USTR-2026-0034-00124927

SUBMITTED TO THE OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE

Re: Design of a Plurilateral Agreement on Trade in Critical Minerals

Docket No. USTR-2026-0034 | Submitted March 19, 2026

ALLIED BY DESIGN, VULNERABLE BY DEFAULT:

Why a Durable Plurilateral Critical Minerals Agreement Must Address Security, Digital Sovereignty, and Institutional Reliability

Balsillie Legal Advisory Centre of The Balsillie School of International Affairs

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March 19, 2026

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I. Organizational Standing and Submission Scope

The Balsillie Legal Advisory Centre of the Balsillie School of International Affairs ("BSIA") submits these comments pursuant to the Office of the United States Trade Representative's invitation for public comment on the design of a plurilateral agreement on trade in critical minerals.[1]

BSIA is a joint graduate school of Wilfrid Laurier University and the University of Waterloo, focused on global governance, international security, and the geopolitics of technology and trade. BSIA's research programs address the structural dimensions of Canada-U.S. relations, North American institutional architecture, supply chain security, and the governance of digital and critical infrastructure, precisely the dimensions this consultation must address if the resulting agreement is to achieve durable reliability.[2] The Balsillie Legal Advisory Centre provides support to scholarly and civil society entities with capacity building and technical expertise on the intersection of international trade, international business, economic statecraft, supply chains, innovation and the digital economy.

This submission does not duplicate technical and legal analysis others have provided on specific mineral deposits, processing infrastructure, or defense industrial integration. Instead, it addresses four structural dimensions that the agreement's design must incorporate if the physical supply chain it creates is to be genuinely reliable: the security relationship that makes allied supply chains trustworthy; the digital and data governance architecture that makes them operationally resilient; the institutional capacity that makes allied commitments durable across administrations and geopolitical cycles; and the clean energy infrastructure that makes allied processing economically viable and strategically independent and that relieves the constrained U.S. grid of electricity-intensive industrial demand, freeing that capacity for the data centers and AI infrastructure that American

[1] Office of the United States Trade Representative, "Request for Comments: Design of a Plurilateral Agreement on Trade in Critical Minerals," Docket No. USTR-2026-0034 (2026).

[2] The Balsillie School of International Affairs is a graduate school jointly operated by Wilfrid Laurier University and the University of Waterloo in Waterloo, Ontario, Canada. BSIA's research programs address global governance, international economic policy, security, and technology governance, with particular depth in Canada-U.S. relations, North American institutional architecture, and the governance of emerging technologies. See www.balsillieschool.ca

technological leadership requires. This single addition converts the energy dimension from a Canadian advantage argument into a bilateral strategic interest argument, and it does so in the scope statement where the USTR reader first encounters the submission's analytical frame. Each dimension is necessary. None is sufficient alone. Together, they define what reliability means in the context of a critical minerals agreement.

II. The Central Proposition: Physical Supply Chain Security Is Necessary but Not Sufficient

The 2025 National Security Strategy calls for reindustrialization, defense industrial base revival, and the use of allied economic power to counteract predatory practices.[3]

The plurilateral critical minerals framework is typically conceived as a physical supply chain problem: China controls the processing; allied nations must build alternative processing capacity; the agreement should incentivize that construction. This framing is accurate as far as it goes.[4] It does not go far enough.

A supply chain is only as reliable as the weakest link in its governance architecture. Physical processing capacity in allied jurisdictions is a necessary condition for supply chain security. But a processing facility built on foreign-owned technology, governed by data rules that expose allied intelligence assets to unilateral foreign legal compulsion, and staffed by governments that lack the institutional capacity to understand what they have committed to, is not a reliable allied asset. It is a fragile one, fragile in precisely the ways the National Security Strategy is designed to prevent.

The Balsillie Legal Advisory Centre's submission identifies four governance design dimensions that the agreement's architecture must incorporate if the physical supply chain it creates is to be genuinely reliable:

- the institutional advisory capacity that allied supply chain partners require to make and keep durable commitments — a design requirement that applies to all parties and that the United States has both the model and the incentive to champion;

[3] National Security Strategy of the United States (Washington, DC: White House, November 2025), 13-14, 21.

[4] International Energy Agency, Global Critical Minerals Outlook 2025 (Paris: IEA, 2025), 10-18; Bipartisan Policy Center, The Missing Midstream: Identifying Investment Challenges for American Critical Mineral Processing Projects (Washington, DC: Bipartisan Policy Center, October 2025); Heidi Crebo-Rediker and Martijn Rasser, Leapfrogging China's Critical Minerals Dominance, Special Report No. 101 (New York: Council on Foreign Relations, February 2026), 1-8; Daniel Manyoki and Andrew Olson, Modernizing Canada's Trade Approach: Recommendations for Strategic Trade Policy (Waterloo, ON: Balsillie School of International Affairs, 2026); Patrick Leblond, Strategic Trade and Economic Security: Implications for Canada (Waterloo, ON: Centre for International Governance Innovation, 2023).

- the data and digital governance architecture, including the governance of CLOUD Act jurisdiction over supply chain intelligence systems built on U.S.-jurisdiction cloud infrastructure;
- the reliability dimension of allied supply chain commitments over time; and
- the clean energy architecture that determines both the economic viability and the strategic independence of allied processing capacity.

The energy dimension of this critique has a concrete and immediate application to the reindustrialization agenda at the center of the NSS. The administration's AI Action Plan states that AI is "the first digital service in modern life that challenges America to build vastly greater energy generation than we have today" and that "American energy capacity has stagnated since the 1970s." Domestically re-shoring electricity-intensive critical minerals processing, aluminum, battery-grade nickel, rare earth element separation, would impose on the constrained U.S. grid precisely the electricity demand that those data centers and AI facilities also require. This is not an argument against reindustrialization. It is an argument for precision in deciding which industries to reindustrialize on U.S. soil, and which to source from allied surplus capacity that has no competing American use. The agreement's processing corridor architecture embodies that precision. It is not a concession to Canadian industrial interests. It is a rational allocation of continental energy resources in the service of American strategic priorities. Each is a design question, not a peripheral concern.

III. Canada as the Essential Allied Partner: Security, Proximity, and Strategic Endowment

A. The Bilateral Security Foundation

A foundational argument of this submission is that national security and economic security are no longer separable domains. The present threat environment demands a posture that "reflects the indistinguishable nature of national security and economic security."[5] Canada's unique combination of mineral endowment, sovereign clean energy, and deep security architecture integration positions it as an asset in this environment of consequence to the alliance as a whole — one whose strategic value increases, not decreases, as the definition of national security expands to encompass economic and

[5] Ann Fitz-Gerald and Halyna Padalko, “Canada’s Opportunity to Redefine Its Defence, and Its Value to Allies” (Centre for International Governance Innovation, 2025) (arguing that national security and economic security are indistinguishable in the present threat environment, that Canada’s data, AI, cybersecurity, and cloud computing infrastructure are strategic assets requiring fierce protection, that “data loss is strategic loss,” and that Canada’s cold climate, clean energy, and stable political environment uniquely position it as a hub for NATO data storage, retrieval and analysis aligned with data sovereignty principles, making it a strategic partner of consequence for collective security).

technological dimensions. The assets that require protection in this environment are not only soldiers and borders; they are data, algorithms, cloud infrastructure, and the supply chains that connect allied industrial capacity. An agreement that secures mineral flows while leaving the digital and institutional architecture of those flows unprotected has addressed the symptom while leaving the disease in place.

The Canada-U.S. security relationship is the deepest bilateral defence integration in the world. NORAD, Five Eyes, NATO, and the shared continental defence architecture represent a century of institutional trust-building that provides the foundation on which any critical minerals agreement between Canada and the United States will be built.[6]

This security foundation matters for the critical minerals agreement in a way that is often understated in supply chain policy discussions. The strategic value of sourcing critical minerals from Canada is not only that Canada is physically proximate, though it is, or that Canada has extraordinary endowments of the minerals the National Security Strategy identifies as essential, though it does. The strategic value is that Canada is a treaty ally, a Five Eyes partner, and a co-architect of the continental defence architecture within which the minerals will be mined, processed, and delivered. That makes Canadian supply chain commitments qualitatively different from commitments made by non-allied producers, however cooperative their political relationship with the United States may be at any given moment.

The plurilateral agreement's architecture should reflect this distinction. An agreement that treats allied producers, Canada, Australia, the United Kingdom, Japan, as interchangeable participants in a supply chain management exercise misses the strategic significance of the alliance relationship. The agreement should be designed around the security relationship, not merely alongside it.

B. Canada's Critical Minerals Endowment in Context

Canada possesses world-class endowments across the full spectrum of critical minerals the National Security Strategy identifies as essential to reindustrialization and defense industrial base revival: rare earth elements in the Ring of Fire and Northwest Territories; graphite in Quebec and Ontario; lithium in Ontario; titanium in Quebec; nickel, cobalt, and copper across the Shield; and the processing infrastructure, nascent but expandable, that could support allied refining capacity at scale.[7]

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[6] Agreement Between the Government of Canada and the Government of the United States of America on North American Aerospace Defense Command (NORAD Agreement), renewed May 12, 2006, in perpetuity; National Security Strategy of the United States, supra note 3, at 4; Government of Canada, Department of National Defence, Strong, Secure, Engaged: Canada's Defence Policy (Ottawa: Department of National Defence, 2017), 53-61.

[7] Natural Resources Canada, Canada's Critical Minerals List (Ottawa: Natural Resources Canada, 2021); Government of Canada, "Government of Canada Releases Updated Critical Minerals List," June 10,

What Canada's resource endowment represents as strategic potential, Canada's committed public investment is beginning to translate into operational architecture. At the 2026 PDAC Convention, Canada announced over $3.6 billion in new programs and investments for critical minerals development, building on the $6.4 billion in critical minerals projects unlocked through the Critical Minerals Production Alliance in October 2025.[8] In aggregate, Canada's committed federal critical minerals investment program, spanning the CMSF, FLMF, the Clean Technology Manufacturing Investment Tax Credit, the Critical Mineral Exploration Tax Credit, and associated programs, represents over $14 billion in deployed or committed Canadian federal support directed at allied supply chain development. Canada is not asking the United States to rely on a declaration of intent. It is looking for the United States to design a plurilateral agreement whose institutional provisions allow an already-committed financial architecture to be deployed with the precision and durability the agreement's objectives require. The institutional advisory capacity deficit documented in Section IV is not a measure of Canadian commitment; it is a constraint on the effectiveness of translating that commitment into durable supply chain obligations.

These endowments exist within a stable, rules-based legal system, a transparent regulatory framework for resource development, and a shared continental infrastructure network. They exist alongside a world-leading research and innovation economy, Canada's AI research clusters in Toronto, Waterloo, Montreal, and Edmonton, its university-industry partnerships in materials science and processing technology, and its established capacity to develop the digital tools that modern supply chains require.

Canada's strategic value to the alliance extends beyond mineral endowment. Canada's cold climate, which reduces thermal disruptions to computing systems, its abundant and affordable clean energy, and its stable political and legal environment uniquely position Canada as a hub for NATO data storage, retrieval, and analysis aligned with data sovereignty principles.[9] The plurilateral agreement's design should recognize this

2024; Natural Resources Canada, Critical Minerals in Canada (NRCan background briefing materials describing chromite and associated deposits in the Ring of Fire region of northern Ontario); Natural Resources Canada, Canada's Critical Minerals Strategy: Progress Update, web publication, February 27, 2026; National Security Strategy of the United States, supra note 3, at 21; Evan Smith and Joshua Wright, Canada's Critical Minerals Capacity (Waterloo, ON: Balsillie School of International Affairs, 2026).

[8] Natural Resources Canada, "Government of Canada Invests to Unlock Canada's Critical Minerals Advantage," News Release (Ottawa: NRCan, March 3, 2026) (reporting over $3.6 billion in new programs and investments announced at the 2026 PDAC Convention, including up to $165.2 million for 22 Canadian projects unlocking over $434 million in project capital; noting $6.4 billion in critical minerals projects unlocked through the Critical Minerals Production Alliance in October 2025; reporting that between 2020 and 2024 Canada reduced its net import reliance for 38 percent of previously net import-reliant critical minerals).

[9] Fitz-Gerald and Padalko, "Canada's Opportunity to Redefine Its Defence, and Its Value to Allies," supra note 5. See also Ann Fitz-Gerald and Hugh Segal, "Reimagining National Security in Canada: The Challenge of Dynamic Change" (Centre for International Governance Innovation, 2021) (arguing that

dimension of Canada's value: a Canada that provides both mineral resources and allied digital infrastructure, powered by the same sovereign clean energy grid, is a more resilient and more strategically consequential partner than a Canada that provides minerals alone.

What Canada has lacked is not resource endowment or research capacity. What it has lacked is the institutional architecture to translate those assets into durable supply chain commitments that the United States can rely upon over time. The agreement's design should be directed, in part, at closing this gap.

The strategic significance of Canada's processing endowment must be assessed against the most consequential recent demonstration of how state-directed, non-market investment can displace allied-jurisdiction processing capacity. Non-market capital has financed the expansion of Indonesian nickel smelting from four facilities to approximately fifty-five over the course of a decade, producing a global nickel surplus that has materially depressed nickel prices and directly undermined the commercial viability of Canadian allied-jurisdiction processing, including the Sudbury basin operations this submission identifies as a cornerstone of the proposed processing corridor.[10] This pattern illustrates a supply chain displacement vector that the plurilateral agreement's architecture must address: the deployment of non-market capital in third-party jurisdictions to develop processing capacity at distorted economics, which then competes with allied-jurisdiction processing without meeting the carbon, data governance, or institutional reliability standards the agreement envisions. The Low-Carbon Processing Standard proposed in Recommendation 7 addresses this vector to some extent: processing in coal-intensive electricity grids carries a carbon footprint that would trigger the carbon content adjustment mechanism. The substantial transformation and rules-of-origin architecture proposed in Recommendation 9 provides the legal mechanism; the carbon content adjustment provides the economic one. Together, they are the agreement's primary structural defence against the replication of this displacement pattern across other critical mineral categories.

C. Middle-Power Architecture and the Canada-Australia Model

The Canada-Australia Joint Statement on Critical Minerals Cooperation of March 2026 illustrates the architecture of middle-power producer alignment that is emerging alongside

the threat environment underpinning Canada's national security has shifted fundamentally and that any recalibration of Canada's national security system must integrate economic and technological dimensions alongside traditional defence).

[10] Ontario Mining Association, Recommendations for the 2026 Ontario Provincial Budget: Strengthening Ontario's Mining Sector (Toronto: OMA, 2026) (identifying the state-directed expansion of Indonesian nickel smelting capacity from four to approximately fifty-five facilities over approximately one decade as the primary driver of global nickel price depression and the most significant near-term competitive threat to Ontario's integrated nickel and cobalt processing sector).

the U.S.-led plurilateral framework.[11] That alignment takes on additional strategic significance in light of the existing bilateral critical minerals partnership between the United States and Australia, which has positioned the two nations as complementary partners in allied supply chain development. The Canada-Australia Joint Statement represents the consolidation of a producer-side counterpart to the U.S.-led framework: where the U.S.-Australia relationship establishes the demand-side and investment architecture, Canada-Australia coordination is developing the supply-side and standards architecture that will determine whether middle-power production is actually reliably interoperable with U.S. industrial needs. The plurilateral agreement's design should recognize and formalize this emerging architecture rather than treating it as incidental to bilateral U.S. relationships.

Canada and Australia share a set of structural characteristics that make them natural counterparts in allied supply chain architecture: large mineral endowments; strong sovereign investment frameworks; robust democratic institutions; deep integration in Five Eyes and allied security architectures; and shared concern about the long-term sustainability of supply chain commitments that depend on political alignment rather than institutional durability.

The plurilateral agreement should be designed to strengthen this middle-power producer network, not merely to coordinate bilateral relationships with the United States. A network of allied producers with genuine sovereign capacity, robust advisory institutions, and shared data governance frameworks is a more resilient supply chain architecture than a hub-and-spoke model in which each producer’s commitments depend on its bilateral relationship with Washington. The agreement should create the institutional conditions for middle-power coordination, not merely accommodate it as an afterthought.

D. Energy Security and the Electricity-Minerals Nexus

D.1 Electricity Intensity as the Defining Economic Variable in Critical Minerals Processing

Critical minerals processing is among the most electricity-intensive industrial activity in the modern economy. Unlike extraction and mining, which are primarily capital- and labour-intensive operations, the downstream processing stages, electrolytic reduction, hydrometallurgical refining, solvent extraction, electrowinning, and chemical separation, are fundamentally electricity-consuming operations whose economic viability is driven, in substantial measure, by the cost and carbon intensity of the electricity supply that powers

[11] Canada-Australia Joint Statement on Critical Minerals Cooperation, Ottawa-Canberra, March 5, 2026; Christopher Kukucha, Canada’s Role in Emerging Supply-Chain Alliances (Waterloo, ON: Balsillie School Policy Brief Series, 2023).

them.[12] The geographic distribution of processing capacity in the global critical minerals industry is not simply a function of proximity to ore deposits or end-use manufacturing. It is, in significant part, a function of electricity economics. China's dominance in critical minerals processing reflects not only state subsidies and scale economies but the systematic advantage conferred by access to inexpensive, if coal-intensive, electricity over decades of state-directed industrialization.

Aluminum smelting via the Hall-Héroult electrolytic reduction process provides the paradigm case and the strategic proof of concept. Producing one kilogram of primary aluminum requires approximately 13 to 16 kilowatt-hours of electricity, making aluminum one of the most electricity-intensive manufactured products in the world economy. For a single large aluminum smelter with annual production capacity of 500,000 tonnes, this implies electricity consumption comparable to a city of several hundred thousand people. The direct consequence is that electricity cost constitutes between 30 and 40 percent of the total production cost of primary aluminum, making the price, reliability, and carbon content of electricity the single most decisive operational variable in aluminum smelting economics.[13]

Canada has been demonstrating the strategic model this submission proposes for more than a century. Canada's aluminum industry, concentrated in Quebec's Saguenay-Lac-Saint-Jean region, where Hydro-Québec's hydroelectric generating capacity provides abundant, competitively priced, and near-zero-carbon electricity, is one of the most commercially competitive and lowest-carbon aluminum sectors in the world.[14] Canadian primary aluminum carries a carbon footprint of approximately 2 to 3 kilograms of carbon dioxide (CO_2e) per kilogram produced, compared to a global average of approximately 11 to 12 kilograms, which reflects the coal-intensive processing that dominates the global

[12] International Energy Agency, Global Critical Minerals Outlook 2024 (Paris: IEA, 2024), 89-107 (analyzing electricity consumption requirements across the critical minerals processing value chain, documenting the role of electricity cost and carbon intensity as structural determinants of processing competitiveness across mineral categories including aluminum, nickel, cobalt, rare earth elements, and lithium).

[13] International Aluminum Institute, "Aluminum Sector Greenhouse Gas Pathways to 2050," IAI Sustainability Update (London: IAI, 2023); International Aluminum Institute, Primary Aluminum Production Statistics (London: IAI, 2024) (documenting Hall-Héroult process electricity requirements of 13-16 kWh/kg and global average carbon footprint of primary aluminum at approximately 11-12 kg CO_2e per kg; Canadian hydropower-sourced production at approximately 2-3 kg CO_2e per kg). For Canadian production volumes and provincial distribution, see Natural Resources Canada, "Aluminum," Minerals and Mining Statistics (Ottawa: NRCan, 2024).

[14] Hydro-Québec, Annual Report 2023 (Montréal: Hydro-Québec, 2024) (reporting installed hydroelectric generating capacity exceeding 36,000 MW; Quebec electricity system generating approximately 99 percent of its power from hydroelectric sources, with grid emissions intensity of approximately 1.8 g CO_2e per kWh). The Saguenay-Lac-Saint-Jean aluminum smelting operations of Rio Tinto Aluminum and Aluminerie Alouette provide the principal examples of large-scale, near-zero-carbon aluminum smelting at industrial scale in Canada.

industry.[15] The plurilateral agreement has an opportunity to scale this proven model to the full spectrum of critical minerals for which Canada holds both the deposits and the energy advantage.

The electricity intensity dimension applies across the critical minerals categories essential to defence and advanced technology applications:

Nickel and cobalt: Producing Class I battery-grade nickel (greater than 99.8 percent purity) and co-processing battery-grade cobalt sulphate involve electrowinning and related electrochemical refining operations with substantial electricity requirements. Canada's Sudbury basin, home to the world's largest integrated nickel and cobalt processing operations, already demonstrates that allied-jurisdiction refining is both technically mature and geographically proximate to clean electricity supply.[16]

Lithium (battery-grade): Converting spodumene concentrate to lithium hydroxide monohydrate requires energy-intensive calcination, leaching, and crystallization stages whose economics are directly sensitive to electricity pricing and reliability.

Rare earth elements (REE): The separation of individual rare earth elements from mixed concentrates via solvent extraction and precipitation is among the most energy- and chemically-intensive operations in critical minerals processing. The IEA has specifically identified REE processing as a sector where energy source and cost are structurally determinative of competitive positioning.[17]

Graphite (battery-grade): Synthetic graphite production for battery anode applications requires high-temperature processing with substantial electricity requirements. Quebec's emerging graphite processing sector, supported by provincial hydroelectric capacity, is positioned to develop significant battery supply chain capacity.

Silicon (high-purity): High-purity silicon refining, like aluminum, is an electrothermal process whose economics are dominated by electricity costs. As silicon demand grows with photovoltaic and semiconductor manufacturing expansion, the clean

[15] IAI, Primary Aluminum Production Statistics, supra note 13.

[16] I EA, Global Critical Minerals Outlook 2024, supra note 12, at 89-107 (analyzing electricity consumption requirements across the critical minerals processing value chain, documenting the role of electricity cost and carbon intensity as structural determinants of processing competitiveness across mineral categories including aluminum, nickel, cobalt, rare earth elements, and lithium).

[17] IEA, Global Critical Minerals Outlook 2024, supra note 12, at 44-52 (analyzing rare earth element and lithium processing energy intensity and the structural role of energy economics in supply chain geography). See also U.S. Geological Survey, Methodology and Technical Input for the 2025 U.S. List of Critical Minerals, Open-File Report 2025-1047 (Reston, VA: U.S. Geological Survey, 2025), 12-18, identifying REE processing as among the most energy-intensive mineral processing categories.

electricity advantage of Canadian processing jurisdictions becomes increasingly relevant.

There is a further dimension to the electricity intensity argument that bears direct on United States strategic interests. Importing refined aluminum, battery-grade nickel, and other electricity-intensive processed metals is, in economic substance, an import of embodied electrical energy. Each kilogram of Canadian hydropower-smelted aluminum that enters the United States represents approximately 13 to 16 kilowatt-hours of clean, surplus Canadian hydroelectric generation that the United States could not otherwise access. The America's AI Action Plan states explicitly that “AI is the first digital service in modern life that challenges America to build vastly greater energy generation than we have today" and that "American energy capacity has stagnated since the 1970s." In this context, domestically re-shoring electricity-intensive critical minerals processing does not merely substitute domestic production for imports. It competes directly with data centers, semiconductor fabrication facilities, and AI infrastructure for the same constrained U.S. grid capacity that the administration's own AI strategy identifies as a binding constraint on American technological dominance. The plurilateral agreement's processing corridor architecture, in which electricity-intensive refining remains anchored in Canadian clean energy jurisdictions, is therefore not a concession to Canadian industrial interests. It is a rational allocation of continental energy resources that reserves scarce American grid capacity for the higher-value uses, AI, advanced manufacturing, and defense systems, that the administration's own strategic priorities demand.

The plurilateral agreement presents a design opportunity to establish a clear and legally operationalizable distinction between allied-jurisdiction, low-carbon, institutionally reliable processing and the non-market, high-carbon commodity production that existing trade remedy instruments are designed to address. Processing that meets the Low-Carbon Processing Standard proposed in this submission, produced within an allied institutional architecture, operating under the IP retention and data governance framework, and powered by sovereign clean energy infrastructure, is categorically different from the production profile those instruments target. Building that distinction explicitly into the agreement’s architecture serves the reindustrialization objectives of the 2025 National Security Strategy with greater precision than instruments that do not differentiate by security alliance membership, carbon content, or institutional reliability. The agreement’s strategic value, from a supply chain security standpoint, lies precisely in making that distinction legible as a matter of trade law.

D.2 Canada’s Clean Electricity Endowment: National and Provincial Dimensions

Canada’s electricity system is among the cleanest of any major industrial nation. Approximately 82 percent of Canada’s electricity is generated from non-emitting sources, with hydropower accounting for approximately 60 percent of total generation and nuclear

for approximately 15 percent.[18] The national average grid emissions intensity of approximately 120 to 140 grams of CO_2e per kilowatt-hour is a fraction of China's national grid emissions intensity of approximately 550 to 600 grams of CO_2e per kilowatt-hour.[19] For electricity-intensive processing operations, this carbon differential is not merely an environmental distinction. It is a structural economic difference of two to three orders of magnitude in embedded carbon content, with direct consequences for the commercial viability of processing under any serious carbon pricing architecture.

Quebec: Hydro-Québec's system, with installed hydroelectric generating capacity exceeding 36,000 megawatts, makes it one of the largest hydroelectric utilities in the world.[20] Quebec generates more than 99 percent of its electricity from hydroelectric sources, with a grid emissions intensity of approximately 1.8 grams of CO_2e per kilowatt-hour, effectively near-zero. Quebec already hosts Canada's largest aluminum smelting operations, demonstrating the technical and commercial maturity of low-carbon critical minerals processing at industrial scale. Quebec also holds significant deposits of graphite, lithium, and rare earth elements in its Abitibi and James Bay regions, creating a direct alignment between provincial mineral endowment and energy endowment.

Manitoba: Manitoba Hydro generates approximately 97 percent of Manitoba's electricity from hydroelectric sources on the Nelson River system, with total installed generating capacity of approximately 6,200 megawatts.[21] The Manitoba Innovation and Productivity Taskforce has identified Manitoba as uniquely positioned to serve as Canada's hub for sovereign allied infrastructure, where renewable clean energy, resilient power grids, and secure data systems converge.[22] The Port of Churchill, Canada's only deep-water Arctic

[18]Canada Energy Regulator, Canada's Energy Future 2023 (Calgary: CER, 2023), available at cer-rec.gc.ca (reporting approximately 82 percent of Canada's electricity generated from non-emitting sources, with hydropower at approximately 60 percent of total generation and nuclear at approximately 15 percent). See also Natural Resources Canada, Energy Fact Book 2023-2024 (Ottawa: NRCan, 2024).

[19]Environment and Climate Change Canada, National Inventory Report 1990-2022: Greenhouse Gas Sources and Sinks in Canada (Gatineau: ECCC, 2024), Part 2, Electricity Generation Annex (reporting Canada's national electricity grid emissions intensity; national weighted average approximately 120-140 g CO_2e per kWh, with very low values in Quebec, Manitoba, and British Columbia due to hydroelectric dominance, and higher values in Alberta and Saskatchewan due to natural gas generation). IEA, CO_2 Emissions in 2023 (Paris: IEA, 2024) (reporting China's electricity grid emissions intensity at approximately 560 g CO_2e per kWh, based on China's coal-dominant generation mix accounting for approximately 60 percent of total electricity generation). The IEA updates grid emissions intensity data annually at iea.org/data-and-statistics.

[20]Hydro-Québec, Annual Report 2023, supra note 14.

[21]Manitoba Hydro, Integrated Resource Plan (Winnipeg: Manitoba Hydro, 2022) (reporting approximately 97 percent of Manitoba's electricity generated from hydroelectric sources on the Nelson River system, with installed generating capacity of approximately 5,800 MW and near-zero grid emissions intensity). See also Manitoba Hydro, Annual Report 2022-2023 (Winnipeg: Manitoba Hydro, 2023).

[22] Government of Manitoba, Innovation and Productivity Taskforce, Innovation and Prosperity Report: Charting a Sovereign, Value-Added Future for Manitoba (October 2025) (recommending Manitoba as

seaport on Hudson Bay, provides a direct shipping route from the North American interior to European allied partners, bypassing both Pacific and southern Atlantic routes.

British Columbia: BC Hydro generates approximately 85 to 90 percent of British Columbia's electricity from hydroelectric sources, providing competitive industrial electricity rates and a low-carbon energy profile.[23] British Columbia's Pacific port infrastructure provides gateway access to Asian allied markets, Japan, South Korea, and Australia, and its combination of clean energy and Pacific logistics access positions it as a natural processing location for minerals with Asian-facing market destinations.

Ontario: Ontario's grid is anchored by nuclear baseload power, which accounts for approximately 50-55 percent of generation, supplemented by significant hydroelectric capacity and growing renewable installations.[24] Nuclear power, like hydro, is a non-emitting source. Ontario hosts the Sudbury basin's world-class nickel and cobalt processing infrastructure and the proposed Ring of Fire development, which contains one of the largest known chromite deposits in the world as well as significant nickel, copper, and platinum group element resources.

D.3 The Canadian Processing Corridor: An Integrated Architecture

The agreement's design can most effectively leverage Canada's electricity advantage by treating the Canada-U.S. critical minerals relationship as an integrated processing corridor, not merely a series of bilateral supply arrangements. The outlines of this corridor are already visible in Canada's existing and developing mineral and energy infrastructure:

- **Quebec node:** graphite and lithium deposits in the Abitibi and James Bay regions; world-class aluminum smelting demonstrating the commercial model; Hydro-Québec's hydro system as the energy anchor; emerging REE processing capacity.
- **Ontario-Ring of Fire node:** Sudbury basin's existing nickel, cobalt, and copper processing infrastructure; Ring of Fire chromite and polymetallic development supported by nuclear-hydroelectric grid; proximity to U.S. Great Lakes manufacturing.

Canada's hub for sovereign AI and allied infrastructure; proposing HVDC transmission lines connecting Manitoba Hydro east to Ontario and west to Saskatchewan and Alberta; identifying the Port of Churchill as Canada's Arctic seaport uniquely positioned for a modern transatlantic logistics strategy).

[23] BC Hydro, Annual Report 2023 (Vancouver: BC Hydro, 2024) (reporting BC Hydro's generation mix as approximately 85 to 90 percent hydroelectric). See also British Columbia Ministry of Energy, Mines and Low Carbon Innovation, BC Energy Regulatory filings, for current installed capacity and generation data.

[24] Independent Electricity System Operator (Ontario), 2023 Annual Report (Toronto: IESO, 2024) (reporting Ontario's grid generation mix as approximately 60 percent nuclear and approximately 24 percent hydroelectric, with wind, solar, and natural gas comprising the balance; Ontario's grid emissions intensity well below the North American average due to nuclear baseload dominance).

Manitoba-Arctic node: Manitoba Hydro's near-zero-carbon hydroelectric system; Port of Churchill's Arctic shipping access to European allied partners; proposed HVDC grid interconnection linking the national corridor. HVDC transmission technology enables bulk electricity delivery over long distances with minimal energy loss, making it the enabling infrastructure for physically integrating Canada's provincially distributed clean energy systems into a coherent allied supply chain corridor.

British Columbia-Pacific node: BC Hydro's clean energy base; Pacific port access to Asian allied markets; existing base metals mining and concentrating infrastructure.

Saskatchewan-Alberta node: Saskatchewan is the world's largest producer of high-grade uranium, anchoring allied nuclear fuel supply chains and supporting the advanced reactor programs critical to both defence applications and the clean energy transition; it is also among the world's top jurisdictions for overall mining investment.[25] Uranium is among Canada's 34 designated critical minerals, extending the corridor's strategic value beyond battery materials to allied energy security in its broadest sense. Alberta's established processing and refining capacity, combined with emerging critical minerals recovery programs from oil sands tailings, themselves a significant potential source of recoverable vanadium, titanium, and associated minerals, extends the western corridor's industrial reach. The January 2026 Western Canadian Critical Minerals Strategy Memorandum of Understanding, signed by BC, Alberta, Saskatchewan, Manitoba, and the territories, provides the institutional architecture for western corridor integration connecting Pacific port access with inland processing capacity and allied nuclear fuel supply chains.[26]

The agreement should include provisions that recognize this corridor architecture and support the infrastructure investments, particularly the HVDC grid interconnections proposed in the Manitoba Innovation and Productivity Taskforce report, which would bind

[25] Government of British Columbia et al., Memorandum of Understanding on the Development of a Western Canadian Critical Minerals Strategy (January 25, 2026), available at news.gov.bc.ca (signed by BC, Alberta, Saskatchewan, Manitoba, Yukon, Northwest Territories, and Nunavut; committing all participating governments to "advance reconciliation and create opportunities for Indigenous leadership partnership, participation and/or ownership in critical minerals development"; and identifying infrastructure planning and investment needed to maximize mineral extraction, processing, and export capacity as a shared priority) (noting Alberta's "strength in processing and refining" and Saskatchewan's status as "one of the world's top jurisdictions for mining investment"). See also Natural Resources Canada, "Canada's Critical Minerals List" (Ottawa: NRCan, updated June 10, 2024) (listing uranium among Canada's 34 designated critical minerals; Saskatchewan's Athabasca Basin accounts for approximately 22 percent of global high-grade uranium production).

[26] Government of British Columbia et al., Western Canadian Critical Minerals Strategy. supra note 25.

the corridor's nodes into a coherent and resilient processing and logistics network.[27] Grid interconnection is a supply chain infrastructure. The agreement should treat it as such.

D.4 The Energy-Digital-Processing Nexus

The AI-driven geological characterization systems, real-time logistics analytics, and provenance certification platforms that constitute modern supply chain intelligence are themselves energy-intensive computing operations. Canada's combination of cold climate and abundant clean energy makes it not only a natural processing location for minerals but a natural location for the energy-efficient, climate-resilient digital infrastructure that allied supply chain intelligence requires, including the NATO data storage and analysis infrastructure that serves as a distinct and complementary Canadian contribution to allied security.[28]

Canada's combination of cold climate, near-zero-carbon electricity, and sovereign Five Eyes governance creates a compounded advantage: the lowest-carbon critical minerals processing in the allied network, supported by the lowest-carbon, highest-sovereignty digital infrastructure to power the supply chain intelligence operations that give the physical supply chain its strategic value.[29] An agreement that recognizes only the physical processing layer of this advantage misses the compounded strategic value that Canada's energy and governance position represents.

Canada's energy endowment is therefore not peripheral to the critical minerals agenda; it is an enabler and force multiplier of it. A processing facility powered by insecure, carbon-intensive, or foreign-controlled energy supply does not achieve the strategic independence the agreement envisions.

This energy allocation logic applies with particular force to the United States' current grid constraint. The America's AI Action Plan identifies the U.S. electric grid as facing "a confluence of challenges" driven by AI demand and warns that "American energy capacity has stagnated since the 1970s while China has rapidly built out their grid." Domestically producing the aluminum, battery-grade nickel, and rare earth intermediates that the critical minerals agreement is designed to secure would impose electricity loads on the constrained U.S. grid that are directly competitive with the data centers and semiconductor fabs that AI dominance requires. Sourcing those materials

[27] Government of Manitoba, Innovation and Productivity Taskforce, Innovation and Prosperity Report, supra note 22 (recommending Manitoba as Canada's hub for sovereign AI and allied infrastructure; proposing HVDC transmission lines connecting Manitoba Hydro east to Ontario and west to Saskatchewan and Alberta; identifying the Port of Churchill as Canada's Arctic seaport uniquely positioned for a modern transatlantic logistics strategy).

[28] Fitz-Gerald and Padalko, "Canada's Opportunity to Redefine Its Defence, and Its Value to Allies," supra note 5.

[29] Fitz-Gerald and Padalko, "Canada's Opportunity to Redefine Its Defence, and Its Value to Allies," supra note 5.

from Canada's surplus hydroelectric capacity is, in this sense, an energy strategy as much as a trade strategy: it converts Canadian clean electricity surpluses into American strategic inputs without burdening the U.S. grid that must simultaneously power the AI infrastructure race.

D.5 The Sovereign Investment Safe Harbor Imperative

The investment governance architecture proposed in Section VI.D must address a design vulnerability that runs in the opposite direction from the submission's primary concern: not only must the agreement protect allied supply chains from non-allied investors, but it must also protect allied governments' own sovereign investment instruments from inadvertent challenge under the agreement's own disciplines.

Canada has deployed a suite of sovereign instruments specifically designed to accelerate the development of the critical minerals supply chain. The $2-billion Critical Minerals Sovereign Fund (CMSF) and the $1.5-billion First and Last Mile Fund (FLMF), established in Budget 2025 [30] and formally launched at the 2026 PDAC Convention,[31] operate through equity investments, loan guarantees, offtake agreements, and infrastructure financing to advance critical minerals projects to Final Investment Decision. Canada has further designated certain critical minerals as national security priorities under the Defence Production Act, enabling production mobilization, price stabilization, and assured supply to Canadian and NATO-aligned defence industries. In aggregate, these instruments represent over $14 billion in committed federal support for allied supply chain development.

These instruments involve precisely the categories of government support, namely equity investment, loan guarantees, preferential offtake, and pricing stabilization, that subsidy disciplines, investment chapter obligations, and national treatment provisions in trade agreements are designed to govern. An agreement whose investment or pricing disciplines inadvertently brought these instruments within their scope would undermine precisely the allied industrial capacity the agreement is designed to strengthen. The design precedent is the CUSMA national security exception (Article 32.2), which

[30] Government of Canada, Budget 2025: A Strong and Sovereign Canada (Ottawa: Department of Finance Canada, November 4, 2025) (establishing the $2-billion CMSF and the $1.5-billion FLMF; expanding the Critical Mineral Exploration Tax Credit to 12 additional mineral categories; extending the Clean Technology Manufacturing Investment Tax Credit in support of Canadian critical minerals processing capacity).

[31] Natural Resources Canada, supra note 8 (announcing launch of the First and Last Mile Fund (FLMF), supported by $1.5 billion in federal funding between 2026 and 2030; describing the forthcoming $2-billion Critical Minerals Sovereign Fund (CMSF) operating through equity investments, loan guarantees, and supply agreements; specifying the FLMF's dedicated funding to enable Indigenous leadership, engagement, and participation throughout the mining value chain; and describing Canada's designation of certain critical minerals as a national security priority under the Defence Production Act, R.S.C. 1985, c. D-1, enabling production mobilization, pricing stabilization, and assured supply to Canadian and NATO allied defence industries), available at canada.ca.

provides a potentially self-judging legal basis for allied investment support measures directed at essential security interests. An analogous provision, explicitly recognizing allied-nation sovereign critical minerals investment programs as instruments consistent with and in furtherance of the agreement's objectives, is a prerequisite for Canada's financial commitments to remain legally unconstrained during the agreement's implementation.

D.6 Export Controls as the Supply-Side Complement to Investment Screening

Investment screening addresses who can acquire interests in allied processing facilities. It does not address where those facilities' output flows. An allied supply chain architecture that prevents non-allied acquisition of Canadian processing assets but imposes no constraints on the export destinations of those assets' production has secured the ownership layer of the supply chain while leaving the output layer uncoordinated. Export controls are the supply-side complement to investment screening: together, they close the loop that investment governance opens.

Canada has proposed amendments to the *Export and Import Permits Act* that would enable the Government of Canada to restrict exports of critical minerals in response to actions by third-party jurisdictions that harm allied supply chains or to create a more secure and reliable supply chain architecture.[32] This developing Canadian statutory authority positions Canada to participate in a coordinated allied export controls framework as an equal partner with established legal authority, rather than as a passive recipient of direction from more developed allied export control regimes.

A coordinated allied export controls framework, where parties align their national export control authorities to ensure that allied-jurisdiction critical minerals production reaches allied end-users and is not diverted to non-allied jurisdictions that have been denied investment access, is the institutional complement that makes the Plurilateral Investment Screening Coordination Mechanism proposed in Recommendation 8 comprehensive. The agreement should establish a framework for coordinating allied export controls on covered mineral categories, operating alongside and reinforcing the investment screening coordination mechanism.

[32] *Export and Import Permits Act*, R.S.C. 1985, c. E-19, as proposed to be amended. Natural Resources Canada, "Canada's Critical Minerals Strategy: Progress Update," February 27, 2026, canada.ca (noting that "in 2025 Canada proposed amendments to the Export and Import Permits Act, awaiting ratification, to enable the Government of Canada to respond to actions of another country that harm Canada or to create more secure and reliable supply chains")

E. Carbon Regulatory Arbitrage and the Low-Carbon Processing Premium

E.1 Non-Market Carbon Advantage as Structural Distortion

The principal submission documents non-market subsidies, distorted pricing, and state-directed investment as primary structural sources of China's dominance in critical minerals processing. A second, equally structural source of competitive distortion has received less analytical attention: the carbon cost differential arising from the stark difference between China's coal-intensive electricity grid and the clean energy grids of allied processing jurisdictions. Under market conditions that do not price embedded carbon, this differential constitutes an invisible subsidy to high-carbon processing that systematically disadvantages allied-jurisdiction, market-priced, low-carbon operations.

China's national electricity grid is approximately 60 percent coal-powered, producing a national average grid emissions intensity of approximately 550 to 600 grams of CO_2e per kilowatt-hour.[33] For a processing operation consuming 1,000 gigawatt-hours of electricity annually, a realistic figure for a large integrated nickel smelter and refinery, the annual carbon content of Chinese electricity-sourced processing is approximately 550,000 to 600,000 tonnes of CO_2e. The equivalent operation powered by Quebec's or Manitoba's hydroelectricity generates approximately 1,000 to 3,000 tonnes of CO_2e annually.[34] This difference of two to three orders of magnitude is not a marginal distinction. Under any serious carbon pricing architecture, it translates into a massive cost differential that corrects the current market distortion in favour of low-carbon, allied-jurisdiction processing.

The following comparison illustrates the carbon differential, using aluminum as the benchmark case:

Dimension	Chinese Smelting (coal grid)	Canadian Smelting (Quebec hydro)
Grid emissions intensity	~560 g CO_2e/kWh	~1.8 g CO_2e/kWh
Electricity per kg Al	~14 kWh/kg	~13-14 kWh/kg
Grid carbon per kg Al	~7,840 g CO_2e/kg	~25 g CO_2e/kg
Total scope 1+2 per kg Al	~11-16 kg CO_2e/kg	~2-3 kg CO_2e/kg
Carbon: 500,000-ton plant	~5.5-8 million tCO_2e/yr	~1,000-1,500 tCO_2e/yr

Table 1. Illustrative carbon content comparison: Chinese coal-grid aluminum vs. Canadian hydropower aluminum. Sources: IAI (2023); Hydro-Québec Annual Report 2023; IEA CO_2 Emissions in 2023.

Under current market conditions, the carbon cost differential is invisible: the market price of processed aluminum reflects neither processing efficiency nor carbon content. The EU's Carbon Border Adjustment Mechanism, analyzed in Section III.E.2 below, is the first

[33] IEA, CO_2 Emissions in 2023, supra note 19.

[34] Hydro-Québec, Annual Report 2023, supra note 14; Manitoba Hydro, Integrated Resource Plan, supra note 21.

major trade policy instrument to begin correcting this market failure, and the plurilateral agreement should align with and reinforce that correction.

E.2 The EU Carbon Border Adjustment Mechanism

The European Union's Carbon Border Adjustment Mechanism ("CBAM"), established by Regulation (EU) 2023/956 of 10 May 2023, represents the most consequential development in international carbon trade policy in a generation, and its implications for the plurilateral critical minerals agreement are direct and substantial.[35]

CBAM is a border adjustment mechanism that applies a carbon price to imported goods in sectors where EU producers face costs under the EU Emissions Trading System. CBAM's initial product scope explicitly includes aluminum under CN 76, making it directly applicable to the most electricity-intensive critical minerals processing sector.[36] Following a transitional reporting-only phase (October 2023 to December 2025), financial obligations under CBAM took effect on January 1, 2026, requiring importers to purchase CBAM certificates corresponding to the carbon price that would have applied under EU carbon pricing rules.[37]

Canadian aluminum produced with near-zero-carbon hydroelectric power, carrying a carbon footprint of approximately 2 to 3 kilograms of CO_2e per kilogram, faces essentially zero CBAM certificate obligation when exported to the EU. Chinese aluminum, carrying a footprint of approximately 11 to 16 kilograms of CO_2e per kilogram, faces a significant and growing CBAM cost as EU ETS free allocations are phased out between 2026 and 2034.[38] CBAM thus creates precisely the market signal that the plurilateral agreement's non-market-practices provisions are designed to generate: a price premium for allied, low-carbon processing that corrects the historical market failure to price embedded carbon.

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[35] Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism, OJ L 130, 16.5.2023, p. 52 (CBAM Regulation). The transitional reporting-only phase ran from October 1, 2023 to December 31, 2025. Financial obligations (requiring CBAM certificates) commenced January 1, 2026. EU ETS free allocations for CBAM sectors are phased out between 2026 and 2034. See also European Commission, "Carbon Border Adjustment Mechanism," available at ec.europa.eu/taxation_customs.

[36] CBAM Regulation, supra note 35, Annex I (listing covered product categories including iron and steel (CN 72-73), aluminum (CN 76), cement, fertilizers, hydrogen, and electricity). Aluminum's inclusion under CN 76 makes CBAM directly applicable to Canada's largest electricity-intensive critical minerals processing sector.

[37] CBAM Regulation, supra note 35.

[38] IAI, Primary Aluminum Production Statistics, supra note 11 (documenting Canadian hydropower-sourced aluminum production at approximately 2-3 kg CO2e per kg); IAI, "Aluminum Sector Greenhouse Gas Pathways to 2050," supra note 13 (documenting the global average carbon footprint of primary aluminum at approximately 11-12 kg CO2e per kg on a Scope 1+2 basis).CBAM Regulation, supra note 35 (EU ETS free allocations for CBAM sectors are phased out between 2026 and 2034, increasing CBAM certificate obligations for high-carbon aluminum imports).

CBAM also signals a regulatory trajectory that the plurilateral agreement must anticipate. The United States has examined analogous mechanisms through the Clean Competition Act and related legislative proposals.[39] The plurilateral agreement should be designed from the outset to be compatible with, and to reinforce, the CBAM architecture and its successors.

E.3 Implication: A Low-Carbon Processing Standard

The plurilateral agreement should establish a Low-Carbon Processing Standard as a qualification criterion for the market price supports, investment incentives, and allied market access preferences available under the agreement. This standard would require that processing operations receiving agreement benefits meet a maximum carbon-intensity threshold, expressed as grams of CO_2e per unit of output for each covered mineral category, calibrated to the carbon intensity achievable with market-available clean electricity sources in allied jurisdictions.

The Low-Carbon Processing Standard should be designed with three features: (a) a carbon content adjustment for non-party imports from processing operations that do not meet the Standard, analogous to CBAM, that converts the carbon cost differential into an explicit and corrective price signal; (b) calibration for compatibility with EU CBAM methodology, so that agreement-compliant operations are recognized under CBAM as meeting or exceeding its requirements, avoiding duplicative compliance burdens for allied producers; and (c) a Standing Working Group on Carbon and Environmental Standards to monitor the evolution of allied carbon pricing frameworks and recommend updates to maintain alignment and competitive efficacy over time.

F. Indigenous Partnership as Supply Chain Architecture

Canada's critical minerals corridor cannot be built, legally secured, or reliably operated without Indigenous partnership. This is a structural supply chain design constraint, not a peripheral social policy consideration. The vast majority of Canada's critical minerals deposits, and the infrastructure necessary to develop them, are located on or adjacent to Indigenous territories: lands in which First Nations, Métis, and Inuit peoples hold constitutionally protected rights, treaty rights, and, increasingly, formal ownership or co-management interests whose recognition is a precondition for durable project authorization under Canadian constitutional law.

[39] The Clean Competition Act was introduced in the U.S. Senate (S. 4355, 117th Congress, introduced June 7, 2022; reintroduced 118th Congress) and proposed a carbon border adjustment applicable to industrial goods including aluminum and steel based on the carbon content of covered imports. As of the date of this submission the legislation has not been enacted. See also U.S. Department of the Treasury and Office of the United States Trade Representative, discussions of carbon border adjustment mechanisms in the context of the Inflation Reduction Act (2022) and ongoing trade policy deliberations.

The Ring of Fire, the submission's Ontario processing node for chromite, nickel, copper, and platinum group element development , became accessible for development only through the Marten Falls Community Access Road Partnership Agreement [40] and the Webequie Supply Road Community Partnership Agreement,[41] both concluded in 2025 after multi-year Indigenous-led negotiation. Construction of the access road infrastructure that will unlock the Ring of Fire's mineral endowment is scheduled to commence in 2026. The Port of Churchill, the Manitoba-Arctic corridor node's primary export gateway, is owned and operated by the Arctic Gateway Group, an Indigenous-led partnership of dozens of First Nations and Hudson Bay communities, which has already completed two consecutive seasons shipping critical minerals to European allied markets. [42]

The Government of Canada's own First and Last Mile Fund acknowledges this structural reality directly: the Fund explicitly provides dedicated funding to enable Indigenous leadership, engagement, and participation throughout the mining value chain, recognizing that most critical minerals deposits and enabling infrastructure projects in Canada are located on Indigenous territories. The January 2026 Western Canadian Critical Minerals Strategy Memorandum of Understanding, signed by six provinces and territories, commits all participating governments to "advance reconciliation and create opportunities for Indigenous leadership partnership, participation and/or ownership in critical minerals development.[43]

For the plurilateral agreement, the implication is direct: allied investment in Canadian processing capacity is only as durable as the partnership structures on which it rests. Processing corridors built without genuine Indigenous partnership are legally vulnerable in Canada, as constitutional law requires meaningful consultation and accommodation prior to Canadian Crown authorization of resource development. Partnership

[40] Ontario Ministry of Northern Development, Marten Falls Community Access Road Partnership Agreement (November 2025) (recording the $39.5-million agreement between the Government of Ontario and Marten Falls First Nation to advance construction of the Marten Falls Community Access Road, the primary road-access prerequisite for mineral development in the Ring of Fire region; establishing Indigenous employment, environmental stewardship, and community benefit obligations as conditions for road development).

[41] Ontario Ministry of Northern Development, Webequie Supply Road Community Partnership Agreement (October 2025) (recording the agreement between the Government of Ontario and Webequie First Nation to accelerate construction of the all-season Webequie Supply Road, with construction scheduled to commence in June 2026; establishing Indigenous employment, environmental monitoring, and community benefit obligations as conditions for infrastructure development).

[42] Arctic Gateway Group, "About the Arctic Gateway Group," arcticgatewaygroup.ca (describing the Indigenous-led ownership structure of the Port of Churchill and Hudson Bay Railway; noting completion of two consecutive seasons shipping critical minerals to European allied markets; describing the Port of Churchill Plus initiative exploring expanded capacity for critical minerals, potash, and potentially energy exports).

[43] Government of British Columbia et al., Western Canadian Critical Minerals Strategy. supra note 25.

agreements that involve Indigenous equity ownership, co-management, or benefit-sharing are structurally more durable because they align the long-term economic interests of Indigenous rights-holders with project continuity. The plurilateral agreement should recognize Indigenous partnership structures as a supply chain durability indicator: a feature of the Canadian processing corridor that reinforces, rather than complicates, the reliability the agreement is designed to achieve.

IV. The Institutional Deficit: Reliable Allies Need Sovereign Advisory Capacity

A. The Asymmetry in Trade Advisory Infrastructure

The United States maintains fifteen Industry Trade Advisory Committees (ITACs) and seven Agricultural Technical Advisory Committees that provide American trade negotiators with confidential, sector-specific intelligence under security clearances.[44] This model of structured, security-cleared industry advisory engagement reflects a broad recognition among industrial democracies that complex trade negotiations require continuous, confidential, sector-specific intelligence that public consultation processes cannot replicate. The United States' principal allied supply chain partners have each developed analogous institutional infrastructure: the United Kingdom operates formal Trade Advisory Groups covering key sectors of its post-Brexit trade policy portfolio; Australia maintains structured industry advisory mechanisms through its Department of Foreign Affairs and Trade that provide confidential sectoral input to negotiators; and Japan's Ministry of Economy, Trade and Industry maintains elaborate consultative committee structures that have long provided Japanese negotiators with detailed industrial intelligence across all major trade files.

Canada possessed an analogous system in the Sectoral Advisory Groups on International Trade (SAGITs), which provided sector-specific intelligence to Canadian negotiators throughout the NAFTA era. Those bodies were dismantled after NAFTA's entry into force. Canada is thus the notable exception among its principal Five Eyes and NATO allies: the outlier that eliminated institutional advisory infrastructure that its partners have maintained and, in several cases, strengthened. This is not a characterization of Canadian weakness but an accurate description of a structural gap that the plurilateral

[44] U.S. Department of Commerce and Office of the United States Trade Representative, Industry Trade Advisory Center, trade.gov/industry-trade-advisory-center. This is also modelled in most U.S. allied states. For example, the United Kingdom has Trade Advisory Groups (TAGs) established under the UK Department for Business and Trade, covering sectors and security-cleared advisory architecture; Australia has DFAT industry consultation framework documentation, including the relevant industry advisory mechanism for trade negotiations; and in Japan: METI has a consultative committee structure for trade policy, including the relevant committee name and statutory basis.

agreement's institutional design has the opportunity, and, from the perspective of U.S. supply chain interests, the incentive to close.[45]

Canada now enters trade negotiations with general consultations and broad stakeholder engagement, mechanisms that are valuable for democratic legitimacy but that do not replicate the intelligence function the SAGITs performed. Canada brings to this negotiation the goodwill of a treaty ally and the resource endowment of one of the world's great mining nations. It does not bring the institutional infrastructure of a modern industrial power prepared to negotiate the architecture of its own economic future with precision.[46]

B. Why the Institutional Deficit Is an American Supply Chain Risk

This is not a Canadian problem that Canada should solve for its own benefit. It is a supply chain architecture problem that the United States has a direct interest in solving. An allied partner that cannot articulate its own interests with precision in the negotiation is challenged when making and keeping durable commitments in the agreement's implementation. Supply chain resilience depends on allied nations' sustained commitment to the framework.[47]

That commitment is most durable when it reflects genuine industry understanding and democratic accountability, when allied governments can explain to their domestic constituencies, with specificity and credibility, why the terms of the agreement serve national interests. An allied nation that cannot articulate those interests with precision in the negotiation is unlikely to defend them effectively in the ratification process or in the years of implementation that follow. An ally flying blind is not a negotiating posture; it is a supply chain vulnerability that the United States inherits.

The February 2026 Critical Minerals Ministerial, which convened fifty-four nations and produced eleven bilateral framework agreements, demonstrated the breadth of allied interest in a plurilateral architecture.[48] Translating that breadth into durable depth requires allies with genuine institutional capacity for industry engagement.

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[45] Barry Appleton, "A Sovereign Advisory System for Canada: Rebuilding Strategic Foresight in Trade and Innovation," CIGI Online (Centre for International Governance Innovation, October 7, 2025), cigionline.org (proposing a Sovereign Advisory System as a digital-economy-era institutional successor to the SAGITs, modelled explicitly on the U.S. Industry Trade Advisory Committee system, and documenting Canada's structural trade advisory capacity deficit as a direct constraint on effective participation in complex international economic negotiations); Matthew Kronby, testimony before the Senate Standing Committee on Foreign Affairs and International Trade, Parliament of Canada, March 24, 2016.

[46] Appleton, "A Sovereign Advisory System for Canada," supra note 45; Barry Appleton, testimony before the Standing Committee on International Trade (CIIT), Parliament of Canada, 2026.

[47] National Security Strategy of the United States, supra note 3, at 21.

[48] U.S. Department of State, Critical Minerals Ministerial, Joint Statement on Critical Minerals Cooperation (February 2026); National Security Strategy of the United States, supra note 3, at 21.

Canada's February 2026 Defence Industrial Strategy, the first comprehensive statement of Canadian defence industrial policy, explicitly integrates critical minerals into the defence industrial base and establishes a "Build-Partner-Buy" procurement framework that prioritizes Canadian firms in sectors where Canada has demonstrated domestic capability, including critical minerals processing.[49] The Strategy is anchored by Canada's designation of certain critical minerals as national security priorities under the Defence Production Act, enabling the federal government to mobilize domestic production, stabilize pricing, and ensure supply continuity for Canadian and NATO allied defence industries.[50] These instruments represent the domestic sovereign authority over strategic resources that the plurilateral agreement's architecture should recognize and build upon rather than inadvertently constrain. Canada's institutional advisory deficit, which is the central concern of this section, is a constraint on the precision with which committed Canadian capital and statutory authority can be translated into durable supply chain obligations. Addressing that deficit through the allied institutional capacity building provisions of Recommendation 3 is an investment in maximizing the return on allied resources that the United States has a direct strategic interest in seeing deployed effectively.

C. Recommendation: Allied Institutional Capacity Building

The agreement should include provisions supporting allied nations in developing the institutional trade advisory infrastructure necessary to engage effectively as long-term supply chain partners. These provisions might take the form of a model advisory committee framework, an allied analog to the U.S. ITAC system, that participating nations commit to establishing within a defined period following the agreement's entry into force, adapted to their domestic institutional contexts.

The agreement should make it a universal design element for all parties, not an optional enhancement. An allied partner without the sectoral intelligence infrastructure to understand what it has committed to and why is a fragile partner regardless of its resource

[49] Government of Canada, Canada's Defence Industrial Strategy (Ottawa: Department of National Defence, February 17, 2026) (establishing Canada's first comprehensive defence industrial strategy; articulating a "Build-Partner-Buy" procurement framework that prioritizes Canadian firms in sectors with demonstrated domestic capability, including critical minerals processing; establishing the Defence Investment Agency; projecting approximately $180 billion in defence procurement and $290 billion in defence-related infrastructure through 2035).

[50] Natural Resources Canada, supra note 8 (announcing launch of the First and Last Mile Fund (FLMF), supported by $1.5 billion in federal funding between 2026 and 2030; describing the forthcoming $2-billion Critical Minerals Sovereign Fund (CMSF) operating through equity investments, loan guarantees, and supply agreements; specifying the FLMF's dedicated funding to enable Indigenous leadership, engagement, and participation throughout the mining value chain; and describing Canada's designation of certain critical minerals as a national security priority under the Defence Production Act, R.S.C. 1985, c. D-1, enabling production mobilization, pricing stabilization, and assured supply to Canadian and NATO allied defence industries), available at canada.ca.

endowment or its goodwill, and a fragile partner is not the kind of partner a plurilateral supply chain architecture can be built upon.

For Canada specifically, the appropriate institutional vehicle is a Sovereign Advisory System, a modern, digital-economy-era successor to the SAGITs, explicitly modelled on the U.S. ITAC architecture and engineered to provide Canadian negotiators with the security-cleared, sector-specific intelligence that complex agreements of this kind require. What makes this argument strategically distinctive is that it is simultaneously a case for a Canadian institutional reform and a U.S. supply chain design requirement: the same institutional infrastructure that makes Canada a more precise and reliable negotiating partner also makes it a more durable supply chain partner during implementation. The SAGITs are, in this sense, dual-use: their value extends far beyond the critical minerals file to the full range of Canada's trade and economic security relationships.[51]An allied-institution requirement embedded in a U.S.-championed plurilateral agreement is among the most effective mechanisms available to create the political conditions for their re-establishment.

The plurilateral agreement should provide Canadian and allied partners with the institutional framework to build that capacity, not as a courtesy, but as a structural requirement of a supply chain architecture that the United States can rely on.

V. Digital Sovereignty as Supply Chain Security Infrastructure

A. The Data Architecture of Allied Supply Chains

Modern critical minerals supply chains are data systems as much as physical logistics networks. The critical minerals supply chain generates and depends upon several distinct categories of strategically sensitive data.[52]

Geological intelligence, AI-driven resource characterization, grade modelling, ore body prediction, constitutes a primary intelligence asset for any nation seeking to develop mineral resources.[53]

[51] Appleton, “A Sovereign Advisory System for Canada,” supra note 45; Matthew Kronby, testimony before the Senate Standing Committee on Foreign Affairs and International Trade, Parliament of Canada, March 24, 2016.

[52]International Energy Agency, Global Critical Minerals Outlook 2025, supra note 4, at 85-92; U.S. Geological Survey, Methodology and Technical Input for the 2025 U.S. List of Critical Minerals, Open-File Report 2025-1047, supra note 17, at 12-18; Balsillie School of International Affairs Graduate Fellows, Global Trends Report 2026: The Age of Unpredictability (Waterloo, ON: Balsillie School of International Affairs, 2026).

[53] U.S. Geological Survey, Methodology and Technical Input for the 2025 U.S. List of Critical Minerals, Open-File Report 2025-1047, supra note 17; see also International Energy Agency, Global Critical Minerals Outlook 2025, supra note 4, at 85-92.

Processing intelligence, the operational data of refinery performance, yield optimization, energy efficiency, and by-product recovery, is a proprietary asset that Chinese firms have built over decades and that allied nations are only beginning to accumulate.[54]

Supply chain intelligence, real-time inventory positions, logistics optimization data, and provenance certification records are the operational nervous system of any allied supply chain coordination mechanism. Each category is a strategic asset. The governance of these assets is as important to supply chain security as the physical infrastructure they describe.[55]

B. The CLOUD Act Governance Problem

The U.S. CLOUD Act (Clarifying Lawful Overseas Use of Data Act) requires providers of electronic communications and remote computing services subject to U.S. jurisdiction to comply with domestic legal process for data held abroad, regardless of the data's physical location or the nationality of the data subject.[56]

This creates a structural asymmetry in any allied data-sharing architecture: data contributed by allied nations to a shared supply chain intelligence system, if hosted on U.S.-jurisdiction cloud infrastructure, as virtually all modern digital systems are, may be subject to unilateral compulsion under U.S. domestic law without the contributing nation's consent or knowledge.[57]

This is not a complaint about U.S. law enforcement capability. The CLOUD Act serves legitimate purposes in the domestic law enforcement context, and this submission does not challenge its domestic operation. The concern is architectural: a shared supply chain intelligence system that allied nations cannot trust will not receive their most sensitive geological, processing, and logistics data. The intelligence layer of the supply chain will operate on incomplete information — which is precisely the outcome the agreement is designed to prevent.

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[54] International Energy Agency, Global Critical Minerals Outlook 2024, supra note 12, at 89-95; Dan Ciuriak, The Strategic Importance of Critical Minerals in the Energy Transition (Waterloo, ON: Centre for International Governance Innovation, 2023).

[55] National Security Strategy of the United States, supra note 3, at 21.

[56] Clarifying Lawful Overseas Use of Data Act (CLOUD Act), Pub. L. No. 115-141, 132 Stat. 348 (2018), codified at 18 U.S.C. §§ 2523, 2713; U.S. Department of Justice, Promoting Public Safety, Privacy, and the Rule of Law Around the World: The Purpose and Impact of the CLOUD Act (Washington, DC: Department of Justice, 2019), 14-17.

[57] Barry Appleton, "Locked In and Locked Out: How CUSMA's Digital Trade Architecture Constrains Canadian Sovereignty and Where the Exits Still Exist" (prepublication draft, March 13, 2026), 17-19; Barry Appleton, "Code Before Clause: Digital Sovereignty and Canada's Trade Policy Challenge," SSRN Working Paper No. 5575590 (2025).

The practical exposure is broader than commonly understood. A comprehensive analysis of CLOUD Act jurisdiction published in the Balsillie Papers documents that over 80 percent of Canadian cloud services rely on foreign infrastructure, including the Department of National Defence's own Defence 365 platform.[58] Any geological, processing, or logistics intelligence hosted on U.S.-jurisdiction cloud infrastructure is potentially compellable under CLOUD Act authority, regardless of where servers are physically located, regardless of contractual data residency commitments, and regardless of assurances made to Canadian clients.

Corporate assurances cannot resolve this structural problem. When a senior Microsoft executive was asked under oath before the French Senate in June 2025 whether he could guarantee that French government data stored in Microsoft's cloud would never be transmitted to U.S. authorities without French authorization, his answer was unequivocal: "Non, je ne peux pas le garantir", "No, I cannot guarantee it."[59] The same answer applies to Canadian allied supply chain intelligence data.

The governance incompatibility runs deeper than jurisdictional reach alone. The Supreme Court of Canada has held, in *R v Spencer* (2014) and *R v Bykovets* (2024), that Canadians retain a reasonable expectation of privacy in electronic data held by service providers, a Charter-protected right that would be violated by the warrantless access to metadata and business records that CLOUD Act compulsion enables.[60] The solution is not to demand changes to U.S. constitutional law. It is to establish the agreed multilateral governance framework, covering specifically the supply chain intelligence categories at issue, that this submission's Recommendation 1 proposes.

The strategic significance of this observation cannot be overstated. Data loss is strategic loss.[61] Building "sovereign compute capacity and infrastructure to secure Canadian data

[58] Barry Appleton, "Whose Law Governs Canadian Data? The CLOUD Act, Executive Agreements and Digital Sovereignty," Balsillie Papers Special Report (Waterloo, ON: Balsillie School of International Affairs, March 11, 2026), balsilliepapers.ca/canadian-data/ (documenting that over 80 percent of Canadian cloud services rely on foreign infrastructure, including the Department of National Defence's Defence 365 platform; establishing that the CLOUD Act's jurisdictional reach is determined by the "national contacts" doctrine making the jurisdictional threshold remarkably low for any entity with NYSE listings, U.S. institutional investors, American subsidiaries or U.S. customers; documenting that when a senior Microsoft executive was asked under oath before the French Senate in June 2025 whether he could guarantee that French government data stored in Microsoft's cloud would never be transmitted to U.S. authorities without French authorization, his answer was unequivocal: "Non, je ne peux pas le garantir"; and establishing that the Supreme Court of Canada's holdings in *R v Spencer*, [2014] 2 SCR 212 and *R v Bykovets*, [2024] 1 SCR 599 are structurally incompatible with the U.S. third-party doctrine that makes CLOUD Act compulsion legally available).

[59] Appleton, "Whose Law Governs Canadian Data?," supra note 45.

[60] Appleton, "Whose Law Governs Canadian Data?," supra note 45.

[61] Fitz-Gerald and Padalko, "Canada's Opportunity to Redefine Its Defence, and Its Value to Allies," supra note 5.

and algorithms" is not optional infrastructure policy but a prerequisite for meaningful allied supply chain participation.[62]

The problem is compounded by the CUSMA's digital trade architecture. CUSMA Article 19.12 prohibits Canada from requiring cloud providers to locate computing facilities in Canada as a condition for conducting business.[63]

The combined effect, the CLOUD Act Trap as analyzed in detail in Appleton's companion work, is that the obvious regulatory remedy for allied data sovereignty is constrained by existing trade obligations, while the underlying exposure from U.S.-jurisdiction cloud infrastructure remains unaddressed.[64]

Canada has a well-established tradition of addressing the extraterritorial reach of foreign law through blocking statutes — a mechanism that operates not by defying foreign legal authority but by providing Canadian companies with a legal prohibition in Canadian law that they can raise as a substantive defense before foreign courts. Under the doctrine of international comity, as applied by U.S. courts, a party served with compulsory process is not required to comply where doing so would require it to violate the law of another nation with a legitimate sovereign interest in the matter.Canada has deployed this mechanism in precisely analogous contexts: the *Foreign Extraterritorial Measures Act* ("FEMA"), R.S.C. 1985, c. F-29, empowers the Attorney General of Canada to issue Orders directing Canadian companies to refuse compliance with foreign measures that exercise extraterritorial jurisdiction contrary to international law or that adversely affect Canadian interests. FEMA Orders issued in the context of U.S. measures relating to Cuba have for decades provided Canadian companies with the legal authority, and the legal obligation, to refuse compliance with U.S. extraterritorial demands, and have been recognized in U.S. proceedings as raising substantive comity

[62] James W. Hinton, Dual-Use Technologies in the Age of Intangibles, CIGI Policy Brief No. 215 (Waterloo, ON: Centre for International Governance Innovation, November 2025) (calling for structural reforms to expand the freedom to operate for domestic firms with IP frameworks that retain ownership and control of key dual-use technologies, and to build sovereign compute capacity and infrastructure to secure Canadian data and algorithms).

[63] Canada-United States-Mexico Agreement (CUSMA), Art. 19.12, entered into force July 1, 2020, implemented in Canada through the Canada-United States-Mexico Agreement Implementation Act, S.C. 2020, c. 1.

[64] Appleton, "Locked In and Locked Out," supra note 57, at 18-19.Société Nationale Industrielle Aérospatiale v. United States District Court for the Southern District of Iowa, 482 U.S. 522 (1987) (establishing that U.S. courts must undertake a comity analysis that considers, among other factors, the extent to which compliance would require a party to violate the law of another nation, before ordering production of evidence located abroad; rejecting a categorical priority rule in favour of a case-by-case interest-balancing approach that gives weight to foreign legal prohibitions). Foreign Extraterritorial Measures Act, R.S.C. 1985, c. F-29 (empowering the Attorney General of Canada to issue Orders prohibiting compliance with foreign measures that exercise extraterritorial jurisdiction over commercial activity in Canada contrary to international law or that cause damage to Canadian interests in trade or commerce).

issues that warrant judicial consideration. The extension of this well-established tool to address the specific CLOUD Act exposure identified in this submission is a natural and legally coherent next step, one that would not create new legal uncertainty but rather bring an existing gap in Canada's data sovereignty architecture into alignment with mechanisms Canada has successfully deployed elsewhere.

As described in Section V.C below, Canada has already made significant investments in the digital credentials and standards-based provenance architecture that forms the foundation of the supply chain data governance framework proposed in Recommendation 1. The blocking statute gap is the final piece of the domestic legal toolkit that would give Canada the sovereign digital infrastructure to participate as a full and confident partner in the supply chain intelligence architecture the agreement envisions.

C. Implications for the Plurilateral Agreement

The data governance architecture of an allied critical minerals supply chain is a shared interest problem, not a bilateral asymmetry problem. The United States benefits from allied supply chain intelligence as much as any party to the agreement: geological characterization data from Canadian mining operations, processing optimization data from allied refineries, and provenance certification records from the full supply chain are the information inputs that make supply chain management, circumvention detection, and emergency response possible. If allied nations rationally protect their most sensitive supply chain intelligence from shared systems because they cannot trust those systems' governance, the agreement's coordination mechanisms will operate on incomplete information. That is a U.S. supply chain risk, not a Canadian one.

An agreement designed to coordinate allied supply chains should therefore include provisions that address the data governance asymmetry as a shared design problem. The objective is not to curtail U.S. law enforcement authority. It is to establish agreed multilateral frameworks — frameworks that the United States itself would benefit from, because they ensure that allied nations contribute their most sensitive supply chain data to shared systems rather than protecting it from them. The specific categories at issue are geological characterization data, processing optimization data, and provenance certification records: the intelligence layer of the supply chain.

Beyond data sovereignty, the agreement should address operational resilience: the capacity of the digital logistics systems governing allied supply chains to withstand disruption. Critical minerals supply chains rely on continuous data exchange for customs clearance, transport scheduling, inventory management, and provenance certification across multiple allied jurisdictions. Disruption of these systems, whether through coordinated cyberattack, infrastructure failure, or deliberate geopolitical interference, can

halt supply continuity as effectively as a physical disruption to a processing facility.[65] The agreement's digital governance provisions should therefore encompass not only data sovereignty rules but operational resilience standards: interoperability requirements, redundancy protocols, and coordinated incident-response frameworks for the digital systems on which allied logistics coordination depends.

Without such a framework, covering both data sovereignty and operational resilience, allied nations will rationally protect their most sensitive supply chain intelligence from shared systems, and the agreement's coordination mechanisms will operate on incomplete information. The intelligence layer of the supply chain will be as fragile as the physical layer it informs.

Canada has already laid the institutional groundwork for the provenance certification architecture proposed in this submission. Natural Resources Canada's February 2026 Digital Credentials Request for Information is exploring the feasibility of a "Mined in Canada" digital credential as proof of origin tied to the mine site and to the province or territory of origin. This is precisely the facility-level provenance certification foundation on which the Multilateral Supply Chain Data Governance and Resilience Framework proposed in Recommendation 1 would build.[66] Canada's leadership of the G7 Roadmap to Promote Standards-Based Markets for Critical Minerals, adopted through Canada's 2025 G7 Presidency, provides the allied multilateral framework within which these digital credentials would operate.[67] The plurilateral agreement should recognize Canada's existing institutional investment in standards-based digital provenance architecture as a Tier 1 contribution to the agreement's circumvention resilience infrastructure, and should build upon the G7 Roadmap's standards framework rather than constructing a duplicative architecture.

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[65] International Energy Agency, Global Critical Minerals Outlook 2025, supra note 4, at 85-92 (analyzing the role of digital logistics systems, real-time inventory management, and provenance certification platforms as operationally critical components of modern critical minerals supply chains, and noting that disruption of these systems is a distinct category of supply chain risk); National Security Strategy of the United States, supra note 3, at 21; Crebo-Rediker and Rasser, Leapfrogging China's Critical Minerals Dominance, supra note 4, at 12-15 (identifying supply chain intelligence disruption as a distinct threat vector requiring coordinated allied response).

[66] Natural Resources Canada, "Digital Credentials: Request for Information" (Ottawa: NRCan, February 19, 2026) (launching a Request for Information to explore the feasibility of a "Mined in Canada" digital credential as proof of origin tied to the mine site and to the province or territory of origin; seeking input from industry, subject matter experts, academia, non-profits, Indigenous organizations, and other stakeholders), available at canada.ca.

[67] Government of Canada, G7 Roadmap to Promote Standards-Based Markets for Critical Minerals (Kananaskis: Government of Canada, 2025) (establishing the allied multilateral framework for mineral traceability and transparency; adopted under Canada's 2025 G7 Presidency alongside the Critical Minerals Production Alliance). See also Natural Resources Canada, "Canada's Critical Minerals Strategy: Progress Update," February 27, 2026, canada.ca (describing Canada's role as Chair of the IEA Critical Minerals Working Party).

D. The AI Governance Dimension

As AI systems become central to geological exploration, mine planning, processing optimization, and supply chain logistics, the governance of AI used in allied supply chains becomes a supply chain governance question. The EU AI Act and the OECD AI Principles establish relevant precedents for the kind of technical governance standards that allied nations are already beginning to apply to AI systems in critical infrastructure.[68]

The plurilateral agreement's digital governance chapter, if it has one, should provide that AI systems used in allied supply chain operations meet agreed technical and governance standards, ensuring that the intelligence layer of the supply chain is as trustworthy as the physical infrastructure it informs.

VI. Reliability as the Agreement's Organizing Principle

A. What Reliability Means in a Critical Minerals Context

The Balsillie Legal Advisory's submission's overarching contribution to this consultation is a reframing of the design question. The USTR's consultation asks how to design a plurilateral agreement on critical minerals. This submission argues that the right organizing principle for that design is reliability: what makes allied supply chain relationships reliably durable across administrations, technology cycles, and geopolitical shifts?

The answer has four dimensions, each of which is a design requirement from the perspective of American supply chain interests:

Physical processing capacity in an allied jurisdiction is a necessary condition, but it is not sufficient. A processing facility built on Chinese-owned technology can be disrupted by a technology licensing dispute — a U.S. supply chain vulnerability. A data-sharing architecture built on U.S.-jurisdiction cloud infrastructure can expose allied geological intelligence to unilateral legal compulsion, which means allied nations will rationally protect their most sensitive data from shared systems — a U.S. intelligence gap. A supply chain commitment made by a government that lacks the institutional capacity to understand what it has committed to will not survive a change in administration — a U.S. implementation risk. And a processing facility powered by carbon-intensive, insecure, or foreign-controlled energy does not achieve the strategic independence the agreement envisions — again, a U.S. strategic interest in the correct answer. Reliability requires all four dimensions:

[68] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 (Artificial Intelligence Act), OJ L, 2024/1689, 12.7.2024, Annex III (listing high-risk AI system categories) Organisation for Economic Co-operation and Development, Recommendation of the Council on Artificial Intelligence, OECD/LEGAL/0449, as amended (2024), Principles 1.3, 1.4.

- physical capacity in allied jurisdictions,
- clean energy infrastructure that powers processing competitively and sustainably,
- digital governance that makes the supply chain intelligence architecture trustworthy for all parties, and
- institutional infrastructure that enables allied partners to make and keep informed commitments over time.
- that enables allied partners to make and keep informed commitments over time.

The agreement that addresses only the first dimension has not solved the problem. It has relocated it.

A fifth physical continuity mechanism complements the four structural reliability dimensions identified above: coordinated allied strategic stockpiling and government-to-government offtake agreements that provide supply assurance during market disruptions and geopolitical interference. Canada has already executed government offtake agreements with Rio Tinto for scandium and with Nouveau Monde Graphite for battery-grade graphite, directed at domestic production assurance and allied defence supply continuity,[69] and is actively exploring strategic stockpiling as a complement to market-based supply chain architecture. The coordinated energy emergency response mechanism proposed in Recommendation 4(d), modelled on the IEA's collective action framework for oil supply disruptions, should have an analogue for physical critical minerals supply: a coordinated allied strategic reserve and emergency offtake framework that can activate committed supply when non-party jurisdictions attempt geopolitical disruption. Allied nations whose individual stockpiling investments are coordinated within an agreed framework are collectively more resilient than unilateral national programs acting in isolation.

B. Processing Technology and the IP Architecture of Reliability

China's dominance in critical minerals is not solely a physical processing advantage. It is a technology and intellectual property advantage, accumulated over decades of state-directed scale production.[70]

[69] Natural Resources Canada, supra note 8 (describing execution of government offtake agreements with Rio Tinto for scandium and with Nouveau Monde Graphite for battery-grade graphite, directed at domestic production assurance and allied defence supply continuity; noting Canada's exploration of strategic stockpiling; describing Defence Production Act designations enabling production mobilization and pricing stabilization for supply continuity).

[70] International Energy Agency, Global Critical Minerals Outlook 2024, supra note 12, at 89-95; Aldo Musacchio and Sergio G. Lazzarini, Reinventing State Capitalism: Leviathan in Business, Brazil and Beyond (Cambridge, MA: Harvard University Press, 2014); Dan Ciuriak, Industrial Policy and Supply-

An agreement that redirects mineral flows and incentivizes facility construction without addressing the technology layer risks producing allied processing plants that depend on Chinese-owned processes or underdeveloped domestic know-how. This is not a theoretical risk. It is the predictable outcome of a supply chain architecture designed around physical assets rather than technological sovereignty.[71]

This risk has resonance for Canada. BSIA Fellow James Hinton has documented Canada's structural IP problem with precision: Canada produces world-class innovation in AI, materials science, and advanced manufacturing, but the country exhibits a documented pattern of "gross incapacity and disorientation when capturing IP," allowing foreign companies to commercialize publicly funded Canadian innovations and then charge Canadians for access to the resulting products.[72] Without IP frameworks that "retain ownership and control of key dual-use technologies" and procurement policies that prioritize Canadian innovators, increased allied investment in critical minerals processing will replicate this pattern at industrial scale.[73]

The scale of China's IP accumulation in mining and critical minerals technology is now documented with quantitative precision. Analysis conducted for Canada's Innovation Asset Collective (IAC) using Innography patent analytics data establishes that China's share of global mining patent filings grew from a modest fraction in 2002 to commanding dominance by 2019, with Chinese-owned patents accounting for the substantial majority of all global mining patent activity by the end of the period. As the figure below illustrates, total global mining patent filings grew from approximately 2,900 in 2002 to more than 22,000 in 2019—an increase of roughly 650 percent—while China's absolute filing volume increased by more than 1,600 percent over the same period, rising from roughly 1,100 to more than 19,000 annual filings. Canadian and

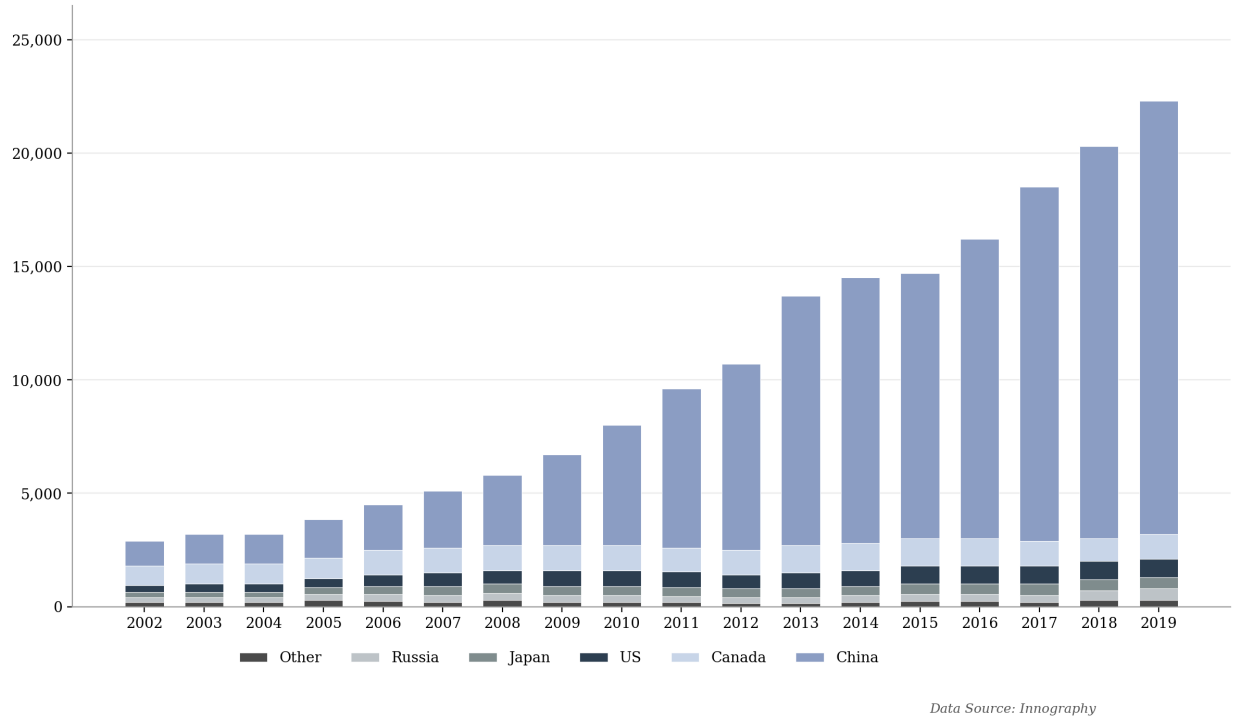
Chain Security in the Energy Transition (Waterloo, ON: Centre for International Governance Innovation, 2024).

[71] Crebo-Rediker and Rasser, Leapfrogging China's Critical Minerals Dominance, supra note 4, at 12-15; Bipartisan Policy Center, The Missing Midstream, supra note 4, at 8-15; Smith and Wright, Canada's Critical Minerals Capacity, supra note 7.

[72] James W. Hinton, "Canada Needs to Own Critical IP and Data Assets to Inspire Generational Economic Prosperity" (Centre for International Governance Innovation, 2020) (documenting Canada's "gross incapacity and disorientation when capturing IP" and the pattern by which publicly funded Canadian innovations are commercialized by foreign companies); James W. Hinton, Mardi Witzel, and Joanna Wajda, An Economic Mirage: How Canadian Universities Impact Freedom to Operate, CIGI Paper No. 274 (Waterloo, ON: Centre for International Governance Innovation) (analyzing how Canadian university research generates IP assets that disproportionately benefit foreign firms).

[73] Hinton, Dual-Use Technologies in the Age of Intangibles, CIGI Policy Brief No. 215, supra note 62; Fitz-Gerald and Padalko, "Canada's Opportunity to Redefine Its Defence," supra note 5.

American filing volumes, by contrast, remained essentially static throughout the period.[74]



Global Mining Patent Filings by Country of Ownership and by Priority Year (2002–2019). Data source: Innography (analysis by James W. Hinton for the Innovation Asset Collective, 2023).

James Hinton observes that registered patents represent only "the tip of the IP iceberg." Below the publicly visible layer of patent filings lies a substantially larger body of trade secrets, proprietary process know-how, manufacturing recipes, operational datasets, proprietary software code, and engineering design rules that are never patented precisely because they are more valuable to their holders as confidential information than as published inventions. China's decades of state-directed, at-scale production in critical minerals processing have generated an accumulation of this unregistered know-how alongside its registered patent portfolio. The result is a dual-layer IP dominance: a dominant registered position in the legally searchable patent record, reinforced by an even deeper repository of experiential knowledge that allied nations, lacking equivalent

[74] James W. Hinton, analysis conducted for the Innovation Asset Collective (IAC), 2023 (data sourced from Innography patent analytics database, mining technology IPC classifications, priority years 2002–2019; on file with Balsillie Legal Advisory Centre). The Innography database aggregates published patent filings from major patent offices worldwide and classifies them by International Patent Classification (IPC) technology field. Filings are attributed to country of priority application. See also Hinton, Dual-Use Technologies in the Age of Intangibles, CIGI Policy Brief No. 215, supra note 62 (providing the broader policy framework within which this patent data is situated).

years of industrial production at comparable scale, are not presently positioned to replicate.[75]

The legal consequence of this dominance is a freedom to operate (FTO) problem of strategic significance for both Canada and the United States. FTO analysis determines whether a firm—or, by extension, a nation's industrial capacity—can develop, manufacture, and commercialize a technology or product without infringing valid IP rights held by third parties. Where China holds dominant IP positions in core processing technologies for lithium, cobalt, nickel, and rare earth elements—the very technologies that allied nations must deploy to build domestic processing capacity—allied firms seeking to construct those processing facilities may be operating in territory covered by Chinese-owned patents, exposed to infringement claims, injunctions, or compelled licensing arrangements that confer strategic leverage on Chinese IP holders over allied supply chain development.[76]

The FTO constraint operates at multiple levels simultaneously. At the domestic level, allied firms can face patent infringement suits in their home courts brought by Chinese IP holders who have filed in allied jurisdictions—a common and legally straightforward strategy for entities with broad global patent portfolios. At the international level, Chinese IP owners can seek to block imports or market access in third-country markets where their patents are registered. At the structural level, the necessity of licensing Chinese-owned processing technology embeds Chinese firms into the operational architecture of allied processing facilities, creating dependency relationships that survive the expiry of the licence term through the embedded know-how, design parameters, and data governance provisions that standard technology transfer agreements routinely include. A processing facility that depends on Chinese-licensed processing technology is not, in any meaningful sense, a sovereign allied asset: it is a facility whose operational continuity is contingent on a commercial relationship, whose

[75] Hinton, communication to Balsillie Legal Advisory Centre, March 2026 (on file) (observing that "patents simply represent the tip of the IP iceberg" in the mining technology context). On the structural distinction between registered IP (patents, utility models) and unregistered IP (trade secrets, know-how, operational data), see World Intellectual Property Organization, Trade Secrets (Geneva: WIPO, 2023) (describing the WIPO definition of trade secrets as information that is secret, has commercial value because it is secret, and has been subject to reasonable steps to keep it secret, and noting that in technology-intensive industries, the economic value of trade secrets routinely exceeds that of the registered patent portfolio). See also Hinton, Witzel, and Wajda, An Economic Mirage: How Canadian Universities Impact Freedom to Operate, CIGI Paper No. 274, supra note 72.

[76] On the freedom to operate concept and its application to the critical minerals technology space, see Hinton, Witzel, and Wajda, An Economic Mirage: How Canadian Universities Impact Freedom to Operate, CIGI Paper No. 274, supra note 72 (analyzing how IP accumulation by foreign entities diminishes domestic FTO for Canadian firms and institutions, with direct implications for firms operating in sectors dependent on foreign-held processing technology). See also Crebo-Rediker and Rasser, Leapfrogging China's Critical Minerals Dominance, supra note 4, at 12–15 (identifying technology licensing dependency as a distinct category of supply chain vulnerability); Hinton, Dual-Use Technologies in the Age of Intangibles, supra note 62.

design improvements may revert or flow to the licensor under standard transfer terms, and whose operational data may be subject to licensor inspection rights embedded in the agreement itself. [77]

China's dominant IP position in mining and processing technology thus constitutes a form of structural leverage that operates entirely through the ordinary mechanisms of commercial IP law—patent assertions, compulsory licensing threats, and technology transfer negotiations in which the Chinese IP holder is in a position to set terms. This leverage does not require export controls, tariffs, or diplomatic confrontation to be effective. It is activated whenever an allied firm or government seeks to build, expand, or operate a critical minerals processing facility using technology in which Chinese entities hold key IP rights, and it is compounded wherever the allied party lacks the engineering talent, R&D infrastructure, or accumulated operational experience to design around the Chinese-held positions.

The agreement's IP architecture must be designed not only to prevent future IP drain—the pattern Mr. Hinton documents in the Canadian context—but to actively address the existing FTO deficit that constrains allied critical minerals processing capacity today. This requires a multi-track approach: accelerated indigenous R&D investment in allied-jurisdiction processing technology; structured IP pooling and cross-licensing arrangements among allied firms operating in the same processing technology space; procurement and investment incentive policies that give preference to processing designs that do not require licensing from non-allied IP holders; and, where existing Chinese IP coverage creates unavoidable FTO barriers in applications with direct national security implications, a coordinated allied approach to the compulsory licensing flexibilities available under the TRIPS Agreement. [78]

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[77] On technology licensing dependencies as a form of supply chain vulnerability in critical minerals processing, see Bipartisan Policy Center, The Missing Midstream, supra note 4, at 8–15; Crebo-Rediker and Rasser, Leapfrogging China's Critical Minerals Dominance, supra note 4, at 12–15; Smith and Wright, Canada's Critical Minerals Capacity, supra note 7. The structural point—that technology licensing agreements routinely include provisions governing data access, improvement ownership, and inspection rights that extend Chinese IP holders' interests into the operational architecture of licensed facilities—is a standard feature of commercial technology transfer practice. See also World Intellectual Property Organization, Transfer of Technology (Geneva: WIPO, 2004), 14–19 (describing standard technology transfer agreement provisions and their implications for the operational autonomy of the licensee).

[78] Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), supra note 87, Arts. 30–31 (establishing the conditions under which WTO Members may make limited exceptions to patent rights (Art. 30) and may grant compulsory licences for patented technologies (Art. 31), including without the patent holder's consent in cases of national emergency or other circumstances of extreme urgency (Art. 31(b)), and Art. 73 (national security exception, providing that nothing in the TRIPS Agreement shall be construed to prevent a Member from taking any action which it considers necessary for the protection of its essential security interests relating to the supply of materials for a military establishment or taken in time of war or other emergency in international relations, or to prevent a Member from taking action in pursuance of its obligations under the United Nations Charter for the

The knowledge generated by allied-financed processing operations, process engineering experience, operational data, optimization algorithms, and accumulated industrial know-how, is as valuable as the facilities themselves, and far more difficult to replace. The agreement's investment incentive provisions should include IP retention conditions ensuring that technology developed with allied public financing remains in allied jurisdictions and contributes to allied industrial competitiveness over time. This is not protectionism. It is the condition for public investment in processing capacity to produce genuine and durable allied industrial strength.

C. Innovation Ecosystem Effects: Measuring the Right Outcomes

Research documents a consistent pattern: where minerals are processed, engineering talent concentrates, processing technology IP is developed, and downstream manufacturing locates.[79]

An allied processing corridor in which the IP layer is foreign-owned produces a facility with workers, but not an innovation ecosystem with capabilities. The agreement's processing incentive provisions should be evaluated not only for their effect on output volumes but for their innovation ecosystem effects, the extent to which they anchor engineering talent, stimulate processing technology research and development, and support the concentration of downstream manufacturing and deep-tech activity in allied processing communities.

Supply chain resilience that is measured only in tonnes of output will systematically underinvest in the human and institutional capital that makes allied processing communities genuinely durable. The review mechanism should be designed to detect and correct this underinvestment.

maintenance of international peace and security)). The TRIPS national security exception in Art. 73 has been found by WTO panels to be partially self-judging with respect to the existence of an emergency in international relations: see Panel Report, Russia—Measures Concerning Traffic in Transit, WT/DS512/R, adopted 26 April 2019, paras. 7.100–7.149. The application of TRIPS compulsory licensing to strategic technology gaps in the critical minerals context would require careful navigation of Art. 31 conditions, including efforts to obtain authorization on reasonable commercial terms prior to the compulsory licence (Art. 31(b)) and payment of adequate remuneration (Art. 31(h)). A coordinated allied approach would reduce the risk of retaliatory action and strengthen the legal justification for the measure. See also Declaration on the TRIPS Agreement and Public Health (Doha Declaration), WT/MIN(01)/DEC/2, adopted 14 November 2001, para. 5(b)–(c) (affirming Members' right to grant compulsory licences and to determine the grounds upon which such licences are granted).

[79] Crebo-Rediker and Rasser, Leapfrogging China's Critical Minerals Dominance, supra note 4, at 18-22; International Energy Agency, Global Critical Minerals Outlook 2024, supra note 12, at 95-98; Bipartisan Policy Center, The Missing Midstream, supra note 4, at 8-15.

D. Investment Screening and the Architecture of Technological Sovereignty

An agreement that incentivizes processing capacity without addressing who controls the technology embedded in that capacity, and without coordinating how allied nations screen the investors who acquire interests in that capacity, is architecturally incomplete. A coordinated plurilateral investment screening framework is the institutional complement to the IP retention provisions of Recommendation 2 and the data governance provisions of Recommendation 1. Together, these three mechanisms form the technological sovereignty architecture that makes allied supply chain investment durable.

D.1 The CFIUS Framework and Its Significance for Critical Minerals

The Committee on Foreign Investment in the United States (CFIUS) operates under the Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA).[80] FIRRMA substantially expanded CFIUS jurisdiction beyond controlling acquisitions to encompass the full range of investment structures through which a foreign person might gain access to sensitive technology, infrastructure, or data: minority investments that afford board representation, observer rights, or access to material nonpublic technical information are now reviewable, as are real estate transactions in proximity to sensitive government facilities.[81]

FIRRMA's TID framework, organizing CFIUS review authority around Technology, Infrastructure, and Data, applies with particular force to critical minerals processing facilities. A processing facility's operational data is, in FIRRMA's terms, sensitive personal data or critical infrastructure; the processing technology embedded in its operations is a covered critical technology. A foreign investor who acquires a minority stake that affords access to processing optimization algorithms and yield data in a critical minerals facility has, in FIRRMA's terms, acquired access to a TID US business. CFIUS has the authority to review that transaction, impose mitigation conditions, or require divestiture.

[80] Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA), Pub. L. No. 115-232, div. A, title XVII, §§ 1701-1728, 132 Stat. 2173 (2018), codified at 50 U.S.C. § 4565 (as amended). FIRRMA was enacted as part of the John S. McCain National Defense Authorization Act for Fiscal Year 2019. The legislation explicitly identified critical technology, critical infrastructure, and sensitive personal data (the "TID" framework) as the central organizing categories of investment security risk warranting expanded CFIUS review authority beyond controlling acquisitions.

[81] 31 C.F.R. Part 800 (Provisions Pertaining to Certain Investments in the United States by Foreign Persons), § 800.248 (definition of "TID US business"); § 800.209 (critical infrastructure); § 800.215 (critical technologies). See also U.S. Department of the Treasury, "The Committee on Foreign Investment in the United States (CFIUS)," treasury.gov/cfius (describing mandatory filing requirements for certain TID US business transactions and the range of investment structures subject to CFIUS jurisdiction, including minority investments that afford board representation, observer rights, or access to material nonpublic technical information).

The significance of this framework for the plurilateral agreement is twofold.

- First, CFIUS represents the most operationally sophisticated investment security review mechanism in the allied world, with access to classified intelligence community assessments, structured mitigation agreement practice, and a multi-agency review process. It provides a model from which allied investment screening frameworks can learn.
- Second, CFIUS is, by design and by law, unilateral: it addresses U.S. national security interests in U.S.-jurisdiction transactions. It does not, and cannot, unilaterally address the coordinated security interests of allied nations in the broader network of processing facilities on which U.S. supply chains depend.

D.2 The Allied Screening Landscape and Its Coordination Gap

Each of the principal allied critical minerals producers operates its own national investment security review mechanism, and each has been substantially reformed in recent years:

Canada: The Investment Canada Act (ICA) has a national security review framework, substantially modernized by the National Security Review of Investments Modernization Act (S.C. 2024, c. 4),[82] that now grants the Minister authority to impose interim conditions during reviews, accept binding undertakings as an alternative to prohibition, and share information with international counterparts. The 2024 amendments also expand review timelines and provide clearer authority for reviews of investments in sectors, including critical minerals, designated as sensitive by regulation. The ICA framework, however, does not yet have the classified briefing infrastructure, the sectoral intelligence advisory bodies, or the structured multi-agency coordination that characterize CFIUS reviews.

United Kingdom: The National Security and Investment Act 2021 [83] established a mandatory notification regime for acquisitions in 17 sensitive sectors, explicitly

[82] Investment Canada Act, R.S.C. 1985, c. 28 (1st Supp.), Part IV.1 (national security review), as added by Economic Action Plan 2009 Act, No. 1, S.C. 2009, c. 2, and substantially amended by the National Security Review of Investments Modernization Act, S.C. 2024, c. 4 (formerly Bill C-34) (expanding national security review timelines, granting the Minister authority to impose interim conditions and accept binding undertakings during reviews, improving information sharing with international counterparts, and strengthening prohibition and divestiture authorities; Royal Assent March 22, 2024; key provisions in force September 3, 2024). The 2024 amendments represent the most significant reform to the ICA national security review framework since the original national security provisions were introduced in 2009.

[83] National Security and Investment Act 2021 (UK), c. 25 (establishing a mandatory notification regime for acquisitions in 17 sensitive sectors including Mining, Advanced Materials, and Artificial Intelligence, with acquisition controls including interim orders, final orders, and call-in powers analogous to CFIUS prohibition and divestiture authorities). The UK NSI Act 2021 applies to transactions that give a person control over a qualifying entity, including stakes of 25 percent, 50 percent, and 75 percent or more. The

including Mining, Advanced Materials, and Artificial Intelligence. The UK regime provides for a call-in power applicable to any transaction, whether controlling or not, that gives rise to a national security risk, with authorities analogous to CFIUS interim orders, final orders, and divestiture requirements.

Australia: The Foreign Acquisitions and Takeovers Act 1975, as amended, operates through the Foreign Investment Review Board (FIRB).[84] Foreign government investors face a zero-dollar screening threshold for investments in Australian critical minerals operations, reflecting Australia's early recognition that state-owned enterprise investment in the critical minerals sector carries qualitatively different risk profiles from private investment.

These national regimes share a fundamental architecture, risk-based review, mitigation agreement practice, and prohibition authority, which derives in part from the common foundation established by the OECD's 2009 Guidelines for Recipient Country Investment Policies relating to National Security.[85] But they operate as isolated national reviews. A state-owned enterprise from a non-allied jurisdiction that seeks to acquire interests in Canada's Sudbury basin processing infrastructure, British Columbia's concentrating facilities, and the U.S. processing operations that depend on their output can be reviewed by three separate agencies applying three separate legal frameworks, communicating limited intelligence to each other, and potentially reaching inconsistent conclusions. The structural weakness of this architecture is not the strength of any individual national

17 mandatory notification sectors are specified in the National Security and Investment Act 2021 (Notifiable Acquisition) (Specification of Qualifying Entities) Regulations 2021, S.I. 2021/1264.

[84] Foreign Acquisitions and Takeovers Act 1975 (Cth) (Australia), as amended; Australian Government, Foreign Investment Review Board, Guidance Note 8: National Security (Canberra: FIRB, December 2020, updated April 2022), available at foreigninvestment.gov.au (establishing, in its sectoral guidance on critical minerals, that foreign government investors face an A$0 screening threshold for any acquisition in Australia, and that FIRB encourages voluntary notification by foreign persons proposing to invest in the extraction, processing, or sale of critical minerals on the basis that the scarcity and geographical concentration of critical minerals leaves them potentially vulnerable to supply chain manipulation and disruptions for strategic gain that could cause long-term harm to national security). See also Australian Government, 2023-2030 Critical Minerals Strategy (Canberra: Department of Industry, Science and Resources, 2023), available at industry.gov.au.

[85] OECD, Recommendation of the Council on Guidelines for Recipient Country Investment Policies relating to National Security, OECD/LEGAL/0372, adopted by the OECD Council on 25 May 2009 (establishing the foundational multilateral framework for investment screening consistent with international trade and investment obligations, including the principles that national security-based investment restrictions should be non-discriminatory, transparent, predictable, proportionate, and accountable; all OECD members as well as Argentina, Croatia, and Kazakhstan have adhered to the Guidelines). See also OECD, Acquisition- and Ownership-Based Policies in Strategic and Sensitive Sectors: Mapping and Analysis (Paris: OECD, 2023) (cataloguing the investment screening frameworks of OECD members and identifying coordination gaps and design divergences among allied jurisdictions in the treatment of critical minerals and dual-use technology investments).

review. It is the absence of a coordination mechanism that would allow allied screening agencies to share intelligence about investors of concern and align their responses.

D.3 Institutional Capacity as a Prerequisite for Effective Screening Coordination

The submission's analysis of Canada's institutional advisory deficit (Section IV) applies with equal force to investment screening. CFIUS reviews are informed by classified intelligence community assessments and by multi-agency deliberation that draws on the sectoral expertise of the Departments of Defense, Energy, Commerce, and State. The ICA national security review process, by contrast, is administered primarily through the Department of Innovation, Science and Economic Development, without the equivalent of CFIUS's classified briefing infrastructure or its inter-agency intelligence synthesis process.

This institutional asymmetry has direct consequences for the viability of a plurilateral investment screening coordination mechanism. Allied coordination is only as strong as the weakest link in the coordination chain. Canada cannot participate effectively in a mechanism that requires sharing assessments of an investor's national security risk profile if Canada's domestic review process lacks the tools to produce that assessment with the precision required for effective coordination. Building the institutional capacity proposed in Recommendation 3 is therefore a prerequisite for the investment screening coordination proposed in Recommendation 8, not merely a complementary reform.

The connection also runs in the other direction: effective investment screening coordination is one of the most powerful arguments for building the sectoral advisory infrastructure. An ITAC-analog advisory body with access to security-cleared industry participants in the mining, processing, and materials science sectors would be in a position to provide the sectoral intelligence inputs, the assessments of technology licensing risk, data governance posture, and operational control structure of a proposed investor, that investment security reviews require but that government analysts alone cannot reliably supply.

D.4 The CUSMA Architecture and the Space for Allied Investment Governance

The plurilateral investment governance framework proposed in Recommendation 8 operates within existing legal authority. CUSMA's national security exception, Article 32.2, provides that nothing in the Agreement shall be construed to preclude a party from applying measures that it considers necessary for the protection of its own essential security interests.[86] The exception operates on a self-judging basis: each party

[86] Canada-United States-Mexico Agreement (CUSMA), Art. 32.2, entered into force July 1, 2020 ("Nothing in this Agreement shall be construed to: ... (b) preclude a Party from applying measures that it considers necessary for the fulfillment of its obligations with respect to the maintenance or restoration of international peace or security, or the protection of its own essential security interests"). The national security exception in Art. 32.2 operates on a self-judging basis, providing the legal space within which CUSMA parties may operate investment screening mechanisms, including review and prohibition of

determines, for itself, what measures are necessary for its essential security interests. This legal architecture provides the space within which CUSMA parties may operate investment screening mechanisms, including review and prohibition of foreign investments in critical minerals processing facilities, without violating CUSMA's investment chapter obligations.

The plurilateral critical minerals agreement can build on this architecture by establishing agreed frameworks for the exercise of investment screening authority in the critical minerals sector, coordinating the notification, intelligence-sharing, and mutual recognition dimensions of allied screening review without requiring any party to surrender its domestic authority to make final investment security determinations. The coordination of investment screening is not a limitation on national sovereignty. It is the application of allied institutional capacity to a problem, the cross-jurisdictional investment security risk, that no single party can address unilaterally.

E. Implementation Architecture: Calibrated Phase-in and Circumvention Resilience

E.1 Phase-in Timelines and the Institutional Readiness Test

The reliability of a plurilateral critical minerals agreement depends not only on the soundness of its substantive commitments but on whether allied partners have the institutional capacity to implement those commitments at the pace the agreement's phase-in schedule contemplates. Phase-in timelines that are calibrated exclusively to commodity market dynamics, to the time required for price mechanisms to stabilize or for processing capacity to come online, will systematically fail if they do not account for the institutional readiness of allied partners to administer the monitoring, compliance, and enforcement functions the agreement requires.

International trade law has long recognized this problem. The TRIPS Agreement's transition period framework, Articles 65 and 66, establishes the foundational precedent: developing and least-developed country Members received differentiated implementation timelines, explicitly because their "economic, financial and administrative constraints" meant that full immediate implementation was not realistically achievable and would undermine rather than advance the agreement's objectives.[87] The plurilateral critical

foreign investments in critical minerals processing facilities, without violating CUSMA's investment chapter obligations. See also GATT Art. XXI(b); GATS Art. XIV bis(b).

[87] Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), Annex 1C to the Marrakesh Agreement Establishing the World Trade Organization, opened for signature April 15, 1994, 1869 U.N.T.S. 299, Arts. 65-66. Article 65 grants developing country Members an additional four-year transition period before being required to apply most TRIPS provisions (Art. 65.2), and Article 66 recognizes that least-developed country Members shall not be required to apply most TRIPS provisions for extended periods in view of their "economic, financial and administrative constraints, and their need for flexibility to create a viable technological base." The TRIPS transition period framework is the

minerals agreement should incorporate an analogous logic, applied not to a development status differential but to an institutional readiness differential across all participating nations.

This is not a concern unique to any particular participant. The agreement's ambitions are genuinely novel across the entire allied institutional landscape: no allied nation has previously administered a plurilateral supply chain intelligence governance framework of this scope, a coordinated investment screening mechanism of this design, or a tiered provenance certification architecture of this technical sophistication. What varies across the alliance is not commitment but institutional readiness — the depth of existing sectoral advisory infrastructure, the maturity of investment screening coordination mechanisms, and the deployment of digital provenance certification platforms. The agreement should establish entry standards that all parties must satisfy and transition support provisions that help all parties reach them.

The CUSMA Rapid Response Labor Mechanism (Annexes 31-A and 31-B) provides a complementary model from within the agreement's own institutional family.[88] The Mechanism's design reflects an understanding that facility-level compliance obligations are most durably achieved through graduated enforcement, initial cooperative review, structured remediation periods, and escalating sanctions for persistent non-compliance, rather than immediate punitive measures that exceed the enforcement capacity of the responding party. Applying this graduated architecture to the plurilateral critical minerals agreement's phase-in provisions would produce timelines that are both credible as legal obligations and achievable as operational realities.

The agreement should establish institutional readiness benchmarks that all participating nations must satisfy as conditions of participation, with the following tiered architecture:

Tier 1 obligations — notifying review openings under the investment screening coordination mechanism, participating in the data governance framework, and reporting on innovation ecosystem metrics — take effect at entry into force. These obligations require primarily political commitment and modest administrative capacity that all allied parties can be expected to meet.

foundational international trade law precedent for the principle that complex multilateral obligations should be calibrated to the institutional and administrative capacity of the parties obligated to implement them, not merely to the subject-matter economics of the obligation.

[88] Canada-United States-Mexico Agreement (CUSMA), Annex 31-A (Facility-Specific Rapid Response Labor Mechanism between the United States and Mexico) and Annex 31-B (Facility-Specific Rapid Response Labor Mechanism between Canada and Mexico), entered into force July 1, 2020. The Mechanism establishes a tiered enforcement process, initial review, cooperative remediation, and escalating sanctions, designed to address facility-level compliance failures in mining, manufacturing, and related sectors through graduated obligations rather than immediate full enforcement. See also USMCA Implementation Act, Pub. L. No. 116-113, § 713, 134 Stat. 11 (2020) (listing enforcement priority sectors including mining, steel, and aluminum, which correspond directly to critical minerals processing operations).

Tier 2 obligations — full operation of the ITAC-analog advisory bodies, active participation in classified investment security review coordination, and deployment of the provenance certification platforms — are triggered by the satisfaction of defined institutional benchmarks rather than by a fixed calendar date. These benchmarks apply to all parties and represent the institutional architecture that makes the agreement's substantive commitments operational rather than declaratory.

Tier 3 obligations — full price mechanism compliance monitoring and enforcement, including the Low-Carbon Processing Standard carbon content adjustment — phase in only after Tier 2 benchmarks are met, with a maximum period and transition support provisions that accelerate institutional readiness.

The agreement should include explicit transition support provisions: technical assistance, access to U.S. ITAC and CFIUS institutional experience, and, where appropriate, co-financing for the advisory infrastructure that Recommendation 3 proposes. An allied partner that is genuinely investing in institutional readiness but has not yet reached the Tier 2 benchmark should receive the support needed to close that gap, not sanctions that create perverse incentives to defer institutional development to avoid triggering obligations.

E.2 Circumvention Resilience as an Institutional Capacity Challenge

Circumvention of a plurilateral critical minerals agreement's price supports and market preferences would most likely take one of three forms: origin-shifting, ownership-structure circumvention, and documentation fraud. Each requires a distinct institutional response, and the effectiveness of each response is directly constrained by the institutional capacity of allied partners to carry it out.

Origin-shifting circumvention occurs when a non-party processor acquires raw or partially processed critical minerals from an extraction jurisdiction, performs minimal processing in a non-party jurisdiction, and then exports to an agreement party claiming that the minimal processing constitutes sufficient transformation to qualify the product for agreement benefits. The legal standard for detecting and rejecting this form of circumvention is the substantial transformation criterion: origin is conferred by the last substantial transformation performed on a good, typically assessed through a change in tariff classification or satisfaction of a regional value content threshold.[89] For the

[89]WTO Agreement on Rules of Origin, Annex 1A to the Marrakesh Agreement Establishing the World Trade Organization, opened for signature April 15, 1994, 1868 U.N.T.S. 397, Arts. 1-3 (establishing that non-preferential rules of origin should be based on the criterion of substantial transformation, defined as the criterion that confers origin on a good as a result of the last substantial transformation worked on the good, expressed through a change in tariff classification, an ad valorem percentage criterion, or a manufacturing or processing operation). The substantial transformation standard is the operative legal framework for determining whether processing in a non-party jurisdiction genuinely transforms a critical mineral product such that it no longer carries the origin of the input material and is therefore the relevant legal benchmark for distinguishing genuine allied-jurisdiction processing from transshipment or minimal processing designed to launder origin for access to agreement price supports.

plurilateral agreement, the operative rules of origin should be designed on the model of CUSMA Chapter 4, product-specific rules that specify the processing threshold that distinguishes genuine allied processing from transshipment, adapted to the specific mineral categories and processing stages covered by the agreement.[90]

Detecting origin-shifting circumvention, however, requires technical capacity that rules of origin alone cannot supply. A customs officer presented with a certificate of origin claiming that nickel cathode processed in a non-party jurisdiction qualifies as originating because it underwent a specified tariff classification change needs to be able to assess whether the claimed processing operations were genuinely performed and whether they meet the substantial transformation standard. This is a technical assessment that requires processing engineering expertise, the ability to evaluate, for example, whether the claimed electrowinning operations were of sufficient duration and technical character to constitute substantial transformation of nickel intermediates into battery-grade cathode. This is precisely the sectoral intelligence that the ITAC-analog advisory bodies proposed in Recommendation 3 would provide, and that government customs officials alone cannot reliably supply.

Ownership-structure circumvention occurs when a non-party entity acquires a controlling or influential interest in an allied-jurisdiction processing facility and then channels the facility's output under the agreement's price preferences, while retaining effective control over the facility's operational and data governance decisions for the non-party entity's benefit. The Plurilateral Investment Screening Coordination Mechanism proposed in Recommendation 8 is the primary institutional response to this form of circumvention: its notification, intelligence-sharing, and mutual-recognition provisions are specifically designed to identify and restrict investment structures that would give non-party entities access to agreement benefits through allied-jurisdiction assets that they effectively control.

Documentation fraud, falsified provenance certificates, manipulated chain-of-custody records, and fraudulent processing documentation, is addressed primarily by the Multilateral Supply Chain Data Governance and Resilience Framework proposed in Recommendation 1. Interoperable digital provenance certification systems with agreed

[90] Canada-United States-Mexico Agreement (CUSMA), Chapter 4 (Rules of Origin) and Annex 4-B (Product-Specific Rules of Origin), entered into force July 1, 2020. Chapter 4 establishes that a good is originating if it is wholly obtained or produced, or if it meets the applicable product-specific rule in Annex 4-B, which for metals and processed mineral products typically requires a change in tariff classification at the heading or chapter level (reflecting substantial processing) or satisfaction of a regional value content threshold. These rules operationalize the substantial transformation standard for the North American critical minerals supply chain and provide the applicable legal framework for assessing circumvention claims in a CUSMA-party context. An analogous rules-of-origin architecture should be designed into the plurilateral agreement to define the processing threshold that distinguishes genuine in-agreement processing from minimal transformation by non-party processors seeking to access agreement benefits through transshipment or minimal processing operations.

technical standards are systematically more resistant to documentation fraud than paper-based or non-interoperable systems, because the cryptographic and audit trail features of properly designed digital certification platforms make falsification significantly more difficult and significantly more detectable. An allied partner that has not yet deployed compliant provenance certification platforms, a Tier 2 institutional benchmark under the calibrated phase-in architecture proposed in Section VI.E.1, is a structural vulnerability in the agreement's circumvention defense architecture. The phase-in framework and the circumvention resilience framework are therefore not independent design elements. They are two faces of the same institutional capacity problem.

VII. Recommendations

BSIA offers the following nine recommendations as design principles for a plurilateral critical minerals agreement that achieves durable reliability across the physical, energy, digital, institutional, investment governance, and implementation architecture dimensions.

Recommendation 1: A Multilateral Supply Chain Data Governance and Resilience Framework. The agreement should establish a Multilateral Supply Chain Data Governance and Resilience Framework providing that: (a) geological, processing, and logistics intelligence contributed by allied nations to shared supply chain coordination systems is governed by agreed multilateral rules that all parties accept as the exclusive legal framework for compulsory access to that data. The Framework should be compatible with Canada's "Mined in Canada" digital credentials initiative and with the G7 Roadmap to Promote Standards-Based Markets for Critical Minerals, recognizing existing allied-nation investments in standards-based provenance certification architecture as Tier 1 contributions to the Framework's implementation; (b) allied nations retain the right to designate categories of supply chain data as subject to national security protection, exempt from compulsory disclosure under any party's domestic law; (c) AI systems used in allied supply chain operations meet agreed technical and governance standards developed with reference to the OECD AI Principles and the EU AI Act; and (d) the digital logistics systems governing allied supply chains meet agreed operational resilience standards, including interoperability, redundancy, and coordinated incident-response requirements, to ensure supply continuity under adversarial conditions.

Recommendation 2: A Processing Technology and IP Retention Annex. The agreement should include a Processing Technology and IP Retention Annex establishing that allied nations may, as a condition of providing investment incentives for critical minerals processing capacity, require that technology developed in the incentivized facility, including process engineering know-how, optimization algorithms, and proprietary separation and refining techniques, remain under the ownership and control of legal entities domiciled in allied nations for a defined period following the investment.

Recommendation 2(b): An Allied Freedom-to-Operate Remediation Framework. The agreement should recognize that China's accumulated dominance in mining and critical minerals processing IP creates existing freedom-to-operate constraints on allied processing capacity development that the IP retention provisions of Recommendation 2(a) alone cannot remedy. The agreement should therefore include provisions supporting: (i) accelerated allied-jurisdiction R&D investment designed to generate FTO-clean processing technologies as alternatives to Chinese-held IP positions in priority processing categories; (ii) structured IP pooling and cross-licensing arrangements among allied firms operating in the same processing technology space, to aggregate allied FTO positions and reduce individual firms' exposure to Chinese-held patents; (iii) procurement and investment incentive conditions that give preference to processing facility designs that do not require licensing from non-allied IP holders for their core processing operations; and (iv) where existing Chinese IP coverage creates unavoidable FTO barriers in processing applications with direct national security implications, a coordinated allied approach to the compulsory licensing flexibilities available under TRIPS Articles 30–31 and the national security exception of Article 73, exercised collectively to reduce the risk of retaliatory action and strengthen the legal justification for the measure.

Recommendation 3: Allied Institutional Capacity Building Provisions. The agreement should include provisions supporting allied nations in developing the institutional trade advisory infrastructure necessary to engage effectively as long-term supply chain partners, modelled on the U.S. ITAC system, that participating nations commit to establishing within a defined period following the agreement’s entry into force. An allied partner without the sectoral intelligence infrastructure to understand what it has committed to is a fragile partner. The agreement should make institutional advisory capacity a design requirement, not an optional feature.

The advisory bodies established under this Recommendation should include cleared IP counsel with FTO assessment capability in critical minerals processing technology, enabling the sectoral intelligence function to extend to the analysis of Chinese-held patent positions and allied firms' exposure to them.

Recommendation 4: Recognition of Energy and Digital Infrastructure as Supply Chain Infrastructure. The agreement should formally recognize that clean, reliable energy supply and sovereign digital infrastructure are integral components of allied supply chain security, not merely domestic policy matters. This recognition should be operationalized through four provisions:

4(a) Processing Corridor Recognition: The agreement should recognize Canada’s national clean energy processing corridor, anchored by Quebec’s and Manitoba’s

hydroelectric systems, Ontario's nuclear-hydroelectric grid, and BC's hydroelectric resources, as a critical allied supply chain infrastructure asset.

4(b) Clean Energy Contribution as Allied Contribution: Participating nations' investment in clean energy capacity that underpins allied mineral processing and supply chain intelligence operations should be recognized within the agreement's allied contribution framework.

4(c) Grid Interconnection as Agreement-Eligible Infrastructure Investment: HVDC grid interconnections among allied processing corridor nodes, including the Manitoba Innovation and Productivity Taskforce's proposed Manitoba-Ontario-Saskatchewan interconnection, should be treated as supply chain infrastructure investments eligible for allied coordination and financing support.[91]

4(d) Energy Emergency Coordination Mechanism: The agreement should establish a coordinated energy emergency response mechanism among party nations, analogous to the IEA's collective action mechanism for oil supply emergencies, which can activate reserve clean energy capacity to maintain critical minerals processing continuity during regional energy supply disruptions.

Recommendation 5: Innovation Ecosystem Impact Assessment. The agreement's processing incentive provisions should be evaluated not only for their effect on output volumes but for their innovation ecosystem effects, the extent to which they anchor engineering talent, stimulate processing technology R&D, and support the concentration of downstream manufacturing and deep-tech activity in allied processing communities. The agreement should require periodic reporting by participating nations on these innovation ecosystem effects and should provide that this reporting inform the agreement's review mechanism. Innovation ecosystem metrics reported under this Recommendation should include FTO landscape indicators — specifically, the proportion of priority processing operations for which allied-jurisdiction IP positions provide FTO-clean alternatives to Chinese-licensed technology — alongside the output volume, talent, and R&D metrics already specified.

Recommendation 6: Middle-Power Producer Coordination Architecture. The agreement should be designed to strengthen the emerging network of allied middle-power producers, Canada, Australia, and others, not merely to manage bilateral relationships with the United States. A middle-power coordination framework, built around shared sovereign investment principles, common IP retention standards, interoperable data governance frameworks, and shared energy infrastructure planning, is a more resilient

[91] Government of Manitoba, Innovation and Productivity Taskforce, Innovation and Prosperity Report, supra note 22 (recommending Manitoba as Canada's hub for sovereign AI and allied infrastructure; proposing HVDC transmission lines connecting Manitoba Hydro east to Ontario and west to Saskatchewan and Alberta; identifying the Port of Churchill as Canada's Arctic seaport uniquely positioned for a modern transatlantic logistics strategy).

architecture than a hub-and-spoke model. The Canada-Australia Joint Statement on Critical Minerals Cooperation of March 2026 provides a model for what this coordination can look like.

Recommendation 7: A Low-Carbon Processing Standard. The agreement should establish a Low-Carbon Processing Standard as a qualification criterion for the market price supports, investment protections, and allied market access preferences available under the agreement. The Standard should provide that: (a) processing operations receiving agreement benefits must meet a maximum carbon intensity threshold calibrated for each covered mineral category to the carbon intensity achievable using market-available clean electricity sources in allied jurisdictions; (b) imports from non-parties from processing operations that do not meet the Standard should be subject to a carbon content adjustment mechanism, analogous to the EU CBAM certificate requirement; (c) the Standard should be calibrated for compatibility with EU CBAM methodology so that agreement-compliant operations are automatically recognized under CBAM; and (d) a Standing Working Group on Carbon and Environmental Standards should be established within the agreement's coordination architecture to monitor the evolution of allied carbon pricing frameworks and recommend updates over time. This recommendation converts Canada's clean electricity advantage, which under current market conditions generates no market premium for Canadian processing, into a structural competitive advantage within the agreement's trade architecture.

Recommendation 8: A Plurilateral Investment Screening Coordination Mechanism. The agreement should establish a Plurilateral Investment Screening Coordination Mechanism providing that: (a) parties commit to notify each other when a review is initiated under their domestic investment screening legislation for any investment in a covered critical minerals processing facility, with notification to include the identity of the investor, the nature of the transaction, and the covered asset; (b) parties agree to share relevant investment intelligence, subject to applicable national security and legal constraints, to ensure that screening reviews in individual party jurisdictions reflect the full picture of an investor's activities, technology access, data governance posture, and operational control structures across the allied network; (c) parties agree to recognize, as a relevant consideration in their domestic screening reviews, any conditions, mitigation agreements, or prohibitions imposed on the same investor by another party with respect to allied critical minerals assets, preventing the use of one allied jurisdiction as a back-door to assets that another party has determined require restriction; and (d) parties commit to developing, through the institutional advisory bodies established under Recommendation 3, the sectoral intelligence infrastructure necessary to assess technology licensing arrangements, data governance postures, and operational control structures of investors in critical minerals processing facilities including specifically whether the technology licensing arrangements of the proposed facility create FTO

dependencies on IP held by entities from non-allied jurisdictions, which should be treated as an independent national security consideration within the coordinated screening framework.

The ICA reforms enacted in Canada under the National Security Review of Investments Modernization Act (S.C. 2024, c. 4) have moved in the right direction. The institutional advisory capacity built under Recommendation 3 is the next necessary step. The agreement's investment screening and pricing disciplines should include an explicit allied sovereign instrument safe harbor providing that government equity investments, loan guarantees, offtake agreements, and production mobilization measures taken by party governments in furtherance of critical minerals supply chain security are recognized as consistent with the agreement's objectives and are not subject to challenge under its investment or subsidy-related disciplines.

Recommendation 9: Calibrated Phase-in, Transition Support, and Circumvention Resilience. The agreement should establish an implementation architecture that reflects the institutional readiness of allied partners, not merely commodity market timelines. Specifically: (a) the agreement should adopt a tiered implementation schedule built around institutional readiness benchmarks; (b) the agreement should include explicit transition support provisions, technical assistance, access to U.S. ITAC and CFIUS institutional experience, and co-financing for advisory infrastructure, for allied partners actively investing in institutional readiness; (c) the agreement's rules of origin for covered minerals should be designed to the substantial transformation standard,[92] with product-specific rules analogous to CUSMA Chapter 4[93] that define the processing threshold distinguishing genuine allied processing from transshipment or minimal transformation designed to access agreement benefits; and (d) the agreement should establish a Circumvention Review Panel, drawing on the sectoral expertise of ITAC-analog advisory bodies, empowered to investigate origin-shifting and ownership-structure circumvention claims and recommend the suspension of agreement benefits for facilities found to have circumvented the agreement's rules. The tiered phase-in, the transition support, and the circumvention resilience framework are not independent design elements: they are three expressions of the same insight that durable implementation requires institutional capacity, and that building institutional capacity requires both support and accountability.

VIII. Conclusion

The plurilateral critical minerals agreement presents a generational opportunity to build allied supply chain resilience. The Balsillie Legal Advisory's submission argues that realizing this opportunity requires designing not only a physical supply chain but a

[92] WTO Agreement on Rules of Origin, supra note 89, Arts. 1-3.

[93] CUSMA, Chapter 4 and Annex 4-B, supra note 90.

governance architecture, one in which allied nations develop genuine processing technology, control the data systems that govern their supply chains, retain the IP value of publicly financed industrial capacity, possess the institutional infrastructure to understand and defend their own interests, build processing capacity on a foundation of clean, sovereign energy infrastructure, coordinate the screening of investments that could compromise the technological sovereignty of the supply chains they are building together, and implement their commitments on a timeline calibrated to what allied partners can actually achieve.

The physical supply chain is the foundation. The technology, data, institutional, energy, investment governance, and implementation architecture built on top of it is the structure. An agreement that secures the foundation while leaving the structure unaddressed will achieve a supply chain that is geographically realigned but institutionally fragile, and a fragile allied partner is not the kind of partner the United States' strategic objectives require.

There is a dimension of the energy architecture that the conclusion should state directly, because it is the strongest purely American-interest argument this submission makes. The United States faces an acknowledged and urgent electricity constraint. The administration's AI Action Plan identifies U.S. energy capacity as stagnant and AI demand as the most significant new energy challenge the country has faced since the 1970s. In this context, the plurilateral agreement's processing corridor architecture, in which electricity-intensive critical minerals refining is anchored in Canada's clean energy surplus, is not simply a Canadian competitive advantage. It is an American grid management strategy. Every kilogram of aluminum, battery-grade nickel, and rare earth intermediate produced in Canada and imported into the United States is electricity the United States did not have to generate, grid capacity that remains available for data centers, semiconductor fabs, and advanced defense manufacturing. An agreement designed to push that processing onto the U.S. grid, in the name of reindustrialization, would not strengthen American industrial capacity. It would constrain the higher-value uses of American electricity that the administration's own technology strategy depends upon.

The Canada-U.S. security relationship provides the deepest bilateral defence integration in the world. That relationship is a strategic asset that no other supply chain architecture can replicate. Canada's minerals, its clean energy, and its potential as a hub for allied digital infrastructure are all dimensions of the same partnership. The plurilateral agreement should be designed to deepen and institutionalize all three, not merely to leverage one.

Canada is ready to be that partner. What it needs, and what the agreement can help provide, is the institutional architecture to translate its security relationship, resource

endowment, energy infrastructure, and research capacity into durable, reliable commitments that the United States can count on. BSIA's submission is offered in that spirit.

The Balsillie School of International Affairs and its Balsillie Legal Advisory Centre welcome the opportunity to engage further with USTR staff on any aspect of these comments.

Respectfully submitted,

Balsillie Legal Advisory Centre of the Balsillie School of International Affairs

Waterloo, Ontario, Canada

March 19, 2026

ANNEX A

Responses to Federal Register Questions

Introductory Note

This Annex maps the analytical framework of the principal Balsillie Legal Advisory Centre submission to the specific questions posed by USTR in the Federal Register notice (91 Fed. Reg. 9686, February 26, 2026; Docket No. USTR-2026-0034). This Annex does not address every question posed in the Federal Register notice. Sections B (target and reference pricing) and C (price adjustment mechanisms) involve commodity-specific market dynamics and financial modelling that fall outside the Balsillie Legal Advisory Centre's institutional expertise; the Balsillie Legal Advisory Centre defers to industry participants, commodity market analysts, and specialized trade economists on those questions. For ease of cross-reference, each response is keyed to the lettered section and numbered question in the Federal Register notice.

Section A: Prioritization of Critical Minerals and Trading Partners

Questions addressed: A.1-A.3 (mineral prioritization and grouping criteria) and A.4-A.5 (trading partner selection and qualities).

A.1 What factors should be considered in prioritizing certain critical minerals for agreement scope?

The factors governing prioritization of specific critical minerals for initial agreement scope should include, as a primary economic criterion, the electricity intensity of the mineral's key processing stages. Prioritizing electricity-intensive critical minerals for agreement coverage has two strategic rationales. First, electricity-intensive minerals are precisely those for which market-based supply chain architecture will generate the greatest competitive advantage over non-market, high-carbon alternatives. Second, electricity-intensive minerals are those for which Canada's and other allied nations' clean energy endowments translate most directly into a durable structural competitive advantage. On this criterion, the following mineral categories warrant priority consideration: aluminum (CN 76), Class I nickel and battery-grade cobalt, lithium hydroxide monohydrate, rare earth elements (separated, individual), battery-grade graphite, and high-purity silicon.

A.2 How can critical minerals be effectively grouped for similar interventions?

For the purpose of designing common pricing mechanisms and standards, minerals can usefully be organized into two groups by their dominant processing energy profile. Group 1, High Direct Electricity Intensity: Minerals whose key processing stages are primarily electrochemical or electrothermal, including aluminum, Class I nickel, cobalt, and battery-

grade graphite. These are natural candidates for common pricing mechanism design and for the Low-Carbon Processing Standard. Group 2, High Combined Energy Intensity: Minerals whose processing requires substantial thermal energy in addition to electricity, including lithium hydroxide production, REE separation, and silicon purification. For this group, the carbon content of both electricity supply and thermal energy is relevant to the carbon arbitrage analysis.

A.3 How can the agreement address co-occurring minerals with different market structures?

The agreement should address this by designing pricing mechanisms at the level of the integrated processing operation rather than the individual mineral output. A Sudbury-type integrated smelter and refinery produces nickel, cobalt, copper, platinum group elements, and other by-products from a single ore feed. Price floors under the agreement should apply to the full basket of outputs from covered processing operations rather than to individual minerals in isolation, preventing the kinds of differential treatment that could fracture the economics of integrated allied processing assets.

A.4 Which trading partners should be considered for participation, and why?

The Balsillie Legal Advisory Centre submission argues that allied supply chain architecture should be organized around the security relationship, not merely around resource endowment or political cooperation. The agreement's initial cohort should prioritize nations that: (a) share formal treaty-based security obligations with the United States, principally the Five Eyes partners and NATO Allies with significant mineral endowments; and (b) possess the institutional and regulatory capacity to make and sustain binding supply chain commitments across political cycles. Canada holds a structurally distinct position within this framework as a co-architect of the continental defence architecture within which the minerals will be mined, processed, and delivered.

A.5 What qualities should trading partners exhibit to be considered for inclusion?

The Balsillie Legal Advisory Centre submission identifies three categories of qualities directly relevant to long-term supply chain reliability. First, security architecture integration: partners should be formal treaty allies with demonstrated capacity for intelligence-sharing and joint defence operations relevant to supply chain protection. Second, institutional advisory capacity: partners should possess, or commit to developing, the sectoral trade advisory infrastructure necessary to make and keep informed supply chain commitments. Third, data governance framework compatibility: partners should maintain data governance frameworks compatible with the Multilateral

Supply Chain Data Governance and Resilience Framework proposed in Recommendation 1 of the submission.

Section D: Establishment of Common Standards to Address Regulatory Arbitrage

Questions addressed: D.1 and D.2.

D.1 How should the agreement address regulatory arbitrage?

The Balsillie Legal Advisory Centre submission identifies two forms of regulatory arbitrage that the agreement must address: the arbitrage created by asymmetric data governance regimes, and the carbon regulatory arbitrage created by asymmetric electricity grid carbon intensity between allied and non-party processing jurisdictions.

On data governance arbitrage: CUSMA Article 19.12 prohibits Canada from requiring cloud providers to locate computing facilities in Canada as a condition for conducting business, meaning Canada cannot deploy the most obvious regulatory tool to address the CLOUD Act governance problem. Addressing this asymmetry requires an agreed multilateral governance framework.

On carbon regulatory arbitrage: China's coal-intensive electricity grid produces a national average grid emissions intensity of approximately 550 to 600 grams of CO_2e per kilowatt-hour, a structural competitive advantage of two to three orders of magnitude in embedded carbon content for electricity-intensive processing operations compared to Canadian allied-jurisdiction operations.

The agreement should establish common minimum standards for three categories of regulatory arbitrage: Carbon and environmental standards (a Low-Carbon Processing Standard, Recommendation 7, with a carbon content adjustment mechanism for non-compliant imports analogous to EU CBAM, complemented by minimum requirements for environmental performance, labour standards, and community benefit obligations); Data governance standards (agreed rules governing the treatment of supply chain intelligence data that ensure allied nations can contribute sensitive data to shared coordination systems without exposing it to unilateral legal compulsion); and AI governance standards (agreed technical and governance requirements for AI systems used in supply chain operations, developed with reference to the OECD AI Principles and the EU AI Act).

D.2 What specific regulatory requirements or standards would need to be addressed to stabilize markets?

The Balsillie Legal Advisory Centre submission identifies three categories of standards directly relevant to supply chain market stability. First, IP retention standards (Recommendation 2). Second, the Low-Carbon Processing Standard (Recommendation

7): by establishing a market premium for low-carbon, allied-jurisdiction processing and imposing a carbon content adjustment on high-carbon non-party imports, the Standard corrects the most significant unaddressed market distortion in critical minerals markets. Third, processing technology governance standards: agreed requirements that AI and digital systems used in processing operations meet allied governance standards.

Section E: Rules to Govern Investment in Critical Mineral Supply Chains

Questions addressed: E.1, E.2, and E.3.

E.1 What commitments related to investment screening mechanisms should be included?

Investment screening mechanisms in the agreement should specifically address: (a) the technology licensing arrangements of any processing facility receiving allied investment incentives, requiring that critical processing technology be ownedlicensed from allied-jurisdiction entities or subject to IP retention conditions; (b) ownership and control structures that would give non-party entities effective control over processing intelligence data, including operational data, optimization algorithms, and yield data; and (c) the coordination of investment security reviews across allied jurisdictions to prevent a non-party investor denied access to one allied nation's critical minerals assets from acquiring equivalent access through the assets of another allied nation. The CLOUD Act analysis in Section V.B of the submission is also directly relevant: investment screening should consider whether the digital infrastructure of a proposed facility would expose sensitive operational data to legal compulsion under non-allied jurisdictions' domestic laws.

The CFIUS framework analyzed in Section VI.D of the submission demonstrates the operational model: FIRRMA's TID framework triggers mandatory review for minority investments that afford access to material nonpublic technical information in a covered critical technology or critical infrastructure business.[94] The plurilateral agreement should extend this logic to the allied network level, recognizing that the relevant unit of analysis for investment security review in the critical minerals sector is not a single facility but the interconnected processing corridor on which allied supply chains depend. Recommendation 8 of the submission proposes the coordinated notification, intelligence-sharing, and mutual-recognition mechanism that would give this logic institutional form.

[94] 31 C.F.R. Part 800, supra note 81, §§ 800.248, 800.209, 800.215.

E.2 What commitments related to investment policies and procedures should be included?

Recommendation 2 of the submission (Processing Technology and IP Retention Annex) addresses this question directly. The agreement should establish that allied nations may, as a condition of providing investment incentives, require that technology developed in the incentivized facility remain under the ownership and control of legal entities domiciled in allied nations for a defined period. Recommendation 5 (Innovation Ecosystem Impact Assessment) is also directly relevant: investment incentive provisions should be evaluated for their innovation ecosystem effects, and a periodic reporting requirement tied to these metrics would constitute a valuable accountability mechanism.

Recommendation 2(b) of the submission (Allied Freedom-to-Operate Remediation Framework) is also directly responsive: it addresses the existing FTO constraints on allied processing capacity arising from China's accumulated IP dominance, and proposes coordinated allied R&D investment, IP pooling arrangements, procurement conditions favouring FTO-clean processing designs, and where necessary, a coordinated approach to TRIPS compulsory licensing flexibilities for applications with direct national security implications.

E.3 How should the agreement address assets partially or fully owned by non-parties?

This question is addressed in two layers that the submission’s analysis, as developed in Section VI.D, now supports in depth: the facility-level technology sovereignty framework applicable to all investments regardless of ownership structure, and the coordinated investment screening mechanism through which allied nations jointly assess the investment risk profiles of non-party investors across the allied network.

The Facility-Level Framework

The IP retention conditions and technology licensing requirements proposed in Recommendation 2 should apply regardless of the processing facility's ownership structure, governed by the facility's jurisdiction rather than the investor's nationality. This is consistent with the broader principle that allied supply chain security requires technology sovereignty to be anchored at the facility level, not merely at the ownership level. A processing facility in Ontario or Quebec that is 49 percent owned by a state-owned enterprise from a non-party jurisdiction, and whose technology licensing arrangements give that enterprise access to processing optimization data and yield information, does not cease to be a technological sovereignty risk simply because formal control remains with allied-jurisdiction shareholders.

The FIRRMA TID framework, analyzed in Section VI.D, provides the conceptual basis for this approach: the question is not whether a non-party entity controls the facility, but

whether the investment structure affords the investor access to material nonpublic technical information, board representation that provides a window into strategic operations, or operational influence over data governance decisions.[95] The plurilateral agreement's investment governance provisions should apply this logic at the allied level, treating access to covered technical information and operational data as the relevant threshold rather than formal voting control.

The Coordinated Investment Screening Framework

Beyond the facility-level technology framework, the agreement should address the coordinated assessment of investment transactions in the critical minerals sector through the Plurilateral Investment Screening Coordination Mechanism proposed in Recommendation 8. This mechanism addresses a structural gap that no single party's domestic screening regime can close unilaterally: the possibility that a non-party investor denied access to a U.S.-jurisdiction critical minerals asset under CFIUS authority could instead acquire an equivalent or complementary position in the Canadian, Australian, or British facilities that supply feedstock, concentrate, or refined product to that U.S. asset.

The CUSMA national security exception (Article 32.2) establishes that investment screening measures taken to protect essential security interests can operate outside CUSMA's investment chapter obligations.[96] This provides the legal architecture within which CUSMA parties may, in appropriate circumstances, coordinate their investment security reviews without any obligation to extend CUSMA's investment protections to the investor being reviewed. Coordination of investment screening is compatible with, and reinforced by, existing CUSMA architecture.

The institutional dimension is critical. Effective coordinated investment screening requires that allied partners' domestic review processes can generate assessments of investor risk profiles with comparable precision. The OECD's 2009 Guidelines for Recipient Country Investment Policies relating to National Security established the foundational principles of non-discrimination, transparency, proportionality, and accountability that all allied screening regimes now nominally follow.

But shared principles do not produce coordinated outcomes unless they are underpinned by shared intelligence infrastructure.[97] The institutional advisory bodies proposed in Recommendation 3 provide the allied analog to the CFIUS multi-agency review process: sector-cleared industry participants who can assess the technology licensing

[95] 31 C.F.R. Part 800, supra note 81, §§ 800.248, 800.209, 800.215.

[96] CUSMA, Art. 32.2, supra note 86. See also GATT Art. XXI(b); GATS Art. XIV bis(b).

[97] OECD, Recommendation of the Council on Guidelines for Recipient Country Investment Policies relating to National Security, OECD/LEGAL/0372, supra note 85. See also OECD, Acquisition- and Ownership-Based Policies in Strategic and Sensitive Sectors: Mapping and Analysis (Paris: OECD, 2023).

arrangements, data governance postures, and operational control implications of a proposed investment in the context of critical minerals processing.

The Canadian ICA reforms under the National Security Review of Investments Modernization Act (S.C. 2024, c. 4) have improved information-sharing authorities between Canada and allied counterparts and have given the Minister tools analogous to CFIUS mitigation agreements.[98] These reforms move in the right direction. The plurilateral agreement's investment screening coordination mechanism is the institutional framework within which those improved Canadian authorities can be fully deployed in coordination with allied partners, rather than operating as a series of bilateral exchanges that miss the cross-jurisdictional picture.

Section F: Implementation and Enforcement of a Plurilateral Agreement

F.1 How should the United States evaluate the appropriate phase-in time for price-related and other measures for each critical mineral?

This question is addressed in Section VI.E.1 of the submission and in Recommendation 9. The submission's analysis of Canada's institutional advisory deficit (Section IV) is directly relevant: phase-in timelines should be calibrated not only to commodity-specific market dynamics, which fall outside the Balsillie Legal Advisory Centre's institutional expertise, but also to the institutional readiness of allied partners to administer the monitoring, compliance, and enforcement functions the agreement requires. A phase-in timeline that is economically appropriate for a given mineral category but institutionally unreachable for allied partners will produce either systematic non-compliance or perverse incentives to defer institutional development.

The foundational international trade law precedent is the TRIPS Agreement's transition period framework, which recognizes that complex multilateral obligations should be calibrated to the administrative and institutional capacity of the parties obligated to implement them.[99] The CUSMA Rapid Response Labor Mechanism (Annexes 31-A and 31-B) provides a complementary model from within the agreement's own institutional family: graduated enforcement, cooperative review, structured remediation, and escalating sanctions, is more durable than immediate full compliance requirements that exceed the enforcement capacity of the responding party.[100]

[98]Investment Canada Act, National Security Review of Investments Modernization Act, S.C. 2024, c. 4, supra note 82.

[99]TRIPS Agreement, Arts. 65-66, supra note 87.

[100]CUSMA, Annexes 31-A and 31-B, supra note 88.

Concretely, phase-in design should operate on a tiered architecture keyed to institutional readiness benchmarks rather than to fixed calendar dates for all obligations. Tier 1 obligations (notification, data governance participation, innovation ecosystem reporting) should take effect at entry into force. Tier 2 obligations (full advisory body operation, investment screening coordination, provenance certification deployment) should be triggered by the satisfaction of defined benchmarks. Tier 3 obligations (full price mechanism compliance monitoring and Low-Carbon Processing Standard carbon content adjustment enforcement) should phase in only after Tier 2 is operationally achieved. The agreement should include transition support provisions, technical assistance, access to U.S. ITAC and CFIUS institutional experience, and co-financing for advisory infrastructure, to accelerate institutional readiness, with a maximum period after which full Tier 3 obligations apply regardless of benchmark status.

F.2 How should the agreement address concerns about gray or black markets?

The digital systems that enable gray market circumvention, fraudulent provenance certificates, manipulated logistics data, falsified origin documentation, are the same systems that the agreement's supply chain intelligence architecture must secure. A robust Multilateral Supply Chain Data Governance and Resilience Framework (Recommendation 1), that includes interoperable provenance certification systems with agreed technical standards, is therefore a gray market prevention mechanism as well as a data sovereignty measure. These requirements, applied to provenance certification platforms, would significantly complicate the digital manipulation of origin and chain-of-custody data that facilitates gray market flows.

F.3 How should a plurilateral agreement protect against circumvention and ensure that benefits accrue predominantly to the parties?

This question is addressed in Section VI.E.2 of the submission and in Recommendation 9. As with F.1, the institutional capacity analysis in Section IV of the submission is central: each of the three primary circumvention vectors requires an institutional response directly constrained by the capacity of allied partners to execute it.

Origin-shifting circumvention, routing minerals through a non-party jurisdiction after minimal processing to claim agreement benefits, is detected through the substantial transformation standard: origin is conferred by the last substantial transformation worked on a good, assessed through a change in tariff classification or regional value content threshold.[101] The agreement's rules of origin should be designed on the model of CUSMA Chapter 4, with product-specific rules that define the processing threshold distinguishing genuine allied processing from transshipment for each covered mineral

[101]WTO Agreement on Rules of Origin, supra note 89, Arts. 1-3.

category.[102] Critically, assessing whether a claimed processing operation meets the substantial transformation standard for an electrochemical or metallurgical product requires processing engineering expertise that government customs officials alone cannot reliably supply. The ITAC-analog advisory bodies proposed in Recommendation 3 provide the sectoral intelligence necessary to make these determinations credibly and consistently.

Ownership-structure circumvention, non-party entities acquiring influential positions in allied-jurisdiction processing facilities to access agreement benefits while maintaining operational control for non-allied purposes, is addressed by the Plurilateral Investment Screening Coordination Mechanism proposed in Recommendation 8. Its notification, intelligence-sharing, and mutual-recognition provisions are specifically designed to identify and restrict investment structures that would give non-party entities access to agreement benefits through allied-jurisdiction assets that they effectively control.

Recommendation 8(d) specifically requires the coordinated screening framework to assess whether a proposed facility's technology licensing arrangements create FTO dependencies on non-allied IP holders, which is itself treated as an independent national security consideration

Documentation fraud, falsified provenance certificates, and chain-of-custody records are addressed by the digital provenance certification systems under Recommendation 1. An allied partner that has not yet deployed compliant provenance certification platforms is a structural vulnerability in the agreement’s circumvention defense. The tiered phase-in architecture under Recommendation 9 makes provenance certification deployment a Tier 2 benchmark, ensuring it is achieved before full price mechanism enforcement begins. The three circumvention defense mechanisms are therefore not independent: they are a layered architecture in which institutional capacity, investment screening, and digital governance operate together.

Recommendation 9 also proposes a Circumvention Review Panel, drawing on the sectoral expertise of ITAC-analog advisory bodies, empowered to investigate origin-shifting and ownership-structure circumvention claims and recommend the suspension of agreement benefits for facilities found to have circumvented the agreement’s rules. An advisory-body-empowered panel provides the technical credibility and sectoral knowledge that a purely governmental review process cannot replicate.

[102]CUSMA, Chapter 4 and Annex 4-B, supra note 90.

F.4 How should the parties monitor and enforce any breaches of the agreement?

An agreement whose monitoring and enforcement obligations require sophisticated sectoral intelligence will not be effectively enforced by partners that lack the institutional trade advisory infrastructure to generate that intelligence. The agreement should therefore include monitoring provisions calibrated to the institutional capacity that partner governments are expected to maintain, and to provide coordinated monitoring support where individual partners' capacity is limited. The digital governance framework proposed in Recommendation 1 should include a coordinated incident-response mechanism for breaches of the data governance provisions, with clear notification, investigation, and remediation protocols. The tiered phase-in architecture under Recommendation 9 ensures that monitoring and enforcement obligations only become fully binding when partners have achieved the institutional readiness to discharge them effectively.

Section G: Mechanisms for Coordination Among Parties

Questions addressed: G.1-G.4.

G.1 How could a mechanism be designed to respond to externalities, dynamic market changes, or market crises?

Recommendation 1 of the submission (Multilateral Supply Chain Data Governance and Resilience Framework) proposes the foundational architecture for this function. A shared supply chain intelligence platform, governed by agreed multilateral data rules, provides the real-time situational awareness that effective crisis response requires. Effective crisis response coordination also requires the institutional infrastructure proposed in Recommendation 3: a network of allied advisory bodies with sector-specific intelligence capacity, analogous to the U.S. ITAC system, which can provide governments with real-time industry intelligence during a supply chain crisis.

G.2 How could the agreement support coordination of public and private scale-up support?

The middle-power producer coordination framework (Recommendation 6) addresses this question directly. A network of allied middle-power producers with shared sovereign investment principles, common IP retention standards, and interoperable data governance frameworks provides the institutional architecture for coordinated scale-up support. The Canada-Australia Joint Statement on Critical Minerals Cooperation of March 2026 provides a working model for this coordination in practice.

G.3 How could the agreement mitigate disruptions arising from natural disasters, geology, or technological changes?

The submission's analysis of operational resilience standards (Section V.C) addresses the digital dimension of disruption mitigation. The energy dimension is equally important. The agreement's resilience provisions should address energy supply vulnerability through three mechanisms: Redundant supply connection requirements (agreement-recognized processing facilities should maintain access to at least two independent grid connection points or backup generation capacity sufficient to enable controlled process shutdown and restart without equipment damage or loss of in-process materials); Grid interconnection as allied supply chain infrastructure (the HVDC interconnection linking Manitoba Hydro's system to Ontario and Saskatchewan should be recognized in the agreement as a supply chain resilience investment qualifying for allied infrastructure support under Recommendation 4(c)); and Energy emergency coordination (the agreement should establish a coordinated energy emergency response mechanism among allied nations, analogous to the IEA's oil emergency sharing framework, that can activate reserve generation capacity to maintain critical minerals processing continuity during regional energy supply disruptions, Recommendation 4(d)).

G.4 How could the agreement mitigate market instability resulting from other factors?

The submission's analysis (Sections II and VI.B) addresses state-directed pricing and subsidization as a primary source of market instability. The Low-Carbon Processing Standard (Recommendation 7) naturally biases processing investment toward clean electricity sources, hydroelectric, nuclear, and renewable, which have lower long-term price volatility than fossil fuel-based energy. Structuring the agreement's incentives to favour clean electricity sources is therefore simultaneously a carbon policy measure, a supply chain resilience measure, and a market stability measure. The digital governance framework proposed in Recommendation 1 addresses a further source of instability: deliberate cyber disruption of allied supply chain intelligence systems, which should be treated as a first-order supply chain risk.

Section H: Reference Measures or Agreements

Question addressed: H.1.

H.1 Are there historical or contemporary measures that could serve as a useful reference?

The Balsillie Legal Advisory Centre submission takes no position on the utility of historical commodity agreements as pricing mechanism references. However, the submission's digital governance analysis points to three contemporary frameworks as design

references for non-pricing aspects of the agreement. First, the CUSMA Chapter 19 digital trade architecture illustrates, as a cautionary reference, the constraints that existing trade obligations can impose on subsequent agreements. Second, the EU AI Act (Regulation 2024/1689) and the OECD AI Principles provide contemporary regulatory references for the AI governance standards proposed in Section V.D. Third, the EU CBAM (Regulation 2023/956) provides a directly relevant reference for the Low-Carbon Processing Standard proposed in Recommendation 7, its methodology for measuring embedded carbon content, its CBAM certificate mechanism, and its phase-in architecture should inform the design of the plurilateral agreement's carbon content adjustment provisions.

Section J: Additional Considerations

Questions addressed: J.1 and J.2.

J.1 What other factors should parties take into account in designing the agreement?

The Balsillie Legal Advisory Centre submission offers four factors that are underrepresented in most critical minerals policy discussions. First, the governance architecture of reliability, what makes allied supply chain relationships durably reliable across administrations, technology cycles, and geopolitical shifts, should be the agreement's organizing principle. Second, the clean energy infrastructure dimension: Canada's clean electricity endowment is a structural competitive asset for electricity-intensive critical minerals processing that the agreement should formally recognize. Third, the digital infrastructure dimension of allied contribution: Canada's combination of cold climate, abundant clean energy, and stable governance makes it uniquely positioned to serve as a hub for allied digital infrastructure. Fourth, the innovation ecosystem effects of processing investment: an agreement that measures success only in tonnes of output will systematically underinvest in the human and institutional capital that makes allied processing communities genuinely durable.

J.2 What other trade-related measures should be considered to ensure adequate supply?

The Balsillie Legal Advisory Centre submission's analysis of the CLOUD Act governance problem (Section V.B) and the CUSMA digital trade architecture identifies the specific constraint in CUSMA Article 19.12 that prevents Canada from requiring domestic data hosting for sensitive supply chain intelligence data. The plurilateral agreement can address this constraint through the mechanism of agreed multilateral governance: by establishing a framework under which the most sensitive categories of supply chain data are subject to agreed multilateral rules rather than any single party's domestic law, the agreement functions as a negotiated carve-out from the data localization prohibition. The Low-Carbon Processing Standard (Recommendation 7) is a second trade-related

measure that would directly improve supply resilience by ensuring that the volume incentives created by the agreement's pricing mechanisms direct investment to allied-jurisdiction, clean-energy-powered processing capacity.