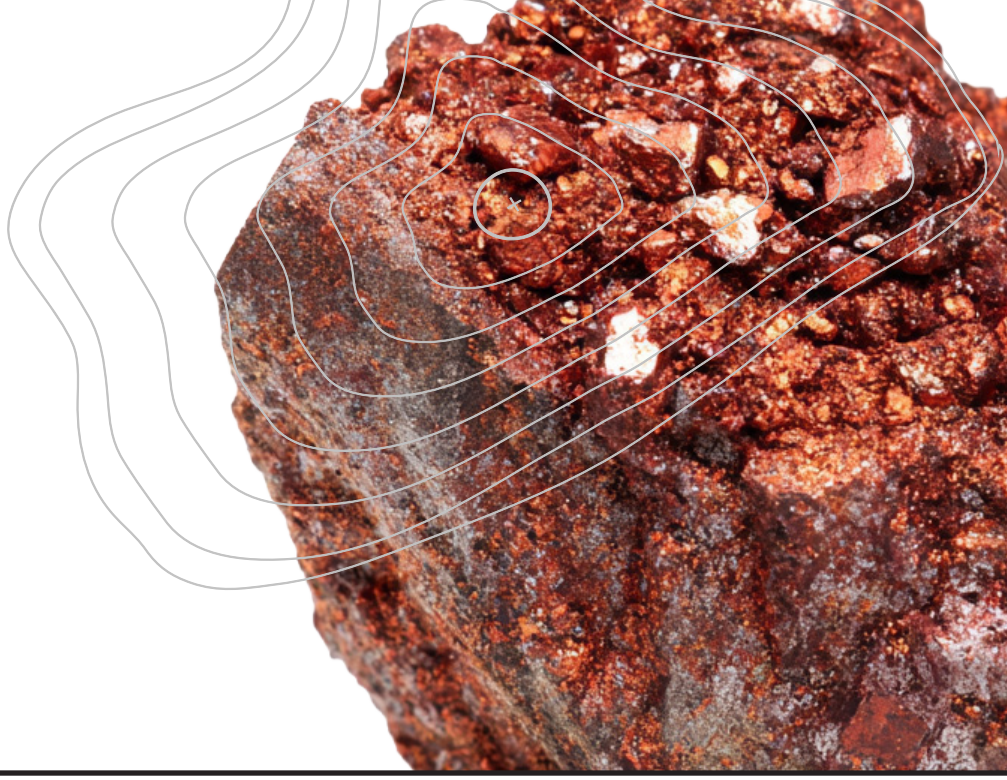
Development finance is being deployed at unprecedented scale. The DFC's commitment of up to USD 565 million for Serra Verde's Brazilian rare earth project illustrates how development finance now functions as a direct instrument of supply chain diversification (Serra Verde 2026). This momentum deepened in April 2026, when USA Rare Earth announced a $2.8 billion acquisition of Serra Verde—the largest rare earths transaction on record—structured around a 15-year offtake agreement covering 100% of production of the four magnetic rare earths and combining U.S. government entities with private capital. The Serra Verde investment is significant as a capital instrument, but its contribution to competitive commercial viability depends on whether per-unit operating support follows the capital commitment into the Brazilian processing sector—a condition that has not yet been met.

Standards and traceability may prove the most durable instruments of all, because they define the terms on which access to major markets is granted. The G7 Roadmap to Promote Standards-Based Markets for Critical Minerals commits G7 countries to aligned performance criteria covering human rights, Indigenous rights and Free, Prior and Informed Content (FPIC), emissions disclosure, and traceability (Natural Resources Canada, 2025). Governance quality is becoming a form of market power. It is not, however, a substitute for cost competitiveness. As noted in Section 3, a governance premium of 5 to 15% does not bridge a 20 to 40% operating cost disadvantage. Standards create necessary conditions for market access; they do not create sufficient conditions for commercial viability.

“Standards and traceability define the terms on which access to major markets is granted, with the G7 Roadmap establishing aligned criteria covering human rights, Indigenous rights, FPIC, emissions disclosure, and traceability. Governance quality is becoming a form of market power—but it is not a substitute for cost competitiveness.”

06.

Shifting Geometries of Alliances



The most important structural shift in global minerals governance over the past three years is not any single agreement or investment but the emergence of a new geometry of alignment–overlapping, plurilateral, and issue-specific–gradually replacing the assumption of a single open global market. Brazil and Canada illustrate the two dominant strategies within this new order.

Canada has bet on allied architecture, stacking bilateral MoUs, G7 alliances, and multilateral frameworks into a coordinated Western supply chain with explicit security logic. Brazil has pursued strategic multi-alignment–Chinese capital in lithium, American DFI in rare earths, French offtake, EU trade frameworks–all without exclusivity. One country is building walls; the other is building doors. The contrast is real, but by 2025-2026 both countries are converging around the same set of allied partners even as their underlying strategies remain distinct.

The G7 Production Alliance, launched by Canada at the Kananaskis Summit in June 2025, has become the central multilateral instrument for allied minerals coordination. Through two rounds of announcements, it mobilized CAD 18.5 billion in Canadian critical minerals projects across twelve allied partners, with a focus on standards-based markets, traceability,

and demand certainty (Natural Resources Canada, 2026a). In February 2026, U.S. Secretary of State Marco Rubio announced FORGE as the successor to the Minerals Security Partnership, with South Korea in the chair, signaling further institutionalization of the allied minerals architecture.

The EU-Mercosur Association Agreement, signed in Asunción on January 17, 2026 after twenty-five years of negotiation, is one of the most geopolitically significant agreements of this decade for critical minerals in the Americas (MercoPress, 2026a). It eliminates or reduces tariffs on more than 91% of bilateral commerce, establishes a dedicated critical minerals chapter, and binds compliance with the Paris Agreement as an essential clause. South America holds 56.7% of global lithium reserves, 36.3% of copper, and 94.1% of niobium (USGS, 2026). The EU's single-source concentration target under the Critical Raw Materials Act cannot be met without deep engagement with Mercosur (UPI, 2026).

Bilateral arrangements have proliferated in parallel. The February 2026 U.S. Critical Minerals Ministerial alone saw ten new frameworks signed. India and Brazil concluded a cooperation MoU covering exploration, processing, refining, and recycling. Canada signed bilateral frameworks with India, Argentina, and Australia. And during President Lula's visit to Hannover in April 2026, Brazil and Germany signed a joint declaration committing both governments to joint research and development across the full critical minerals production chain. Also agreed was a bilateral funding program for national institutions and companies by end-2026, reinforcing Brazil's role as a pivotal node in the emerging European critical minerals architecture. The pace of agreement-making is creating a dense web of commitments that will increasingly shape which countries operate as preferred partners in project development and financing.

“The EU-Mercosur Association Agreement, signed after 25 years of negotiation, eliminates or reduces tariffs on more than 91% of bilateral commerce, establishes a dedicated critical minerals chapter, and binds compliance with the Paris Agreement as an essential clause.”

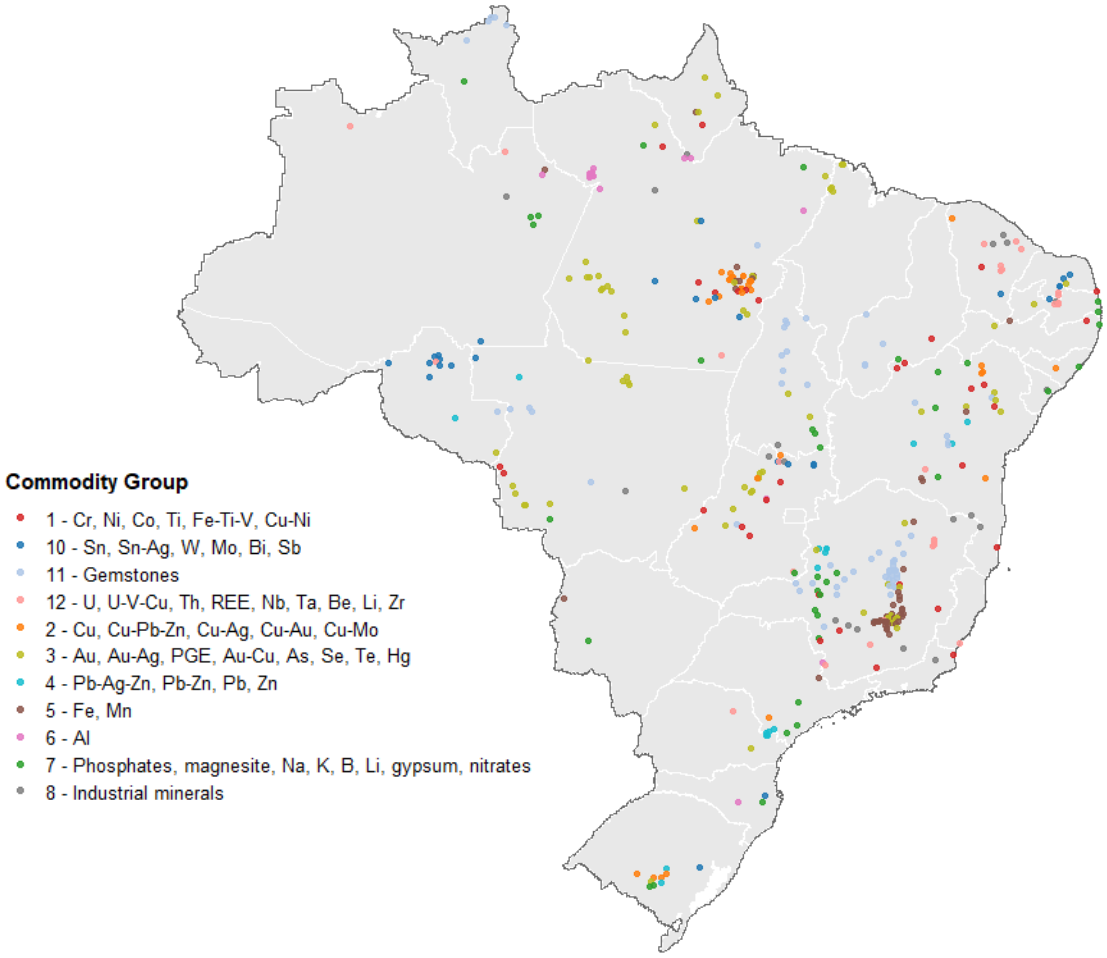
07.

Brazil from Geological Potential to Strategic Actor

Brazil occupies a paradoxical position in the global minerals landscape. It holds extraordinary reserves. Yet its share of global processing remains limited, and the dominant direction of raw material exports continues to point toward China. In the first quarter of 2025, Brazilian copper exports to China rose by 180%, manganese by 310%, and ferronickel by 253%, underscoring the structural depth of that relationship (DatamarNews, 2025). Brazil is rich in the ground, but it has not yet translated that wealth into comparable influence across the value chain.

The Lula government has made clear that Brazil should not remain merely a raw material exporter. High level engagement with the United States in late 2025 emphasized that participation in critical minerals frameworks must involve technology transfer and local processing rather than simple extraction. This position reflects a broader industrialization strategy centered on value chain ascent and higher skill employment.

Figure 2. Critical minerals in Brazil



Brazil's domestic policy has become more concrete. The Ten-Year Plan for Mineral Resources Research (PlanGeo) for 2026-2035 prioritizes geological mapping focused on strategic minerals (Serviço Geológico do Brasil, 2025). BNDES and Finep launched a BRL 5 billion public call in January 2025 for business plans linked to strategic minerals transformation and sustainable materials for energy transition value chains (BNDES, 2025). Project MagBras, which brings together more than 28 companies including Stellantis and Vale, represents an important early effort to build rare earth magnet production capacity.

The Centre for Rare Earths Innovation, Technology and Recycling (CRITR) facility in Minas Gerais is another significant step (ASX, 2025). Yet these remain demonstrator scale initiatives rather than fully commercial midstream platforms.[8]

Brazil is no longer treating critical minerals as a peripheral mining issue, and recent policy moves suggest a more serious effort to link extraction to industrial upgrading.[9] Even so, the gap between ambition and implementation remains significant. The country is clearly in motion, but it is not yet institutionally or commercially positioned

to assume that midstream and downstream expansion will follow automatically from upstream strength. That transition will depend on whether Brazil can align public finance, licensing and regulatory coordination, technology access, and socially legitimate territorial governance around a coherent long-term strategy.

Institutional constraints remain serious. By December 2025, around 100,000 mineral exploration areas were reportedly pending auction at the National Mining Agency, which suspended a planned critical minerals auction citing budgetary limits (Mining.com, 2025; Northern Miner, 2025). Licensing uncertainty, infrastructure deficits, and uneven state capacity continue to slow implementation. Brazil's 2026 election adds further uncertainty, compounded by an unsettled legislative environment. There are 13 competing bills under congressional review and some legislators have advanced proposals to create a state-owned critical minerals company—widely referred to as 'TerraBras'—though the government has moved to distance itself from the idea.

There is also a broader strategic dimension. Brazil's longstanding preference for strategic autonomy means that it is wary of arrangements that could reduce its room for maneuver among major powers. This posture is not simply ideological. It is a calculated asset. Brazil participates in multiple minerals forums while resisting exclusivity. It welcomes Western development finance while maintaining deep commercial ties with China. Chinese investment in Brazilian lithium moved ahead without major controversy, including BYD's 2023 acquisition of mineral rights in Minas Gerais and investment in Atlas Lithium (Teixeira, 2025; Atlas Lithium, 2024).

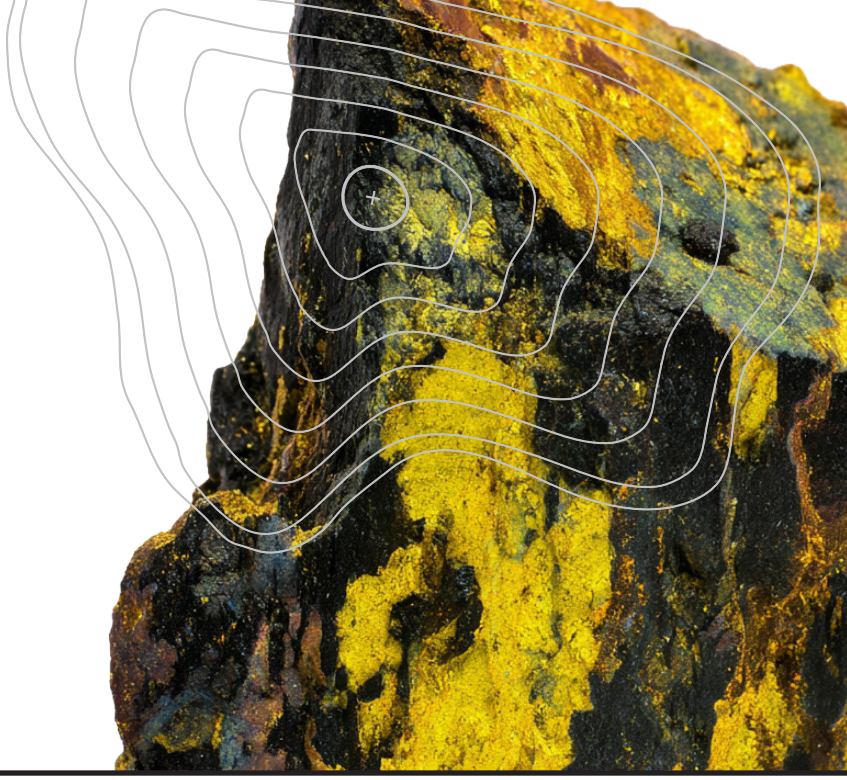
At the same time, the DFC's Serra Verde commitment indicates growing U.S. interest in redirecting at least part of Brazil's mineral trajectory (Fastmarkets, 2026).[10] Yet autonomy without industrial strength can become a form of vulnerability. Roughly 95% of Brazilian spodumene and effectively all of its rare earth output were still moving to Chinese processing facilities by early 2026 (Fastmarkets, 2026). Brazil's commercial openness increases flexibility, but also embeds dependence and generates political and legal risks.[11]

The Amazon intensifies this complexity. Significant critical mineral potential lies in or near areas where Indigenous rights, biodiversity governance, and climate commitments intersect. Thousands of applications to exploit energy transition minerals are pending in the Brazilian Amazon, many overlapping Indigenous lands and conservation areas (Muggah, 2026c). Conflicts over environmental licensing and consultation processes, including Federal Public Prosecutor interventions in lithium related cases, highlight the governance risks of rapid expansion without robust legitimacy (Fastmarkets, 2026).

Brazil's challenge is therefore not merely to produce more. It is to convert extraordinary geological advantage into industrial capability and strategic leverage without undermining the social and environmental legitimacy that will increasingly shape access to premium markets.

08.

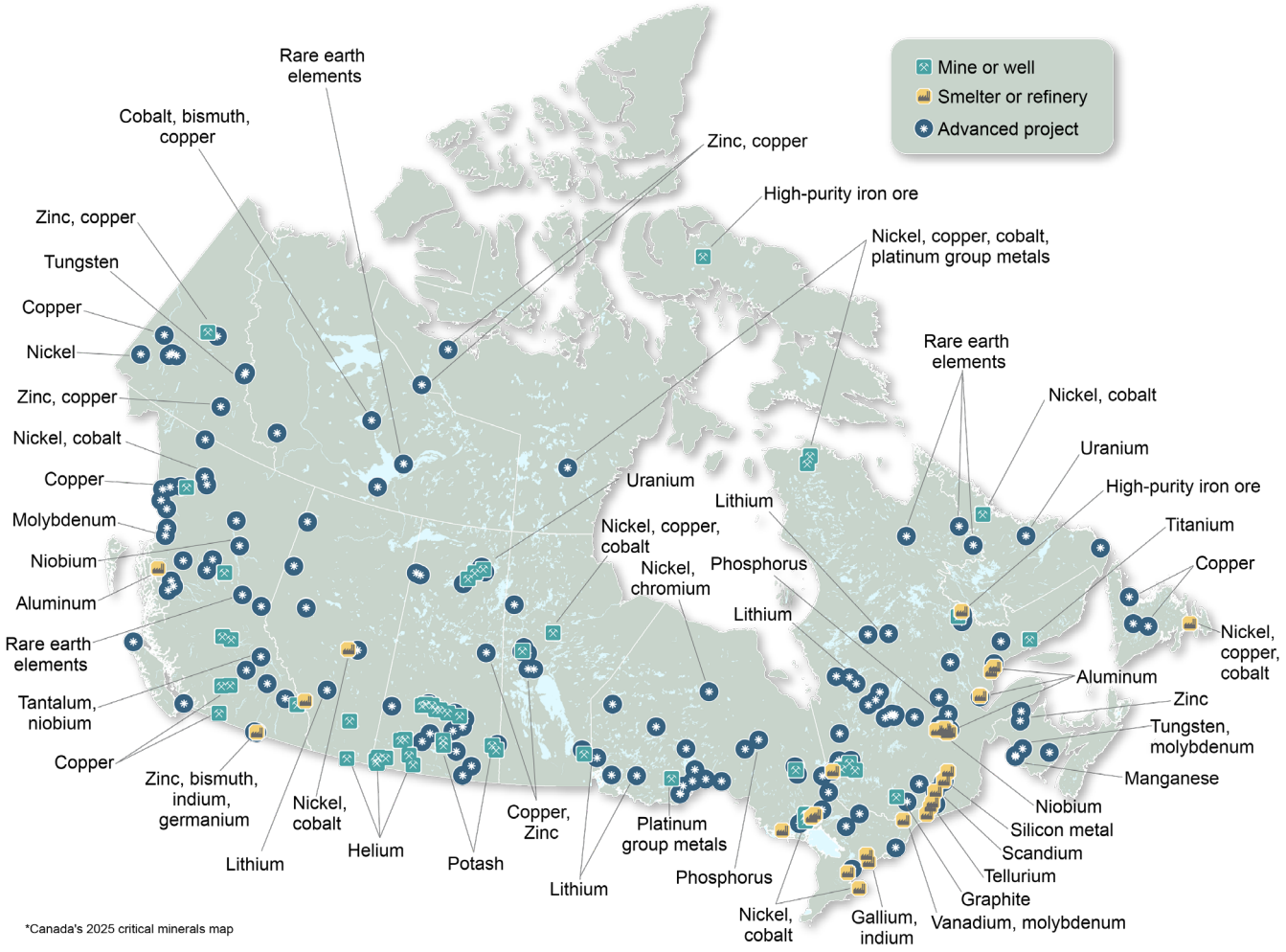
Canada from Supplier to Rule Shaper



Canada occupies a different position. Its strength lies less in geological scale comparable to Brazil and more in political trust, regulatory credibility, mining finance depth, and alignment with allied supply chain initiatives. That position rests on a long history of supplying strategic minerals to industrial powers and on the institutional reputation it has built over decades.

Canada's critical minerals strategy has become much more concrete since 2023. Its policy mix includes exploration support, enabling infrastructure, public finance, geoscience, stockpiling powers, investment screening, export control capacity, and leadership in standards based markets. The CAD 2 billion Critical Minerals Sovereign Fund, the CAD 1.5 billion First and Last Mile Fund, and additional funds for international research partnerships announced at PDAC 2026 reflect a substantial public commitment (Natural Resources Canada, 2026a).

Figure 3. Critical minerals in Canada



Yet Canada still faces the same core industrial economics problem discussed earlier. Public equity and debt support can help projects get built. They do not automatically bridge the cost gap between Canadian processors and Chinese incumbents selling into commercial markets. The gap left by the uncertain future of North American production credits has not yet been fully filled by equivalent Canadian measures.

Canada has also moved quickly to embed critical minerals within a broader national security framework. The second round of the G7 Production Alliance announced in March 2026 brought total capital mobilization under the alliance to CAD 18.5 billion (Natural Resources Canada, 2026a). The February 2026 Defence Industrial Strategy further integrated critical minerals into national security planning (Canada, 2026b). At the same time, Canada's shift in investment screening has been stark.

The approval of Zijin's acquisition of Neo Lithium in 2021 became a turning point, and Ottawa's 2022 divestment orders against Chinese linked firms marked a decisive policy reversal (Cision, 2021).

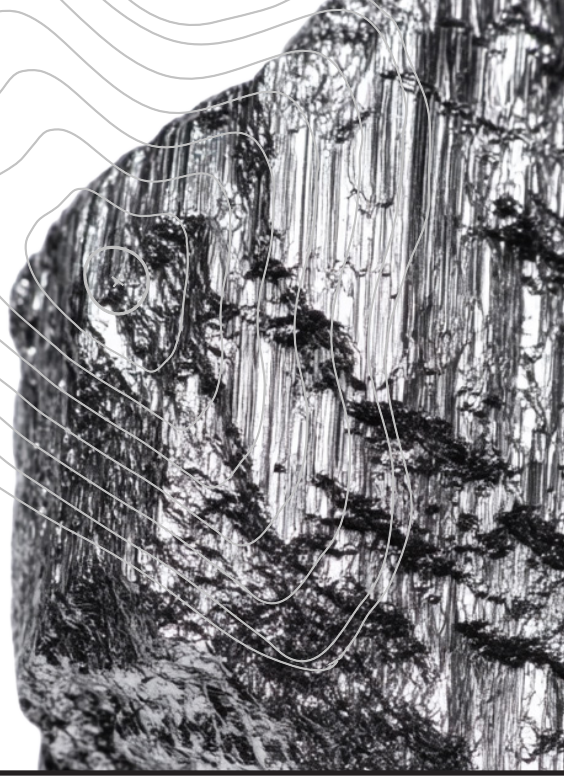
Canada's effort to make Indigenous partnership a structural differentiator is strategically significant. The legal and constitutional framework is comparatively advanced, and new funding streams have been created to support rights holders in consultation processes. Yet the gap between architecture and practice remains real. Ontario's 2025 Bill 5, which created special economic zones that could exempt projects from elements of provincial and environmental law, illustrates the tension between strategic urgency and community legitimacy (Legislative Assembly of Ontario, 2025).

Canada's broader vulnerability lies in the tension between deep alliance integration and exposure to American unilateralism. It is Washington's most trusted minerals partner, yet it is also vulnerable to the very trade tools that the United States is developing to secure strategic autonomy. The resulting dilemma has no easy resolution. Canada gains leverage through integration, but integration also constrains room for maneuver.

> *"Canada has also embedded critical minerals within a broader national security framework. The second round of the G7 Production Alliance, announced in March 2026 brought total capital mobilization under the initiative to CAD 18.5 billion."*

09.

Convergence, Divergence, and the Case for Coordination



The recent trajectories of Brazil and Canada reveal two different strategic responses to the same emerging order. Canada has moved toward managed decoupling from China, reinforced allied integration, and rapid institution building. Brazil has pursued a more open and competitive neutrality, combining Chinese commercial engagement with growing Western finance and broader diplomatic flexibility.

These strategies are different, but they are not unrelated. By 2025 and 2026, the two countries were converging in some respects around similar Western and allied architectures, even as their underlying strategic logics remained distinct. Both are now interacting with the same widening set of partners, including India, the European Union, and U.S. backed finance mechanisms. Both are also facing the same underlying challenge, namely how to remain indispensable without becoming structurally subordinate to a single bloc.

That shared exposure is the strongest argument for more deliberate bilateral coordination. Canada's strengths in standards, allied credibility, and governance frameworks can help Brazil access premium markets without forcing Brazil to abandon its autonomy tradition. Brazil's scale, Global South reach, and non aligned diplomatic capital can help Canada diversify beyond an increasingly uncertain U.S. centered order.

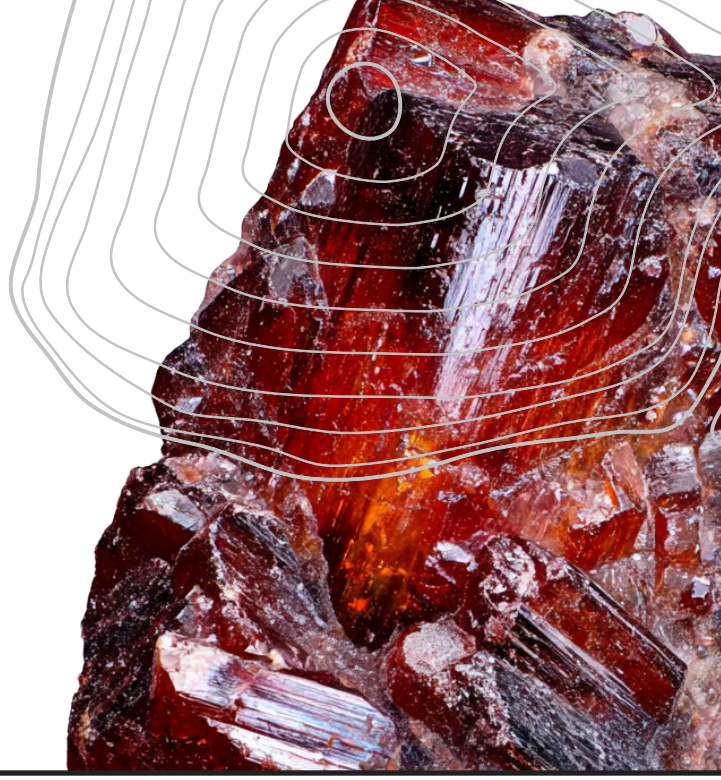
The relationship is not without difficulty. Vale's 2006 acquisition of Inco and the long strike that followed left an enduring residue of mistrust concerning labor relations, management culture, and community expectations in the Canadian context (Vale, 2006; Stewart, 2009). But historical friction does not negate present strategic complementarity. It clarifies the need for a more careful institutional design.

The bilateral case rests on three points. First, both countries need to demonstrate that their minerals can satisfy the governance standards now demanded by major buyers. Second, both face the same midstream bottleneck, but with meaningful complementarity in sectors such as rare earths and battery materials. Third, both are navigating a multipolar demand environment in which no single relationship can define their long term position.

“Canada and Brazil are strategically complementary. Both share a midstream bottleneck, but also complementarities in rare earths and battery materials, while navigating a multipolar demand environment where no single relationship will define their long-term position.”

10.

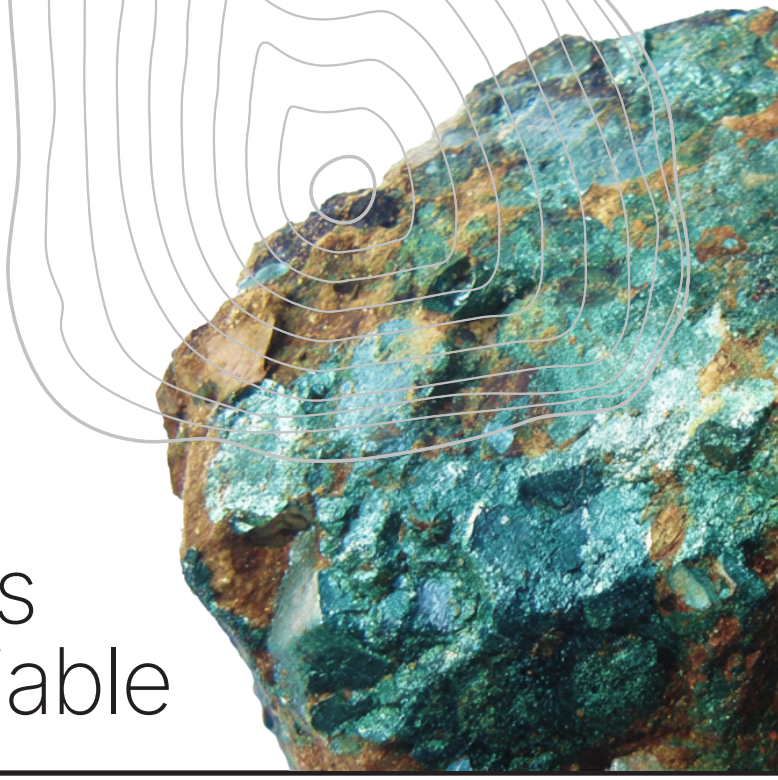
Mercosur, Europe, and the Regional Dimension



The EU Mercosur Association Agreement, signed in January 2026, should be understood not simply as a trade agreement with geopolitical implications, but as a geopolitical agreement with trade mechanisms attached. For Europe, it offers diversified access to a region central to reducing excessive single source dependence under the Critical Raw Materials Act. For Brazil, it creates expanded market access and some protection for domestic value addition strategies (MercoPress, 2026a; MercoPress, 2026b; UPI, 2026).

This has implications for Canada. Canadian companies operating in Brazil could benefit from a well governed Brazil Europe minerals corridor. At the same time, there is a risk that European investment and demand could flow toward Brazilian production in ways that bypass Canadian midstream capacity. The strategic answer is not direct competition. It is complementarity. A well designed Canada Brazil partnership could position Canadian technical capacity, standards expertise, and market relationships as assets within a wider Brazil Europe and Mercosur framework.

A broader hemispheric agenda is also increasingly relevant. Port infrastructure, logistics, permitting, environmental monitoring, workforce development, and emergency response protocols all shape the resilience of regional supply chains. The Americas remain under integrated in these respects. More structured coordination could reduce shared bottlenecks and improve collective leverage.



11.

Indigenous and Community Rights as a Strategic Variable

No serious treatment of critical minerals governance in the Americas can relegate Indigenous and community rights to a compliance annex. These issues are central to project viability, investor confidence, and market access. Global Witness documented at least 29 fatal cases linked to mining and land and environmental defense in 2024 alone (Global Witness, 2025). At the same time, major standards-based market initiatives increasingly require meaningful consultation and, in practice, credible evidence of free, prior, and informed consent.

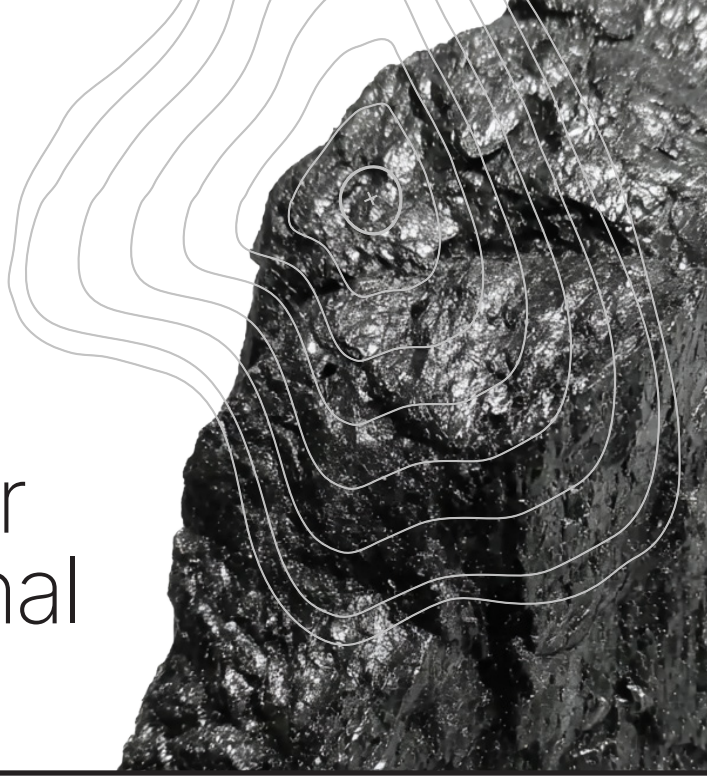
Canada and Brazil approach this challenge from different starting points. Canada's constitutional and treaty framework is comparatively robust, but procedural compliance does not automatically generate trust or durable partnership. Brazil's formal protections are significant on paper, yet implementation is uneven and remains subject to political contestation. In both countries, the strategic lesson is the same: projects that lack social legitimacy become slower, costlier, more vulnerable to litigation, and less attractive to buyers and financiers.

Social legitimacy, however, depends on more than consultation, procedural rights, or even credible evidence of consent. In many mining regions, the central political question is whether local communities are fairly compensated for the cumulative impacts associated with extraction and processing, including ecological damage, competition over water, infrastructure stress, public health pressures, unequal distribution of royalties and rents, the social and fiscal consequences of mine closure, and the long-term development trajectory of the territory itself. These pressures are further compounded where mining supply chains intersect with organized crime, illicit economies, corruption, or weak local oversight, all of which can erode trust, distort public decision-making, and intensify insecurity around projects.

For this reason, a bilateral Canada-Brazil agenda should treat Indigenous and community engagement as part of its core strategic design. Joint work on consent protocols, community agreements, co-investment models, long-term benefit sharing, and transparent management of royalties and public revenues would improve legitimacy in both countries and strengthen their competitiveness in standards-based markets.

A serious critical minerals strategy must therefore link legal compliance not only to consultation and rights protection, but also to stronger local institutions, better territorial planning, anti-corruption safeguards, and clearer arrangements for post-extractive development. Without that broader institutional foundation, even projects that satisfy formal procedural requirements may fail to secure durable legitimacy in the territories where they operate.

“In many mining regions, the central political question is whether local communities are fairly compensated for the cumulative impacts of extraction and processing, including environmental damage, water competition, infrastructure strain, public health pressures, unequal distribution of revenues, and long-term development outcomes.”



12.

Practical Options for Bilateral and Regional Engagement

Several policy options follow directly from the analysis.

The first is to build a dedicated Canada-Brazil corridor focused on midstream development. This should prioritize refining, chemical conversion, and selected components in areas where both countries have upstream strength but limited processing capability, especially rare earths and battery materials. The corridor should combine project preparation, technical collaboration, and long-term offtake arrangements around a narrower set of jointly identified priority projects rather than a broad and diffuse agenda. It should also include a joint technology development program with a dedicated R&D budget, a realistic ten-year timeline, and structured mechanisms for knowledge transfer from operating non-Chinese facilities. Capital co-investment without technology co-development will not produce competitive processing capacity, so the corridor should be designed to move projects from feasibility to demonstration to commercial scale under shared benchmarks and regular bilateral review.

A second option is to establish a selective cooperation platform built around differentiated bottlenecks and complementary strengths. The aim would be to generate practical gains in four areas. First, in standards, traceability, and responsible sourcing, Canada brings stronger experience in governance frameworks and alliance coordination, while Brazil contributes scale, project diversity, and a major producing economy in which these frameworks can be applied and adapted. Second, in public finance and project de-risking, Canada offers a more developed architecture of sovereign, alliance-based, and blended-finance instruments, while Brazil offers a pipeline of projects and a larger platform for testing how finance can support value-chain deepening. Third, in human capital and technical training, both countries would benefit from joint graduate programs, technician exchanges, pilot-plant secondments, and applied training in hydrometallurgy, refining, and process engineering. Fourth, in technology and pilot processing, Brazil offers industrial ambition and demonstrator initiatives, while Canada contributes project-structuring experience, standards interoperability, and stronger links to allied commercial networks.

The third is to align standards and traceability systems so they function across major markets. The aim should not be formal uniformity for its own sake but interoperability that lowers compliance costs for buyers, financiers, and producers while preserving flexibility across jurisdictions. In practice, this means prioritizing a limited set of common metrics for traceability, emissions disclosure, consultation standards, and responsible sourcing that can travel across North American, European, and allied markets. Standards alignment is a necessary condition for premium market access, especially where producers seek to differentiate themselves from higher-risk supply. It is not, however, a substitute for cost competitiveness, where Chinese product will continue to set the price floor regardless of governance differentiation until operating cost parity is achieved.

The fourth is to place Indigenous and traditional community engagement at the center of cooperation rather than on its margins. Any bilateral framework should include active participation by Indigenous and community representatives and should link public finance to meaningful consultation, benefit sharing, and long-term local participation. A joint workstream on FPIC protocols, co-investment models, community agreements, and multi-generational benefit arrangements would improve legitimacy in both markets while also reducing project delay, litigation risk, and reputational vulnerability. The strategic point is not only normative. In increasingly standards-based markets, territorial legitimacy is becoming a condition of investor confidence and buyer access, especially for projects located in sensitive ecological and social areas.

A fifth is to treat Mercosur not only as a trade bloc but as an industrial platform. Canada should view engagement with the Mercosur architecture as a way to support local value creation, regional processing capacity, and standards-compatible access to major markets rather than as a narrow trade diplomacy exercise. In practical terms, this means identifying a

small number of value-chain segments in which Canadian capital, technical expertise, or service providers could support industrial upgrading in Brazil and the wider region, while building on the bilateral Canada-Argentina MoU as an entry point. A Mercosur-facing strategy would also help position Canada within a regional ecosystem that is becoming increasingly important to Europe and other partners seeking diversified minerals supply.

The sixth is to distinguish clearly between capital support and operating support in blended finance design. The former now exists in meaningful form through equity, concessional debt, and first-loss tranches from BNDES, Finep, Canada's Sovereign Fund, and allied DFIs. The latter does not, at sufficient scale, in the current allied toolkit. A joint Canada-Brazil blended finance facility should therefore do more than mobilize capital at the front end. It should include mechanisms such as production tax credits, minimum price guarantees, or other per-unit operating support instruments that can bridge the gap between competitive Chinese pricing and the actual cost of production at Western facilities during the period before process cost parity is achieved. Without that distinction, projects may be built but remain commercially fragile once they enter the market.[12]

The seventh is to build hemispheric resilience beyond individual projects. Logistics, infrastructure, workforce training, environmental monitoring, and shock response systems all shape the security of mineral supply chains, and resilience is built through systems rather than isolated flagship investments. A practical agenda would include port and rail coordination, emergency planning for maritime disruption, shared approaches to environmental monitoring, and contingency planning for bottlenecks in freight, energy, or key inputs. The objective should be to reduce the vulnerability of the wider regional supply chain to geopolitical shocks, licensing delays, and infrastructure failures that can undermine otherwise viable projects.

The eighth is to elevate workforce development into a first-order strategic priority. The most binding constraint on competitive midstream capacity in both countries is not geology alone and not capital alone. It is the shortage of engineers and technicians with the operational experience needed to run complex hydrometallurgical and chemical processing systems at commercial yield. A bilateral Canada-Brazil Human Capital Program could therefore encompass joint graduate programs, vocational training curricula, targeted immigration pathways, fast-track credential recognition, pilot-plant secondments, and structured exchanges between firms, technical institutes, and public agencies. The purpose should be not simply to create more training slots, but to rebuild the institutional conditions of industrial learning that sustained midstream capability requires over time.

Conclusion

Critical minerals competition in the mid 2020s is at once a market transition, a governance challenge, and a geopolitical realignment. For Brazil and Canada, the stakes are substantial. Both possess the geological endowments and institutional foundations needed to become more than suppliers. Both could become system shaping actors whose decisions about processing, standards, partnerships, and industrial policy influence how the Americas connect to an increasingly fractured global economy.

The institutional architecture of mineral security is being built now. The G7 Production Alliance, the EU Mercosur agreement, the growing web of bilateral memoranda, and the wider U.S. centered minerals security framework are already laying down rules and expectations that will constrain future choices. Countries that engage early and coherently will have more influence over these arrangements than those that arrive later.

Both Brazil and Canada face versions of the same core challenge. Each must remain valuable to multiple partners without becoming captured by any single one. Brazil's autonomy tradition is a real asset, but only if it is coupled to industrial capability. Canada's deep allied integration offers security and market access, but it also requires diversification to avoid excessive dependence on an increasingly unpredictable U.S. centered policy environment.

None of this will be achievable without confronting the industrial economics problem that still sits beneath much of the strategic discussion. China's processing dominance is not merely a product of subsidy or weak regulation. It is also the product of accumulated technology, institutional learning, and human capital. Closing that gap will require public support for research and development, serious bilateral investment in workforce capacity, and more explicit recognition that operating economics, not only capital formation, will determine whether non-Chinese processing capacity can survive.

If pursued seriously, bilateral and regional cooperation could allow both countries to move from geological fortune to industrial agency, capturing more value domestically, building more resilient supply chains, and helping define the governance standards that will shape trusted minerals markets over the coming decade. If not, both risk remaining in a familiar position for resource rich states, essential to others but only marginal in shaping the rules of the game.

The urgency of this agenda has been amplified by the convergence of major geopolitical shocks. The wars in Ukraine and the Middle East have demonstrated that supply chain disruption is no longer a tail risk but a structural condition of the global economy (Muggah 2026a, 2026b). In such an environment, countries that fail to secure resilient access to critical minerals will not only face economic vulnerability but strategic dependence.

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Annex 1. Key Critical Minerals Agreements Involving Brazil and Canada with U.S. and Chinese Firms (2015–2026)

The table below maps the major commercial and diplomatic engagements that have shaped the minerals positions of Brazil and Canada over the past decade. Read together, the entries reveal three structural patterns. First, Chinese commercial activity in Canada peaked between 2019 and 2022 and has since been largely blocked or reversed through the Investment Canada Act, while Chinese investment in Brazil continued to grow under a more open regime.

Second, U.S. government capital shifted decisively from commercial co-investment toward large-scale development finance, reflecting Washington's prioritization of allied supply chain security. Third, the pace of bilateral MoU-making accelerated sharply in 2026, with Canada signing new frameworks with India, Australia, and others in the space of weeks—a sign that the alliance minerals architecture is moving from aspiration to institution.

Brazil

Year	Type	Parties	Minerals	Detail
2023	Investment (China, private)	BYD subsidiary → Coronel Murta plots, Minas Gerais	Lithium	BYD acquired mineral rights for 852 hectares in Brazil's Lithium Valley
2023	Investment (China)	Chengxin Lithium + Yahua Industrial Group → Atlas Lithium	Lithium	USD 50 million investment in Minas Gerais lithium project
2025-2026	DFI financing	U.S. DFC → Serra Verde, Goiás	Rare earths	Up to USD 565 million–single largest U.S. minerals investment in Brazil; initial USD 465M board approval August 2025, expanded package finalized February 2026.
2024	Market interest	BYD, CATL, Volkswagen / Sigma Lithium	Lithium	Discussions on potential acquisition or supply agreement.
2025	Industrial partnership	MagBras consortium (Stellantis, Vale + 36 other firms and institutions)	Rare earths	Pilot toward integrated extraction-to-magnet value chain; launched July 14, 2025.
2025	Public finance	BNDES / Finep	Multiple	BRL 5 billion call for strategic minerals business plans.
2025	Offtake agreement	Brazilian Rare Earths + Carester (France)	Rare earths	Ten-year offtake and processing technology agreement, Bahia.
2026	Bilateral MoU	U.S.-Brazil (Critical Minerals Ministerial)	Multiple	Framework engagement; Brazil participates without exclusivity commitment.
2026	Bilateral MoU	India-Brazil	Rare earths, lithium	Covers exploration, processing, refining, and recycling.
2026	Trade/investment framework	EU-Mercosur Association Agreement	Multiple	Signed Asunción, January 17; includes dedicated critical minerals chapter.

Brazil

continuation

Year	Type	Parties	Minerals	Detail
2026	Acquisition	USA Rare Earth → Serra Verde, Goiás	Rare earths	$2.8 billion cash and stock and 15-year offtake SPV with U.S. government pending Supreme Court review.
2026	Bilateral declaration	Brazil (MCTI) – Germany (Federal Ministry of Research, Technology, and Space)	Multiple	Covers research and development cooperation with bilateral direct funding for national institutions and companies.

Canada

Year	Type	Parties	Minerals	Detail
2019	Acquisition (allowed; later criticized)	Sinomine → Tanco Mine, Manitoba	Lithium, caesium, tantalum	Canada's only operating lithium mine; output shipped to China.
2021	Acquisition (allowed; later criticized)	Zijin Mining (SOE) → Neo Lithium Corp.	Lithium	CAD 960 million; no security review; triggered parliamentary investigation.
2022	Divestment order	Ottawa → Sinomine (Power Metals Corp.), Chengze Lithium (Lithium Chile), Zangge Mining (Ultra Lithium)	Lithium, caesium, tantalum	Three Chinese state-linked firms ordered to divest under Investment Canada Act; Sinomine's Tanco Mine ownership was not affected.
2022–2024	Co-investment	U.S. DoD → Fortune Minerals, Lomiko Metals	Cobalt, graphite	USD 14.9 million to strengthen North American supply chains.
2022–2024	Co-investment	U.S. DoD → Electra Battery Materials	Cobalt	USD 20 million for North America's first cobalt sulfate refinery.
2022	Bilateral framework	U.S.-Canada Joint Action Plan	Multiple	Led to multiple DoD investments in Canadian mining and refining.

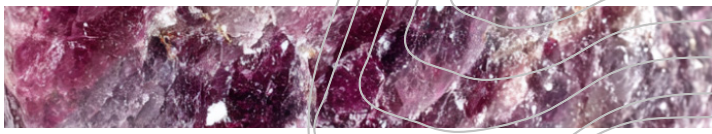
Canada

continuation

Year	Type	Parties	Minerals	Detail
2025	Public fund	Canadian Government – Critical Minerals Sovereign Fund	Multiple	CAD 2 billion; equity, debt, and offtake instruments.
2025	Multilateral	G7 Production Alliance Round 1	Multiple	CAD 6.4 billion across 26 projects with 9 allied partners (October 31, 2025).
2025	Bilateral MoU	Canada-Argentina	Multiple	Covers exploration, processing, and investment facilitation.
2026	Multilateral	G7 Production Alliance Round 2	Multiple	CAD 12.1 billion across 30 new partnerships with 12 allied partners (March 2, 2026).
2026	Bilateral MoU	Canada-India	Multiple	Covers exploration, processing, investment facilitation, and ESG standards; signed during PM Carney's bilateral visit to India.
2026	Bilateral agreements	Canada-Australia	Multiple	Signed during PM Carney's address to Australian Parliament, March 5, 2026; Australia also joined the Critical Minerals Production Alliance.
2026	Multilateral	FORGE launch (successor to MSP)	Multiple	South Korea in the chair through June 2026; U.S., Canada + allies; announced February 4, 2026 Critical Minerals Ministerial.
2026	Investment	U.S. DFC → Orion Critical Minerals Consortium	Multiple	USD 600 million mobilizing additional USD 1.2 billion; USD 1.8 billion public-private partnership with Orion Resource Partners and Abu Dhabi's ADQ; closed January 2026.

Annex 2. Selected Critical Minerals Deals: Brazil and Canada (2021–2026)

The table below summarizes key transactions and partnerships since 2021, organized to highlight the contrast between the two countries' trajectories. Canada's deals show a consistent pattern of Chinese divestment followed by allied re-investment and rapid multilateral institution-building. Brazil's record reflects continued Chinese commercial engagement alongside growing Western development finance interest, without the security-screening architecture that has reshaped Canada's investment landscape. The most striking similarity between the two countries is their parallel turn toward Western multilateral architecture in 2025–2026: both are now participating in FORGE, both have signed bilateral MoUs with India, and both are receiving significant U.S. and European development finance. The two countries are converging on the same set of allied partners, even as their underlying strategies remain distinct.



Year	Country	Deal / Partnership	Minerals	Partners / Value	Type
2021	Canada	Zijin Mining acquires Neo Lithium Corp.	Lithium	Zijin Mining (China, state-linked listed co.), CAD 960m.	Acquisition
2022	Canada	Ottawa orders Chinese divestments	Lithium, caesium	Sinomine → Power Metals; Chengze → Lithium Chile; Zangge → Ultra Lithium.	Divestment order
2022	Canada	U.S.-Canada Joint Action Plan on Critical Minerals	Multiple	U.S. and Canadian governments.	Bilateral framework
2022	Canada	Minerals Security Partnership launch	Multiple	U.S., EU, Canada, Japan, South Korea, Australia, others.	Multilateral framework
2023	Brazil	BYD acquires mineral rights, Coronel Murta	Lithium	BYD / Exploração Mineral do Brasil (China), 852 ha, Minas Gerais.	Private acquisition
2023	Brazil	Chengxin Lithium + Yahua invest in Atlas Lithium	Lithium	Chengxin Lithium + Sichuan Yahua (China), USD 50m (USD 10m equity + USD 40m prepayment)	Minority investment + offtake
2024	Canada	U.S. DoD invests in Fortune Minerals & Lomiko Metals	Cobalt, graphite	U.S. DoD / Defense Production Act, USD 14.7–14.9m; NRCan co-funding.	Co-investment
2024	Canada	U.S. DoD invests in Electra Battery Materials	Cobalt	U.S. DoD / Defense Production Act, USD 20m (Ontario cobalt refinery).	Co-investment
2025	Brazil	MagBras consortium launch	Rare earth magnets	SENAI, Vale, Stellantis, WEG + multiple mining cos.; BNDES-backed; launched July 14, 2025, Minas Gerais.	Industrial JV / demonstrator
2025	Brazil	Brazilian Rare Earths / Carester offtake	Rare earths (DyTb)	Carester SAS (France), binding 10-year offtake + engineering partnership; signed Oct 2025.	Offtake / technology

continuation

Year	Country	Deal / Partnership	Minerals	Partners / Value	Type
2025	Brazil	BNDES/Finep public call for strategic minerals	Multiple	Brazilian government, BRL 5bn.	Public finance
2025	Canada	G7 Critical Minerals Production Alliance launch	Multiple	Canada (G7 Presidency) + G7 partners; Kananaskis, June 2025.	Multilateral framework
2025	Canada	G7 Production Alliance Round 1	Graphite, REEs, scandium	Canada + 9 allied partners (France, Germany, Italy, Japan, Luxembourg, Norway, U.S., Australia, Ukraine), CAD 6.4bn; Oct 31, 2025.	Multilateral
2025	Canada	Canada-Australia Joint Declaration of Intent	Multiple	Canada, Australia; signed Nov 1, 2025, Toronto.	Bilateral declaration
2025	Canada	Canada-Argentina MoU	Multiple	Canada, Argentina.	Bilateral MoU
2026	Brazil	U.S. DFC commits to Serra Verde, Goiás	Rare earths	U.S. DFC, USD 565m (finalised Feb 2026; incl. U.S. equity stake option); Pela Ema mine, Goiás	DFI financing
2026	Brazil	EU-Mercosur Association Agreement signed	Multiple	EU Commission + Mercosur governments; signed Jan 17, 2026 (ratification pending).	Trade / investment framework
2026	Brazil	India-Brazil critical minerals MoU	Rare earths, lithium	India, Brazil; signed Feb 21, 2026 (Lula state visit, New Delhi).	Bilateral MoU
2026	Brazil	U.S. Critical Minerals Ministerial engagement	Multiple	U.S., Brazil + 54 countries; Washington DC, Feb 4, 2026.	Multilateral engagement

continuation

Year	Country	Deal / Partnership	Minerals	Partners / Value	Type
2026	Canada	Critical Minerals Sovereign Fund launch	Multiple	Canadian government, CAD 2bn; announced PDAC, March 2026.	Public fund
2026	Canada	G7 Production Alliance Round 2	Multiple	Canada + 12 allied partners, CAD 12.1bn; announced Mar 2, 2026 (PDAC).	Multilateral
2026	Canada	Canada-India critical minerals MoU	Multiple	Canada, India; signed Mar 2, 2026 (Carney visit, New Delhi).	Bilateral MoU
2026	Canada	Canada-Australia new critical minerals agreements	Multiple	Canada, Australia; Mar 4-5, 2026 (Carney address to Australian parliament); Australia joins G7 Production Alliance.	Bilateral agreements
2026	Canada	FORGE (successor to MSP) launch	Multiple	U.S., Canada, South Korea (chair) + all MSP allies; announced Feb 4, 2026.	Multilateral framework
2026	Canada	PDAC Brazil-Canada Mining Finance Roundtable	Multiple	130+ Brazilian reps, 33 mining cos., Canadian banks; BCCC/ ADIMB/ApexBrasil; Mar 1, 2026.	Business dialogue
2026	Brazil	$2.8 billion cash and stock and 15-year offtake SPV with U.S. government pending Supreme Court review.	Rare earths	USA Rare Earth → Serra Verde, Goiás	Acquisition
2026	Brazil	Covers research and development cooperation with bilateral direct funding for national institutions and companies.	Multiple	Brazil (MCTI) – Germany (Federal Ministry of Research, Technology, and Space)	Bilateral declaration

Note: Deals involving Chinese state-owned or state-linked enterprises in Canada have been subject to increasing scrutiny under the Investment Canada Act since 2022. Brazil has explicitly rejected exclusive agreements with any single partner, maintaining an open multi-partner approach.

Endnotes

1. For example, solvent extraction optimization, continuous separation cascades, precipitation chemistry, and energy recovery systems.

2. For example, China graduates roughly 10,000 a year in geology and geo-science fields. Brazil likely graduates 300-800 per year. Canada graduates roughly 900 a year with just over 1,000 masters or PhD level students enrolled in geology and earth sciences. There are as many as 150,000 Chinese experts and engineers working in critical minerals-related fields in China as compared to as many as 15,000 in Brazil and 8,000 in Canada.

3. Notably Lynas in Malaysia and MP Materials in the United States.

4. Enacted on August 16, 2022, the Inflation Reduction Act (Pub. L. 117-169) was the clearest recent U.S. attempt to align industrial policy, decarbonization, and domestic investment. By 2024–25 it had helped spur large-scale clean-energy and manufacturing announcements, but since President Trump returned to office in January 2025, parts of its implementation have been frozen, curtailed, or contested, leaving its long-term effects uncertain.

5. Canada is not yet a commercial producer of rare earth processing facilities, though it hosts large deposits and has set-up a number of pilot processing projects. See Canadian REE projects

6. Under the Investment Canada Act, Ottawa can review transactions on national security grounds, and since 2022 it has explicitly treated foreign state-owned or state-influenced investment in critical minerals as presumptively injurious in many cases, including through forced divestitures.

7. Its main formal review mechanism for foreign transactions remains competition oversight through Brazil's Administrative Council for Economic Defense (CADE) under Law No. 12.529/2011, which is designed to address market concentration rather than geopolitical dependence or strategic control over mineral supply chains.

8. Both are, however, pilot-scale demonstrators rather than operating commercial-scale facilities. The distance from pilot demonstration to competitive commercial production is precisely where Western critical minerals initiatives have most consistently stalled–not for lack of capital or geological resource, but for lack of the specialized process knowledge required to achieve competitive operating yields.

9. On 6 May 2026, Brazil's Chamber of Deputies approved PL 2.780/2024, which establishes the Política Nacional de Minerais Críticos e Estratégicos (PNMCE). The bill has since been sent to the Federal Senate for review. If enacted, it would create a governance structure for critical and strategic minerals, provide fiscal and credit incentives, establish instruments such as a mineral-activity guarantee fund, and prioritize projects linked to research, extraction, processing and transformation. The proposal has also drawn criticism from Indigenous, human-rights and socio-environmental organizations, which argue that its sustainability safeguards are secondary to an agenda of expanding mineral production. See Beatriz Roscoe and Ruan Amorim (2026) and Leocadio (2026)." Additional references need to be added. These are Roscoe, B. and Amorim, R. (2026). Lower House Passes Critical Minerals Bill, Valor International, 7 May; and Leocadio, A. (2026). PL Dos Minerais Criticos Ignora Indigenas e Meio Ambiente, Alertam Organizacoes, Revista Cenarium, 6 May.

10. The DFC's commitment of up to USD 565 million, followed by USA Rare Earth's $2.8 billion acquisition announcement in April 2026, makes Serra Verde the single largest U.S. minerals investment in Brazil and illustrates both the scale of allied interest in redirecting Brazil's minerals trajectory and the limits of capital instruments alone. Capital commitment has now been secured at considerable scale; regulatory closure has not. Whether Serra Verde produces competitive commercial output will depend on whether per-unit operating support follows the capital commitment—a condition not yet secured—and on the resolution of a constitutional challenge filed by Rede Sustentabilidade with Brazil's Supreme Court, which constitutes a non-trivial risk to deal completion. Both conditions should form part of any bilateral negotiation over the project's commercial and policy framework.

11. The legal and political risks surrounding that openness became more concrete in April 2026. On April 25, Rede Sustentabilidade filed a petition with Brazil's Supreme Court seeking to suspend the Serra Verde acquisition on national security grounds, arguing that existing legislation lacks the constitutional safeguards required for transactions involving strategic mineral assets. The filing does not alter the commercial or diplomatic logic of the deal, but it introduces a non-trivial legal variable into a transaction whose closing was already contingent on regulatory approval. It also illustrates the broader tension between Brazil's openness to foreign capital and the absence of a dedicated national security screening regime for strategic mineral assets.

12. Brazil's April 2026 decision to proceed without new tax incentives, relying instead on Eco Invest blended finance auctions, reflects a reasonable judgment about upstream capital attraction. However, it does not address operating economics. A joint Canada-Brazil blended finance facility should therefore be designed from the outset to include instruments—production tax credits, minimum price guarantees, or equivalent per-unit mechanisms—that can sustain commercial viability during the period before Brazilian processing capacity achieves cost parity with Chinese incumbents.

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