energyfutureslab

INDUSTRIAL DEVELOPMENT PLAYBOOK:
ALBERTA'S CRITICAL MATERIALS OPPORTUNITY

TODAY'S LATENT POTENTIAL

Alberta sits on a strong but underdeveloped foundation for participating in North America's critical minerals economy. The province's resource base — including lithium-rich brines and other mineral prospects — provides a credible starting point. More importantly, Alberta already possesses much of the **industrial DNA** required for success: a skilled engineering workforce, large-scale processing experience, and a permitting regime built for heavy industry. These capabilities, combined with existing transportation and energy infrastructure, could anchor a **midstream advantage** — refining and processing feedstocks from Alberta, BC, and the North into inputs for batteries, renewable technologies, and advanced manufacturing.

Yet the ecosystem remains **immature and fragmented**. Unlike other industrial buildouts, Alberta's critical materials opportunity lacks scaled infrastructure, anchor projects, or clear institutional leadership. Activity is scattered across junior explorers, research programs, and local pilots rather than an integrated industrial base. Coordination among governments, Indigenous partners, and private capital is limited, and the province's role in Canada's **national critical minerals strategy** remains peripheral. These gaps create uncertainty for investors and make it difficult to translate geological and industrial promise into market-scale supply chains.

Alberta's critical minerals and metals ecosystem is still at an early stage, but the ingredients for global competitiveness can be developed. Unlocking Alberta's potential in the critical materials sector demands looking beyond provincial borders and acting with a broader, systems-based vision. Today, Alberta and Canada lack a cohesive plan to transform its resource base into a full value chain—remaining focused largely on upstream extraction rather than downstream processing and refining. Uncertainty around market demand for lithium brine, coupled with limited understanding of Alberta's potential midstream role, has stalled momentum. Meanwhile, expertise and initiatives remain fragmented and disconnected, preventing the province from learning and scaling at speed.

To seize this moment, Alberta must align its industry, research, and policy communities around a shared strategy that positions the province as an indispensable player in the world's critical materials future, not merely a supplier of raw inputs.

The proposed framework shows how these latent strengths can be translated into an integrated, investment-ready industry.

Stage:
INDUSTRY DEVELOPMENT

STAGE 1: LATENT POTENTIAL & FRAGMENTATION

SYSTEM REQUIREMENTS

"What Is Needed"

An anchor convener (i.e. field catalyst or independent intermediary) is required to unite fragmented efforts and align the ambitions of governments, industry, academia, and communities. Alberta's critical materials opportunity will only advance if actors see themselves as part of a coherent, interdependent system, rather than disconnected players.

Mobilizing the untapped expertise of industry leaders, researchers, and technical specialists will generate credible insights into markets, resource potential, and investment opportunities. To move from fragmentation to focus, the ecosystem requires strong social infrastructure that accelerates collective learning and policy alignment.

With better intelligence and a unifying platform, Alberta can transform scattered activity into a strategic, purpose-driven network that builds momentum toward a resilient and globally competitive critical materials sector.

PATH TO COMPETITIVENESS

"Success Looks Like"

Alberta's critical materials landscape begins to shift from scattered potential to purposeful collaboration. Governments, industry, Indigenous and local communities, utilities, academia, and development agencies connect through new communication channels and trusted forums that build social infrastructure across the province and the Western and Northern Canadian regions.

Through this collaboration, Alberta gains a clearer understanding of its competitive position, from available resources and industrial byproducts to carbon and environmental trade-offs. Fragmentation gives way to focus as information begins to flow, relationships deepen, and early coordination efforts replace isolated initiatives.

The ecosystem starts to see itself as an interdependent system, laying the foundation for a coordinated, learning-oriented approach to building a resilient and globally competitive industry.

CRITICAL RISK FACTORS

"Failure Looks Like"

If Alberta maintains a status quo approach, the province risks watching its critical materials opportunity slip away before it ever gains traction. Fragmented pilot projects and uncoordinated initiatives may fail to secure public awareness, investor confidence, or political momentum. Without a mechanism to connect and learn at speed, valuable insights remain siloed, and progress remains negligible.

Communities, particularly Indigenous and rural, are likely to be left behind, adding social and reputational risk that deters investment.

With government attention still focused on incumbent sectors, Alberta risks missing the narrow window to establish a more resilient, diversified, and high-productivity industry.

The result: unrealized potential, continued dependence on foreign markets, and a failure to convert resource abundance into strategic advantage.

How to win
Develop a durable coalition that maintains focus and commitment across multiple election and short-term investment cycles.

Stage:
INDUSTRY DEVELOPMENT

STAGE 2: ECOSYSTEM MOBILIZATION

SYSTEM REQUIREMENTS

"What Is Needed"

The system needs a shared understanding of Alberta's role within national and continental supply chains. Governments, post-secondary institutions, the innovation ecosystem, and communities must align around a clear value proposition: Alberta's comparative advantage in midstream processing. This means orienting R&D, workforce training, and investment attraction toward that opportunity in a coordinated, strategic manner.

Both federal and provincial governments must recognize the importance of ecosystem-based approaches and sustained collaboration, rather than a sole focus on one-off project incentives.

Success here depends on clarity of purpose, cross-sectoral coordination, and the ability to mobilize collective capacity, transforming good intentions into unified action that strengthens Alberta's role in continental and global supply chain.

PATH TO COMPETITIVENESS

"Success Looks Like"

Alberta's critical materials ecosystem transforms into a mobilized coalition with shared intent. Lines of communication connect upstream mining projects across Western and Northern Canada, clarifying how materials and expertise can flow across jurisdictions.

Alberta's processing potential is recognized as a strategic contribution to allied energy security, and key actors coalesce around a common purpose. Market intelligence sharpens, identifying credible investors, site selection factors, and barriers to growth. Governments receive clear, data-driven signals from the ecosystem on what's needed: a coordinated, long-term policy approach rather than fragmented project support. Plans for recycling and reintroducing post-consumer materials emerge, while investment attraction agencies align efforts with domestic industrial needs.

Alberta moves from alignment to action, transitioning from a promising concept to a structured, mobilized movement positioned to deliver tangible results.

CRITICAL RISK FACTORS

"Failure Looks Like"

If coordination stalls during mobilization, Alberta risks becoming a spectator in Canada's critical materials race. A flood of Central Canadian projects could dominate federal attention and incentives, sidelining Alberta's unique midstream refining and processing potential.

Without clear articulation of Alberta's role in continental supply chains, investment and policy focus may consolidate elsewhere, reinforcing existing regional imbalances. The province could remain trapped in a low-value, export-oriented position, supplying raw materials to others who capture the real value through processing and technology deployment.

This failure to mobilize an integrated ecosystem, linking R&D, workforce, investors, and communities, would leave Alberta's energy security contribution underrecognized and underdeveloped, jeopardizing its ability to compete in the next generation of industrial growth.

How to win
Accelerate shared learning and understanding, unifying behind a common purpose.

Stage:
INDUSTRY DEVELOPMENT

STAGE 3: ENABLING POLICY & INFRASTRUCTURE SHIFTS

SYSTEM REQUIREMENTS

"What Is Needed"

The system now needs predictable policy, streamlined regulation, and shared infrastructure to transition from alignment to acceleration. Governments must position Alberta as a strategic continental processing hub, anchored by midstream industrial capacity. That means establishing clear permitting processes, consistent regulatory timelines, and targeted refining incentives supported by reliable power, transport, water, and waste management infrastructure.

A unified interdepartmental approach is essential, bridging ministries and agencies under a shared vision of competitiveness and climate responsibility. Federal and provincial collaboration must translate into coordinated co-investment and global engagement strategies. Investors need certainty and continuity and a degree of cross-party consensus that transcends election cycles. Alberta's system must also build transparency, tracking, and awareness mechanisms to demonstrate global credibility.

Ultimately, this stage demands policy coherence and institutional alignment to create the confidence required for major private-sector investment.

PATH TO COMPETITIVENESS

"Success Looks Like"

Early federal co-investments and offtake agreements confirm Alberta's midstream role and attract new waves of investor confidence. Policy coherence between provincial and federal governments creates the certainty needed to accelerate project deployment. Trade and pricing mechanisms begin to stabilize markets, while international partners recognize Alberta as a credible player in the non-Chinese supply chain.

Global midstream firms and technology leaders engage, and communities are empowered with knowledge of their regional advantages. Plurilateral cooperation strengthens (i.e. joint due diligence, financing, and technical collaboration), amplifying progress across mining, processing, and recycling.

With emerging global linkages and strategic reserves supporting price stability, Alberta's ecosystem becomes both investable and indispensable in advancing resilient, low-carbon supply chains for North America.

CRITICAL RISK FACTORS

"Failure Looks Like"

At this critical juncture, the greatest risk is policy inertia and misalignment. If industry ambition outpaces government responsiveness, capital will simply go elsewhere (i.e. to regions offering clearer pathways, faster permitting, and more predictable policy environments).

Without coordinated infrastructure investments (i.e. power, transport, water, and industrial land) projects will remain conceptual rather than operational. Alberta and its Western and Northern partners could find themselves stuck exporting unprocessed resources, dependent once again on traditional oil and gas markets to maintain economic relevance growth.

The failure to act decisively would not just forfeit investment; it would undermine confidence in Alberta's capacity to lead in the emerging energy economy. In a sector where momentum matters, hesitation could lock Alberta into a supporting role, watching others capture the midstream value it could have owned.

How to win
Establish an enabling investment environment for private and public capital to flow.

Stage:
INDUSTRY DEVELOPMENT

STAGE 4: SYSTEM COHERENCE AND GRADUAL GROWTH

SYSTEM REQUIREMENTS

"What Is Needed"

Joint action, infrastructure sharing, and sustained investment is required to enable steady growth. Workforce pipelines must be developed through universities, polytechnics, and Indigenous partnerships, ensuring the talent base aligns with the expanding midstream cluster. Capital access must improve, narrowing the gap with US and Australian financial markets, while coordinated supply chain linkages ensure that materials mined in Western and Northern Canada are processed in Alberta.

Industrial clusters should grow horizontally, linking clean energy, petrochemical, and recycling sectors to enhance resilience and efficiency. Shared infrastructure and offtake agreements with EV, grid storage, and defence markets will anchor the system in long-term demand.

The ecosystem requires a mature finance and infrastructure framework, supporting projects that turn collaboration into tangible, scalable industrial growth across Alberta and Western Canada.

PATH TO COMPETITIVENESS

"Success Looks Like"

Alberta's critical materials sector achieves coherence, confidence, and commercial traction.

A cluster of midstream processing facilities takes root, integrated with Western Canada's resource base and supplying secure offtake into electric vehicle, grid storage, and defence markets. International expertise, capital, and technology are embedded into the supply chain, expanding local capacity and competitiveness. Joint investment attraction initiatives and shared infrastructure (i.e. clean power, transport corridors, logistics) enable scale and efficiency. Finance and offtake networks deepen, connecting Canadian producers with global buyers and investors.

The result is a balanced, strategically connected ecosystem where collaboration and infrastructure underpin steady growth.

Alberta emerges not as a peripheral supplier, but as a continental hub of innovation and refinement and a trusted anchor in North America's secure energy and materials future.

CRITICAL RISK FACTORS

"Failure Looks Like"

Without sustained coordination and investment, Alberta risks stalling before scale. Growth could be confined to a handful of isolated projects, each too small to meaningfully impact the provincial economy or attract long-term offtake.

The absence of an integrated ecosystem (i.e. skilled labour, shared infrastructure, finance networks) would erode competitiveness, leaving even publicly backed facilities struggling to reach capacity or compete globally. Alberta could be seen as marginal to continental supply chain resilience, a jurisdiction rich in resources but poor in coordination.

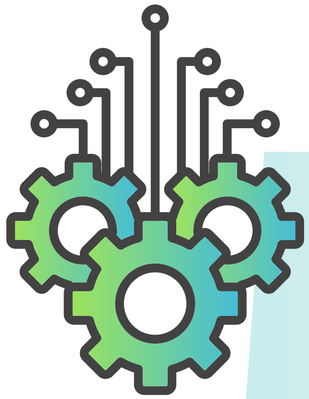
Failure to build social and industrial linkages would also weaken public trust and investor certainty, deterring the partnerships needed to scale.

The result is a fragmented landscape of underperforming assets, short-lived projects, and missed opportunities in a rapidly consolidating global market.

How to win
Turning intention into action through joint implementation.

Stage:
INDUSTRY DEVELOPMENT

STAGE 5: INSTITUTIONAL-IZATION & INTEGRATION



SYSTEM REQUIREMENTS

"What Is Needed"

The system needs to embed permanence, credibility, and global recognition. Alberta must brand itself as a secure, low-emissions processing hub, anchored in Indigenous partnership and equity participation to ensure legitimacy and shared prosperity.

Long-term offtake agreements across North America, Europe, and Asia will provide market certainty and reinforce Alberta's position within allied supply chains.

The province requires institutionalized governance frameworks that sustain collaboration, set pricing benchmarks, and sustain regulatory and environmental excellence. Strong domestic SMEs should be nurtured to service logistics, technology, and process innovation needs, ensuring the ecosystem remains adaptive and competitive.

What the system needs most at this stage is enduring alignment, an integrated industrial base, a strong brand identity, and the trust of global partners who see Alberta as indispensable to their critical materials future.

PATH TO COMPETITIVENESS

"Success Looks Like"

At full maturity, Alberta becomes a linchpin of allied energy and industrial security, supplying refined materials for batteries, renewables, semiconductors, and defence applications.

The province's industry is now institutionalized, supported by enduring governance, pricing benchmarks, and integrated supply chain infrastructure. Domestic SMEs thrive, providing logistics, technology, and processing innovations that reinforce competitiveness.

Alberta's processing benchmarks guide continental markets, while strong linkages with global partners sustain trade and resilience. The sector is not merely functioning, it is self-sustaining, adaptive, and internationally recognized for its transparency, circularity, and environmental integrity.

Success here is not just industrial, it is systemic: a deeply rooted network of aligned institutions, empowered communities, and innovative firms that ensure Canada remains a strategic cornerstone of the global critical materials economy.

CRITICAL RISK FACTORS

"Failure Looks Like"

The system risks unraveling just as it matures. Without enduring governance, stable policy, and a strong international brand, competitors (i.e. Australia, U.S.) will outpace Alberta in market share, investment, and reputation.

Lacking embedded institutions and Indigenous equity participation, the province could lose legitimacy at home and credibility abroad.

Absent long-term offtake agreements, Alberta would again be substituted by jurisdictions offering greater certainty and lower risk, leaving it exposed to commodity volatility and industrial decline.

The danger is not collapse, but irrelevance: a missed opportunity to secure a lasting role in the global energy transition, as other regions capture the economic, environmental, and geopolitical rewards that Alberta once had within reach.

How to win
Maintained focus and commitment to gradual growth and integration.

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