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Investment Incentives for **Critical Minerals** in **Canada**

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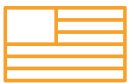
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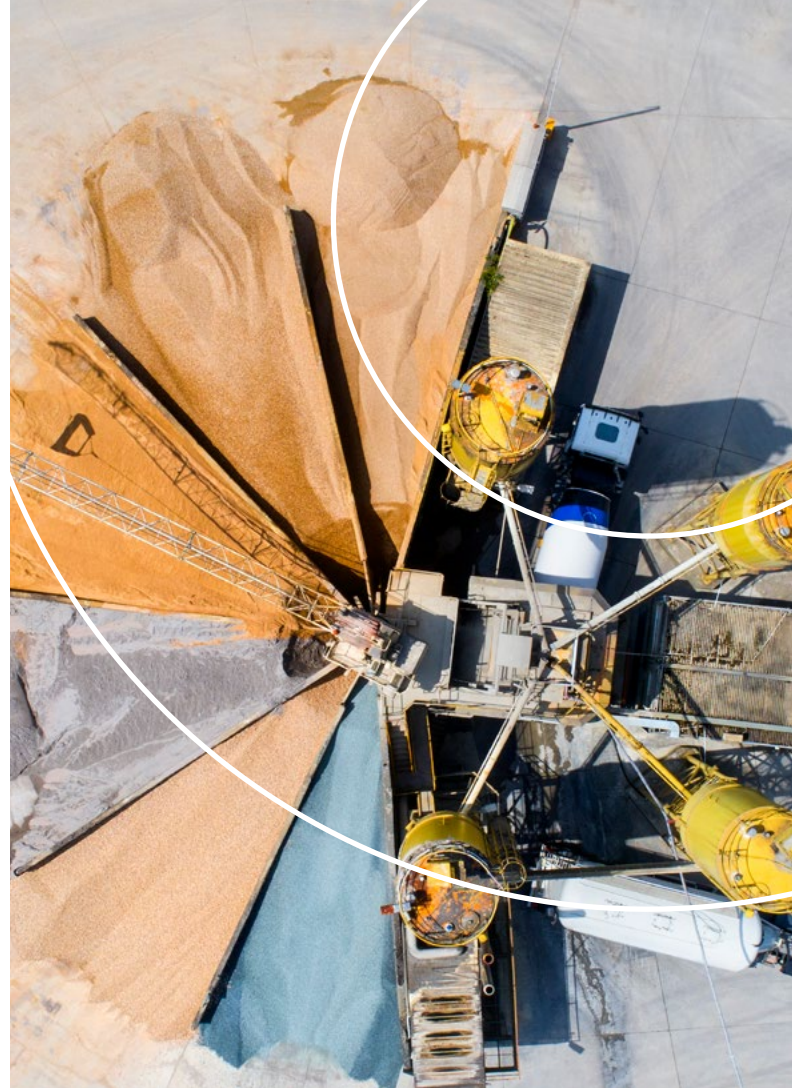


Executive Summary

The need for critical minerals is huge — and global investment in the next decade will be measured in hundreds of billions of dollars.

Governments encourage foreign investment through fiscal incentives (e.g., tax holidays, reduced tax rates and tax deductions or credits), financial incentives (e.g., grants and loans or subsidized government insurance) and other incentives (e.g., subsidized public infrastructure, market preferences and regulatory concessions).

In this report, we compare investment incentives for critical minerals across four jurisdictions: Canada, the United States, the European Union and Australia. We spoke in person and remotely with experts in mining and mineral processing companies, manufacturing companies, government and academia as well as independent analysts. Informants included persons of diverse age and experience. Information was extracted from original documents and analyst summaries. Quotes from sources highlight key messages and illustrate different perspectives.



The concept of critical minerals is still evolving. Related government policies and incentives are new and will take time to roll out — and much longer to make a full impact. Translating incentives into practice at the company or project level is case-by-case. Moreover, nations are not monolithic: large countries like the United States have multiple parallel and sometimes misaligned initiatives. Within a region, national, provincial, territorial and community levels of government may each write their own policies, support mechanisms and dynamics that advance — and complicate — critical mineral financing and project development.

Prior to the development of the Canadian Critical Minerals Strategy in 2022, Canada's activities have been, understandably, smaller than those in the United States and Australia, both of which have more mature plans. Most efforts suggested in the Canadian strategy are relatively new and need

elaboration. There is a lot of critical mineral growth needed; forecasts for additional volumes of critical materials are impressive. Considering also current geopolitical shifts away from Chinese and Russian reliance, Canada can take advantage of U.S., European and South Korean investments.

Canada has inherent advantages of world-leading deposits of critical minerals, good governance, clean energy and social cohesion.

Looking at mechanisms from other jurisdictions is useful as these suggest additional approaches that Canada might take to support critical minerals. Our recommendations build on those previously made by the Canadian Chamber of Commerce in 2022 on strengthening Canadian supply chains for critical minerals. Many of the recommendations support conditions for favourable minerals development and reinforce fiscal and financial incentives. We categorize 13 recommendations in three areas:

A. Making decisions

1. Create our own critical minerals goals.
2. Obtain faster and consistent approvals for mining.
3. Build a critical minerals digital information hub for Canada.
4. Embed Indigenous reconciliation in critical minerals development.

B. Leveraging opportunity

5. Modernize our workforce for critical minerals.
6. Support small minerals companies.
7. Fill the midstream gap for critical minerals production.
8. Recognize equipment manufacturers and minerals service providers.

C. Thinking ahead

9. Fix the existing value chain misalignment.
10. Strengthen Canada's financial institutions for critical minerals.
11. Add demand-side incentives.
12. Lead on international ESG standards.
13. Coordinate investment criteria with Canadian allies.

The urgency for Canada to act is driven by our own environmental sustainability expectations including 2050 net-zero targets but also by competing jurisdictions — notably Australia and the United States — that are more advanced than Canada in their critical minerals programs. Canada needs to develop expeditious and competitive incentives to de-risk and secure investment in upstream mining and midstream processing infrastructure as well as mineral exploratory initiatives. Our report identifies gaps in Canada's critical minerals investment attraction policy suite and provides recommendations to the federal government on how Canada can better compete for investments in this important and rapidly growing sector.



Investment Incentives for Minerals Development

The need for critical minerals is huge — and global investment in the next decade will be measured in hundreds of billions of dollars.

Manufacturers of electric vehicles, stationary batteries, clean energy technology, electronics, aerospace and defence products rely on global value chains. Minerals are mined, processed, upgraded and put into components in different countries, all built on capital from state and private sources.

Foreign direct investment involves the direct investment by companies or governments into foreign firms or projects; for example, via mergers, acquisitions or partnerships in operations. For host countries, this investment is a means of financing new projects and creating jobs for local workers. For multinational companies, it is a means of expanding internationally and securing new business opportunities. For investors, **international capital mobility** is an opportunity to move across borders for higher yields. A disadvantage for a

company doing foreign investment, however, is that it involves the regulation and oversight of multiple governments with associated political risks.

Governments encourage international investment in several ways:¹

- **Fiscal incentives** include tax holidays, reduced tax rates and tax deductions or credits on equipment.
- **Financial incentives** include various grants and loans on new construction or mechanisms like subsidized government insurance.
- **Other incentives** include subsidized public infrastructure, market preferences and regulatory concessions. Subsidized infrastructure refers to the public provision of roads, utilities and other services that help reduce costs to the investor. Market preferences refer to preferential treatment in government procurement or other forms of preferential market access. Regulatory concessions refer to exemptions or reductions in regulatory requirements such as environmental or labour regulations. Some countries also offer incentives for firms that create jobs or enhance skills while others provide incentives for firms that use new technologies or support technology transfer and research and development activities.

1 OECD (2003). Checklist for foreign direct investment incentive policies. Paris.

Each type of investment incentive policy has its own pros and cons. For example, tax incentives can be effective in attracting foreign investment but they can also result in a loss of tax revenue for the government. Governments need to be cautious of international investment for geopolitical and security reasons as foreign influences on production and trade may have domestic industry and security implications.

Policy mechanisms for critical minerals can be **targeted** or **general**. Targeted incentives give special treatment to a type of investment or project, such as a specific mineral. General incentives are implemented broadly to benefit multiple actors across industries or across society as a whole.

Minerals development activities can be categorized along the value chain.² **Upstream** stages begin with mineral exploration followed by mine development and mineral extraction by mining. **Midstream** activities include metallurgy and processing, like metal smelting, refining or conversion of chemicals. **Downstream** activities, like manufacturing of components, battery Gigafactories and airplane factories, pull supply demand for critical minerals through market forces. Whereas extraction and most midstream activities occur in rural or remote regions, the use benefits provided by minerals are realized by the entire population.

Critical minerals in Canada include established commodities (aluminum, potash, zinc, etc.), speciality minerals and chemicals needed in high volumes for the next decades that are produced to specific customer specifications (e.g., graphite, lithium hydroxide, nickel sulphate) and niche minerals and metals with very low production demand (e.g., germanium, cesium, tellurium).

Large volume trade of minerals relies on commodity exchanges for pricing, whereas most minerals are purchased on contracts with customers that include requirements on purity grade, delivery and environmental performance. Further along the value chain, producers must consider downstream and end user expectations.

The minerals and mining industry has a unique structure. The mining sector is often seen as two groups: **juniors** and **majors**. Juniors are riskier ventures, mostly focusing upstream on exploration and early project development with rights to minerals at one or few sites but with no revenue. Majors are mature companies, typically multinational in scope with multiple mines and midstream processing operations that generate cashflow and with significant financial and technical capacities.

Mining and minerals projects are generally seen as high-risk investments. Investors are deterred by high capital outlays that do not realize returns for many years (often a decade or longer). Each project may experience specific challenges: long waits for project studies and approvals, technical challenges associated with unique minerals, local environmental, social and governance (ESG) issues, global commodity and market volatility, and international risks associated with currency and geopolitics. Returns can be substantial, but risks are high, and most exploration projects never generate revenue.

To succeed, upstream and midstream minerals projects need proven mineral resources, long-term capital, infrastructure including transport and power, a skilled workforce and social licence — which may include local community and Indigenous peoples' consent.

2 Government of Canada. [The Canadian Critical Minerals Strategy](#).



Approach Used for This Report

In this report, we analyze and synthesize documents, policies and personal discussions. We spoke in person and remotely with experts in mining and mineral processing companies, manufacturing companies, government and academia as well as independent analysts.

Informants included persons of diverse age and experience. Information was extracted from original documents and analyst summaries. Quotes from sources highlight key messages and illustrate different perspectives.

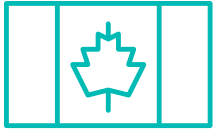
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case-by-case. Moreover, nations are not monolithic: large countries like the United States have multiple parallel and sometimes misaligned initiatives. Within a region, national, provincial, territorial and community levels of government may each write their own policies, support mechanisms and dynamics that advance — and complicate — critical mineral financing and project development.

We looked at Canada, the United States, Europe and Australia. Each has a list of critical minerals and have overarching strategies. Whereas resource-producing nations see critical minerals as an economic opportunity, manufacturing economies aim to manage supply risks that may disrupt their industry or national security. Thus, Australia and Canada are situated largely as mineral providers, whereas the United States and Europe are seeking increasing volumes of affordable minerals and metals to feed industries like automotive, machinery, medical devices, defence and electronics.

Canada's position in the value chain should be viewed with nuance. We are not only a resource producer but also a significant user of critical minerals; for example, in automotive and aerospace manufacturing and in tools and equipment that are used in primary industries like forestry, mining, oil and gas.



Canada

Canada released its critical minerals list in March 2021 that identifies 31 minerals considered critical for the economic success of Canada and its allies – minerals that can be produced in Canada are essential to domestic industry and security and have the potential to support secure and resilient supply chains to meet global demand³.

A subset of six minerals was prioritized in 2022 in **Canada's Critical Minerals Strategy**: lithium, graphite, nickel, cobalt, copper and rare earth elements.⁴

The Canadian strategy aims to “...increase the supply of responsibly sourced critical minerals and support the development of domestic and global value chains for the green and digital economy” ... to “better position Canada as a reliable supplier of critical mineral resources to our allies.”⁵ The strategy is budgeted with about \$8 billion over eight years to build on existing programs and create new mechanisms. Additional efforts can also be expected; for example, as may be announced in federal budgets.



Fiscal incentives

Significant tax credits have been announced. Fiscal mechanisms in Canada support minerals development directly as well as encouraging midstream and downstream actors. The **Critical Minerals Exploration Tax Credit**, announced as part of a series of initiatives collectively entitled **Supporting Canada's Rural Communities**, provides a 30% tax credit for investors in companies exploring for critical minerals.⁶ This is double the existing 15% **Mineral Exploration Tax Credit**.

The **Investment Tax Credit for Clean Technology Manufacturing**, announced as part of the 2023 federal budget, supports Canadian companies

3 <https://www.canada.ca/en/natural-resources-canada/news/2021/03/canada-announces-critical-minerals-list.html>

4 Government of Canada, 2022. [The Canadian Critical Minerals Strategy](#).

5 Government of Canada, 2022. [The Canadian Critical Minerals Strategy](#).

6 Department of Finance Canada. [Supporting Canada's Rural Communities](#).

manufacturing or processing clean technologies and their precursors.⁷ It provides a refundable tax credit of 30% of the cost of investing in new machinery and equipment used in manufacturing or processing of clean technologies (including the extraction, processing and recycling of critical minerals).



Financial incentives

The **Strategic Innovation Fund (SIF)**, managed by Innovation, Science and Economic Development Canada, offers a minimum contribution of \$10 million for projects with total costs of at least \$20 million.⁸ The SIF has budgeted \$5 billion to support clean technology projects with incremental budget over seven years, starting in 2021.⁹ Under the 2022 Canadian strategy, a critical minerals envelope was added, budgeted with \$1.5 billion to support manufacturing, processing and recycling.

A new **Critical Minerals Infrastructure Fund** announced in Budget 2023 will allocate up to \$1.5 billion over seven years towards energy and transportation projects to support the development of critical minerals supply-chains.¹⁰ Small and medium-sized businesses are especially positioned to benefit.



Other incentives

The **Critical Minerals Centre of Excellence**, proposed in the Canadian Critical Minerals Strategy, is supported with \$21.5 million to develop policies to assist project developers in navigating regulatory processes. An additional \$40 million is available for project reviewing and permitting for northern regulatory processes.

Previously, the **Critical Minerals Research, Development and Demonstration Program** offered up to \$5 million for projects aimed at advancing and commercializing technologies for producing critical minerals used in zero-emission vehicles.¹¹ The program focused on upstream processing to support critical mineral value chains.

New funding is provided through the initiative on **Supporting Canada's Rural Communities**, which includes \$79.2 million over five years, starting in 2022–2023, for NRCan to provide publicly accessible datasets to inform critical minerals *exploration* and development.¹²

The long-running **Sustainable Development Technology Canada**¹³ invests in clean technology projects that have included mineral processing and solar materials, among its critical minerals support. The new **Canadian Innovation Corporation** will be established starting in 2023–2024 to promote business investment in research and development across all sectors and regions of Canada, with an initial budget of \$2.6 billion over four years.¹⁴

Additional funding sources announced as part of the 2023 federal budget include the **Critical Minerals Geoscience and Data Initiative**, offering \$79.2 million to support enhanced geoscience and mapping for critical minerals, and the **Critical Minerals Technology and Innovation Program**, offering \$144.4 million for “...research, development, demonstration, commercialization and adoption of new technologies and processes that support sustainable growth in Canadian critical minerals value chains and associated innovation ecosystems.”¹⁵ Further program details, including a call for proposals, will be announced in the coming months.

7 Department of Finance Canada. [A Made-In-Canada Plan: Affordable Energy, Good Jobs and a Growing Clean Economy](#).

8 Innovation, Science and Economic Development Canada. [About the Strategic Innovation Fund](#).

9 IEA. [Strategic Innovation Fund](#).

10 Department of Finance Canada. [Supporting Canada's Rural Communities](#).

11 Natural Resources Canada. [Critical Minerals Research, Development and Demonstration Program](#).

12 Department of Finance Canada. [Supporting Canada's Rural Communities](#).

13 [Sustainable Development Technology Canada \(SDTC\)](#).

14 [Canada Innovation Corporation: Blueprint](#).

15 Natural Resources Canada. [Minister Wilkinson Announces Over \\$344 Million for Canadian Critical Minerals Development](#).

Box A: Canada's announced VW battery plant

More than 20 examples of critical minerals investments made by the Government of Canada were highlighted in the Canadian Critical Minerals Strategy and subsequent announcements.¹⁶ However, the April 2023 release of \$13 billion for a Volkswagen production plant in St. Thomas, Ont. is the largest. It also presents a qualitatively different approach, making specific reference to competing with the United States by using a production support mechanism.¹⁷



Photo: Volkswagen Canada

16 Department of Finance Canada. [A Made-In-Canada Plan: Affordable Energy, Good Jobs and a Growing Clean Economy](#).

17 <https://pm.gc.ca/en/news/news-releases/2023/04/21/volkswagens-new-electric-vehicle-battery-plant-will-create-thousands>



The United States



In the lead up to the Second World War, the U.S. government enacted the Strategic and Critical Materials Stock Piling Act of 1939, identifying 42 materials essential for military production.

The Act is still relevant today, although the U.S. approach now targets domestic manufacturing and job creation, in addition to military requirements. In 2008, the U.S. National Research Council identified five raw materials as critical for the United States economy. The 2022 list of 50 minerals by the U.S. Geological Survey, Department of Interior combines economy and security criteria. Although the United States has substantial mining, the critical minerals identified are mostly imports needed for manufacturers.

The United States is reorienting and modernizing its industrial policies; however, the country does not have an integrated strategy for critical minerals. Three large federal acts include critical

minerals incentives: the **Infrastructure Investment and Jobs Act** of 2021, the **Inflation Reduction Act (IRA)** of 2022 and the **Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act** of 2022. A more established program is the Department of Energy loans program for renewable energy projects in the United States, which has included mineral processing in its scope. The United States maintains focus on military needs, including the **Defense Production Act** that is more flexible in funding mechanisms and can support projects outside the country.



Fiscal incentives

Fiscal incentives include input tax credits (i.e., for capital expenditures) and production tax credits under the **Inflation Reduction Act (IRA)** of 2022. The IRA extends the **Advanced Energy Project Credit** for the production or recycling of wind turbine blades, the manufacturing of energy storage equipment and the refinement of renewable or low-carbon fuels.¹⁸ Facilities processing, refining or recycling critical materials (as defined in the Energy Act 2020) are eligible to claim the benefit. The input tax credit ranges from 6% to 30% of the qualified investment in property used in projects certified by the Department of Energy. Ambitious targets are set: 40% of

18 IEA. [Inflation Reduction Act 2022: Sec. 13501 Extension of the Advanced Energy Project Credit.](#)

the value of the critical minerals contained in a vehicle's battery must be extracted or processed domestically or in a country with which the United States has a free trade agreement, and this goal increases to 80% for 2027.

The IRA **Advanced Manufacturing Production Credit** supports the domestic production of critical minerals used in renewable energy generation, energy storage and the manufacturing of related products.¹⁹ Domestic producers of critical minerals are awarded a tax credit of 10% of the cost of production, beginning in 2023.

The IRA is a landmark incentive for critical minerals and renewable energy development in general. Unlike a one-time grant or loan that needs to be applied for to fund capital expenditures, the production tax credit is recurring and open-ended, limited only by a manufacturer's production output. Observers note its generosity, estimated to pay about one-third the cost of a battery pack²⁰ or more (see Box D). This will pull upstream critical minerals supply to feed expected manufacturing expansion in the United States.



Financial incentives

Under the **Infrastructure Act**, \$6.3 billion is allocated to battery material processing, manufacturing, electric vehicle battery recycling and “second-life” applications,²¹ for example, \$19.5 million is allocated for the extraction of critical minerals from coal and associated waste streams.²² The **CHIPS and Science Act** directs \$52.7 billion for semiconductor manufacturing, workforce development, and research and development.²³



Other incentives

Research and development incentives in the United States are diverse. The **National Energy Technology Laboratory** has provided over \$20 million in funding since 2015 for research and development on midstream processing for the purification, separation and reduction of high-purity rare earth elements and other critical minerals from coal.²⁴

The **Infrastructure Investment and Jobs Act** of 2021 allocates a total budget of \$407 million for research, development and demonstration projects for critical minerals.²⁵ It directs the Secretary of Energy to fund a project to demonstrate commercial feasibility of facilities for extracting, separating and refining rare earth elements and, in coordination with the Director of the National Science Foundation, to issue grants for research on the mining, recycling and reclamation of critical minerals. This section also directs the Critical Minerals Subcommittee of the National Science and Technology Council to coordinate efforts to ensure supply security of critical minerals for the United States.

Funded by the Infrastructure Act, \$675 million is targeted to the **Critical Materials Research, Development, Demonstration and Commercialization Program**, which aims to advance the domestic production of critical materials.²⁶ The **CHIPS and Science Act** directs \$200 billion for research and development and commercialization for supply and security for the domestic semiconductor industry.²⁷

19 IEA. [Inflation Reduction Act 2022: Sec. 13502 Advanced Manufacturing Production Credit](#).

20 <https://chargedevs.com/newswire/this-provision-of-the-ira-could-deliver-much-bigger-results-than-the-ev-tax-credits/>

21 IEA. [Infrastructure and Jobs act: Batteries](#).

22 USDOE. [DOE Announces \\$109.5 Million to Support Jobs and Economic Growth in Coal and Power Plant Communities](#).

23 McKinsey & Company. [The CHIPS and Science Act: Here's what's in it](#).

24 IEA. [NETL Opportunities to Develop High Performance, Economically Viable and Environmentally Benign Technologies to Recover Rare Earth Elements \(REEs\) from Domestic Coal and Coal By-products](#).

25 IEA. [Infrastructure and Jobs act: Critical Minerals](#).

26 USDOE. [Biden-Harris Administration Launches \\$675 Million Bipartisan Infrastructure Law Program to Expand Domestic Critical Materials Supply Chains](#).

27 McKinsey & Company. [The CHIPS and Science Act: Here's what's in it](#).

To shorten mining and mineral processing timelines, several incentives have emerged. In 2020, in the name of national security, a presidential executive order directed the heads of departments of the Interior, Agriculture, Commerce, Environment and Army to accelerate the issuance of permits and the completion of projects in connection with expanding and protecting the domestic supply chain for minerals.²⁸ The Infrastructure Act of 2021 further directs various agencies to take action to promote the development of domestic supply chains for critical minerals.²⁹ The Bureau of Land Management and the Forest Service must establish schedules for and maximize efficiency of their permitting and review processes for critical mineral mines on federal lands.

The **Interagency Working Group on Mining Reform** released its Fundamental Principles for Domestic Mining Reform,³⁰ which highlight the need to secure a sustainable domestic supply of critical minerals, prioritize recycling, adopt royalties for all minerals extracted from public land, establish a fully funded hard rock mine reclamation program and provide more certainty and efficiency in the permitting process.³¹ Their subsequent report recommends regulatory and legislative measures to streamline permitting for the exploration and development of domestic critical minerals.

The **Defense Production Act** adopted by Congress in 1950 continues as a powerful force to support and finance critical minerals in the United States and other countries. It gives the United States President the authority to take measures to secure the supply of materials and services needed for national defence.³² It was invoked in 2022 to strengthen domestic battery production capacity, increase domestic mining and processing capacity for battery materials³³ (see Box C) and accelerate the domestic production of clean energy technologies, including platinum group metal catalysts.³⁴ Measures could include directing private entities to prioritize government purchases for national defence, waiving international trade requirements to secure supply from foreign sources, investigating goods, firms and industries, and requiring certain equipment installations or other measures at production plants.

In 2021, the United States committed to recapitalize and restore the **National Defense Stockpile** of critical minerals and materials, dating back to 1939. Stocks include critical minerals necessary for energy transition and defence purposes, and there are expectations for responsibly sourced and processed minerals.³⁵ Efforts include over \$1 billion to acquire additional critical materials through 2032.³⁶

28 Per section 8, “the term “critical minerals” means the minerals and materials identified by the Secretary of the Interior pursuant to section 2(b) of Executive Order 13817, as amended by this order; and (b) the term “supply chain,” when used with reference to minerals, includes the *exploration, mining, concentration, separation, alloying, recycling and reprocessing* of minerals” (emphasis added).

29 IEA. [Infrastructure and Jobs Act: Critical Minerals permitting and information](#).

30 [Biden-Harris Administration Fundamental Principles for Domestic Mining Reform](#).

31 IEA. [Interagency Working Group on Mining Reform Fundamental Principles](#).

32 IEA. [Defense Production Act](#).

33 IEA. [Defense Production Act](#). The White House. [Memorandum on Presidential Determination Pursuant to Section 303 of the Defense Production Act of 1950, as amended](#).

34 USDOE. [President Biden Invokes Defense Production Act to Accelerate Domestic Manufacturing of Clean Energy](#).

35 <https://www.iea.org/policies/15534-strategic-and-critical-materials-stock-piling-act>

36 <https://www.energy.senate.gov/2022/12/manchin-releases-permitting-text-and-urges-colleagues-to-support-mvp-and-permitting-amendment-to-ndaa>

Box B: U.S. research and development funding

On September 2, 2021, the U.S. Department of Energy announced \$30 million in funding for 13 national lab and university-led research projects for developing new technologies to help ensure the supply security of critical materials used in clean energy technologies.³⁷ These projects aim to diversify the supply of, develop substitutes for and improve the reuse and recycling of rare earth and platinum group elements.

Box C: U.S. DPA

In 2022, the U.S. Department of Defense used the **Defense Production Act** to fund \$120 million to Lynas Rare Earths, an Australian company, to construct a commercial scale heavy rare earth elements separation facility in Texas.³⁸

Box D: Generous IRA production tax credit

The U.S. Inflation Reduction Act is a huge pull. One Canadian technology company we spoke with is shifting the location of its planned renewable energy equipment plant from Canada to the U.S. Over and above local and state incentives, the IRA production tax credit actually pays the company more per unit produced than the operating expenditure.



37 USD OE. [DOE Awards \\$30M to Secure Domestic Supply Chain of Critical Materials.](#)

38 <https://lynasrareearths.com/lynas-awarded-us120m-contract-to-build-commercial-heavy-rare-earths-facility/>



Europe

Europe introduced its Raw Materials Initiative in 2008 to support “secure, stable and sufficient access” to critical minerals.

Since 2011, the European Commission has published five editions of its critical raw materials list. The number of critical minerals listed increased from 14 to 34 in March 2023 and differentiates a subset of 16 high priority “strategic raw materials.” Economic importance and supply risk are the two main parameters used to determine criticality for the EU.³⁹ In 2023, Europe focused on the critical minerals needs of priority industries like renewable energy, digital technology, e-mobility, defence and space.

The European approach aims to strengthen all stages of the European critical raw materials value chain by diversifying imports, reducing strategic dependencies, improving domestic processing capacity, enhancing resource use efficiency and improving sustainability and material circularity.

The European government does not have a direct role in collecting taxes or setting tax rates.⁴⁰ Fiscal measures are decided by each national member state. Financial incentives for critical minerals development in Europe leverage partnerships with industry or with member state (see examples in Boxes E and F). Other incentives for critical minerals tend to be integrated “plans” that are broad in scope and emphasize collaborations and research or support international arrangements.

Horizon Europe is the EU’s long-standing funding program for research and innovation with a 2021–2027 budget of €95.5 billion.⁴¹ Under this program, including a focus on technology readiness and small business, €470 million has been invested to reduce dependency on critical raw materials, and about €200 million has been invested on research to enhance the recovery and recycling of critical raw materials. The **European Battery Alliance** was launched in 2017 and now has more than 400 industrial participants and a similar number of research and innovation partners, with a total of about €100 billion in investment commitments.

Europe developed its first **Action Plan on Critical Raw Materials** in 2020 with 10 areas for a secure and stable supply of critical materials, including

39 <https://esmfoundation.org/new-list-of-critical-raw-materials-is-out/>

40 <https://eur-lex.europa.eu/EN/legal-content/glossary/eu-tax-policy.html>

41 <https://op.europa.eu/en/publication-detail/-/publication/1f107d76-acbe-11eb-9767-01aa75ed71a1>

developing an industry-led raw materials alliance, research and development initiatives, sustainable financing criteria, strategic international partnerships and expertise and skills through the value chain of critical raw materials, from mining, processing and manufacturing to the recovery and recycling of critical materials found in waste flows.

One outcome of the Action Plan is the **European Raw Materials Alliance (ERMA)**, with over 500 organizations from across the globe along the value chain, including several companies and associations from Canada. ERMA offers “investment matchmaking through the **Raw Materials Investment Platform** using various financing sources (grant, equity, loan, mixed), with individual investment volumes and structures.”⁴² As of 2022, ERMA identified 14 projects in mining, magnet production and recycling needing investment of around €1.7 billion. Overall, ERMA has a budget of about €30 billion, leveraging sources of money like the European Commission, member states and industry partners⁴³ (see Boxes E and F).

Despite these years of effort, Europe acknowledges that faster permitting and easier access to public finance are needed to strengthen domestic mining and processing, and that financing criteria for critical minerals are difficult and remain yet undefined.⁴⁴ Europe maintains a strong focus on skills and education for sustainable raw materials supply chains, with innovation and education projects in areas including exploration, mining and processing.⁴⁵

Defence and security concerns in Europe were heightened because of the war in Ukraine. Under the umbrella of Horizon Europe, the **RePower EU Plan** was introduced in 2022 to address energy security. The plan proposes public and private sector investment of €210 billion by 2027 to save energy, diversify supplies and accelerate the rollout of renewables in industry and transport, which indirectly supports the critical minerals

necessary for renewable energy technologies. Strengthening strategic raw materials reserves is an option being considered to mitigate supply fluctuations and risk.⁴⁶

Europe proposed its first critical minerals legislation in March 2023, the **Critical Materials Act**, which is being shaped partly in response to the U.S. IRA. Objectives include promoting European domestic production, diversifying imports of critical raw materials to reduce strategic dependencies, mitigating risks of disruptions and ensuring a high level of environmental protection by improving circularity and sustainability. In the Act, Europe is considering a central purchasing agency for critical minerals, a new European Critical Raw Minerals Board, to reduce supply risk. Strategic benchmarks are presented to diversify the raw materials value chain by 2030:

- At least 10% of the EU’s annual consumption should be met by domestic extraction.
- At least 40% of the EU’s annual consumption should be met by domestic processing.
- At least 15% of the EU’s annual consumption should be met by recycling (secondary supply).
- No more than 65% of the EU’s annual consumption should be sourced from a single third country.

The Act also aims to reduce the administrative burden by streamlining permitting procedures for critical raw materials projects in Europe, forcing member states to respond in 24 months for extraction permits and 12 months for processing and recycling permits. Selected strategic critical minerals projects will benefit from shorter permitting timeframes and finance.

42 <https://erma.eu/investment/>

43 <https://vito.be/en/news/european-raw-materials-alliance---digging-ourselves-even-deeper-hole>

44 Constanze Veeh (DG GROW), Keynote address, IRTC Conference, Lille, France. February 17, 2023.

45 EIT RawMaterials. [Call for Innovation & Education Projects](#).

46 Constanze Veeh (DG GROW), Keynote address, IRTC Conference, Lille, France. February 17, 2023.

Box E: Critical minerals funded as “important” European projects

Under the European rules for **Important Projects of Common European Interest**, seven member states (Belgium, Finland, France, Germany, Italy, Poland and Sweden) will fund €3.2 billion, supported by €5 billion in private money, for the extraction, concentration, refining and purification of high-purity battery raw materials.⁴⁷

Box F: European Investment Bank lending to critical minerals

The **European Investment Bank**, the continent’s biggest multilateral financial institution, is growing a critical minerals portfolio that includes the €400 million in lending to Renault Group for the Douai EV Battery Gigafactory⁴⁸, €200 million for an advanced semiconductor silicon wafer project⁴⁹ and €150 million for Europe’s first commercial plant for lithium hydroxide production.⁵⁰



47 European Commission. [State aid: Commission approves €3.2 billion public support by seven Member States for a pan-European research and innovation project in all segments of the battery value chain.](#)

48 European Investment Bank. 2022. DOUAI EV Battery Gigafactory. <https://www.eib.org/en/projects/all/20220168>

49 European Investment Bank. 2022. Advanced semiconductor silicon wafer development. <https://www.eib.org/en/projects/all/20210652>

50 European Investment Bank. 2023. Guben lithium converter (under appraisal). <https://www.eib.org/en/projects/all/20220365>



Australia



Australia published its first critical minerals list in 2013 – termed “critical commodities.”

In 2022, the list identified seven category one (high priority) resources (chromium, cobalt, copper, nickel, platinum-group elements, rare-earth elements, zirconium)⁵¹ plus 15 category two resources that have strong resource potential in Australia. The country aims to be a “global critical minerals powerhouse” by 2030⁵² as it is aggressively encouraging both mining and midstream critical mineral processing.

Australia’s approach to critical minerals builds on inherent geological abundance and adjacency to Asia. The country’s states and territories have a long history of mining (e.g., iron ore, coal, alumina, uranium) with consequent widespread benefits.

The country has created advantageous conditions and infrastructure for mining. Minerals investments are supported by excellent geoscience databases. Government expertise and attitudes towards mining are considered the strongest in the world.⁵³ Approvals and permitting have been effective for new critical minerals mines in Australia.

Communities, environmental organizations and Indigenous groups are relatively accepting of mineral development in areas where there is a long history and familiarity with mining and processing, including the dispersion of economic costs and benefits.



Fiscal incentives

Though it varies by jurisdiction, Australia’s royalties system generally incentivizes the production of critical minerals, particularly lithium.⁵⁴ The state and Northern Territory governments collect output-based royalties as a percentage of the value or volume of production (less common). Royalty payments are treated as a deduction from

51 [Critical commodities for a high-tech world: Australia’s potential to supply global demand](#). Geoscience Australia.

52 Australian Government. [2022 Critical Minerals Strategy](#).

53 Fraser Institute. Annual mining survey 2021, <https://www.fraserinstitute.org/categories/mining>

54 IEA. [Royalties System on Minerals](#).

company income taxes. In 2020, Western Australia introduced **Mining Amendment Regulations** with the aim of incentivizing lithium production. The new regulations state that royalties are to be capped at 5% of the value of lithium concentrate, including for lithium hydroxide and lithium carbonate, as opposed to 5% of the value of lithium hydroxide or carbonate itself, as was previously stipulated. The focus on lithium has advanced Australia to be the top global producer (see Box G).

The **Exploration Development Incentive**, which allowed eligible exploration companies to use a portion of their tax losses from greenfield minerals expenditure to make exploration credits to be distributed to equity shareholders, has been replaced with the **Junior Minerals Exploration Incentive**.⁵⁵ The incentive, supported by \$100 million announced on May 5, 2021, has been extended through June 2025.⁵⁶ By giving up a portion of their losses from greenfield mineral exploration, eligible exploration companies can create tax credits to be distributed to investors.



Financial incentives

Australia's **Modern Manufacturing Initiative**, valued at \$1.3 billion over four years from 2020–2021 to 2023–2024, is a key piece of its Modern Manufacturing Strategy, under which resources technology and critical minerals processing are highlighted as strategic priorities.⁵⁷ The Australian government also established a \$2-billion **Critical Minerals Facility** in 2021.⁵⁸ Managed by Export Finance Australia, the facility offers financing for projects aligned with the

Australian government's Critical Minerals Strategy or otherwise of national interest. The **Critical Minerals Accelerator Initiative**, introduced in 2022, supports strategically significant projects through grants aimed at accelerating projects to market and attracting private financing and investment⁵⁹ (see Box H).

In the 2022 strategy, Australia is securing investment and commercial offtake agreements for domestic projects to increase the diversity of supply and support secure, robust supply chains.



Other incentives

The **Major Projects Facilitation Agency**, established in 2022, assists with regulatory approvals for major projects (i.e., projects over \$20 million) in Australia.⁶⁰ Projects with a capital investment over \$50 million can be eligible for **Major Project Status**, which brings extra support in navigating national, state and territory regulatory approvals (see Box H).

The \$50 million **Virtual National Critical Minerals Research and Development Centre**, also established in 2022, brings together critical minerals expertise from the Commonwealth Scientific and Industrial Research Organisation, Geoscience Australia and the Australian Nuclear Science and Technology Organisation. The Centre aims to "...build Australian intellectual property in critical minerals *processing*, target technical bottlenecks in strategic supply chains and drive breakthrough collaborative research."⁶¹

55 Australian Government. [Exploration Development Incentive](#).

56 Australian Government. [Junior Minerals Exploration Incentive](#).

57 Australian Government. [Modern Manufacturing Initiative Manufacturing Integration Stream – Recycling and Clean Energy Priority Round 1 Grant Opportunity](#).

58 Australian Government. [Critical minerals](#).

59 IEA. [Critical Minerals Accelerator Initiative](#).

60 Australian Government. [Major Projects Facilitation Agency](#).

61 IEA. [Virtual National Critical Minerals Research and Development Centre](#).

Funding of \$1 million to \$30 million was offered through the **Critical Minerals Development Program**.⁶² The funding, which supported *post-exploration* activities, was offered to entities in the critical minerals industry as well as to state or territory government agencies.

Australia's **Critical Minerals Strategy 2023–2030** that aims to balance strategic geopolitical interests with supply chain diversification for economic opportunity while ensuring high ESG levels, “including genuine partnership with First Nations Australians.”⁶³ The country wishes to add value to Australia’s extracted resources through domestic mineral processing and manufacturing industries⁶⁴ (see Box I). Emphasis includes balancing foreign investment in Australia’s critical minerals industry, noting the country will “need to be more assertive about encouraging investment that clearly aligns with our national interest in the longer term.”⁶⁵ Approaches include working with “like-minded economies” to increase investment in critical minerals projects and bringing products to market faster.”⁶⁶

Box G: New lithium mines in Australia opened fast

In 2016 in Australia, there was only one operating lithium mine. By 2022, eight more were producing, and three of these had ramped from greenfield to commercial production in under five years. One reason for the fast approvals on these projects was that they are in areas that already have established mining (iron ore and gold), making for easier environmental and community acceptance of incrementally more mining.⁶⁷ Even though it does not have the greatest mineral reserves, Australia has advanced to be the world’s top producer of lithium, eclipsing other nations.

62 Australian Government. [Critical Minerals Development Program](#).

63 <https://www.minister.industry.gov.au/ministers/king/speeches/speech-australianpwc-critical-minerals-summit>

64 <https://consult.industry.gov.au/2023critminsstrategy>

65 <https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/articles/opinion-piece-critical-minerals-chance-secure-future>

66 <https://www.minister.industry.gov.au/ministers/king/speeches/speech-australianpwc-critical-minerals-summit>

67 [Lithium | Geoscience Australia \(ga.gov.au\)](#)

Box H: Australian projects on cobalt, tungsten and graphite

- EQ Resources Limited was awarded a \$6 million grant in 2022 from the federal government's **Critical Minerals Accelerator Initiative** for the transformation of historic mine waste into a sustainable source of tungsten.⁶⁸
- The **Critical Minerals Facility** provided loans in 2022 to two Australian graphite companies. EcoGraf Limited received \$35 million US to expand its spherical graphite facility. Renascor Resources received \$185 million for an integrated graphite mine and a processing facility.
- **Major Project Status** awarded \$560 million to the Cobalt Blue project near Broken Hill, NSW.⁶⁹

Box I: Australians adding value with midstream processing

Lithium miners in Australia are seeking more value-add by converting lithium concentrates to battery materials. In 2022, Australia's first lithium hydroxide processing plant opened, with China-based Tianqi Lithium taking ore from the large Greenbushes mine in Western Australia. Two more plants are being built in Australia by U.S.-based Albemarle and the Chilean company SQM.⁷⁰ Pilbara Minerals, a large lithium miner in Australia, is working with POSCO in Korea to create an integrated lithium raw materials and chemicals supply chain.⁷¹



68 <https://www.eqresources.com.au/site/pdf/4b20cdc4-5bce-4021-84c9-ff8dc9cc7d9e/Government-Funding-for-Mt-Carbine-Critical-Minerals-Program.pdf>

69 Australian Government. [Supercharging Australia's role in global battery supply chain](#).

70 <https://www.abc.net.au/news/science/2023-02-09/should-australia-manufacture-electric-vehicles/101939662>

71 Pilbara Minerals (March 29, 2023). [P1000 Project final investment decision](#).



Recommendations

The 2022 Canadian Critical Minerals Strategy provides ambitious and comprehensive direction to support international investment in critical minerals in Canada.

Prior to the strategy, Canada's activities have been, understandably, smaller than those in the United States and Australia, both of which have more mature plans. Most efforts suggested in the Canadian strategy are relatively new and need elaboration.

There is a lot of critical minerals growth needed; forecasts for additional volumes of critical minerals are impressive.⁷² Considering also current geopolitical shifts away from Chinese and Russian reliance, Canada can take advantage of American, European, South Korean and other investments.

Globally, government incentives are generous and growing – but international competition is fierce. Carbon finance, including critical minerals investment, has gained in prominence with trillions of dollars of investment in climate solutions globally.⁷³ Investor interest and capital are significant and growing. There is a strong interest by private investors, international mining companies, state-owned investment funds and multinational manufacturers. Money is widely available for critical minerals development, and government is advancing policy and incentives at unprecedented levels.⁷⁴ Barriers to investment often relate to risk and uncertainty, which a country can take measures to mitigate.

Canada has inherent advantages of world-leading deposits of critical minerals, good governance, clean energy and social cohesion. Research and development activities have been funded for years and remain important but are not highlighted as they are not likely to satisfy 2030 timeframes. Canada does not have a government laboratories system at the same scale or with the level of influence as in the United States or Europe.

72 See for example: IEA 2022, <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>

73 Bloomberg, 24 April 2023. Climate Investors Are Spending \$1.1 Trillion on the Next Green Thing. <https://www.bloomberg.com/news/newsletters/2023-04-24/big-take-who-is-investing-in-climate-technology>

74 See for example analysis of over 20 countries: IEA 2023, <https://www.iea.org/data-and-statistics/data-tools/critical-minerals-policy-tracker>

Looking at mechanisms from other jurisdictions is useful as these suggest additional approaches that Canada might take to support critical minerals. Australia has more mining experience in critical minerals and has built government capacity; the United States provides a range of input credits and very generous production incentives.

We categorize 13 recommendations for Canada in three areas:

1. Making decisions
2. Leveraging opportunity
3. Thinking ahead

Our recommendations build on those previously made by the Canadian Chamber of Commerce in 2022 on strengthening Canadian supply chains for critical minerals.⁷⁵ Many of the recommendations fall under the “other incentives” category raised at the beginning of this report, which support conditions for favourable minerals development and reinforce fiscal and financial incentives.

Box J: Resource development decisions are necessary

“Mine approval is an unpopular decision and therefore easy to delay.”⁷⁶



A. Making decisions

Recommendation 1: Create our own critical minerals goals.

Plans described in the Canadian Critical Minerals Strategy urgently need goals, timelines and accountability structures. Details and commitments will bolster confidence of international investors in Canada. Europe has proposed benchmarks for critical minerals to motivate industry and member states. The U.S. has stretch goals in the IRA for companies to qualify for with domestic production tax benefits.

Recommendation 2: Obtain faster and consistent approvals for mining.

In general, environmental assessments and government approvals for mining and minerals developments are slow compared to other sectors like manufacturing. However, there is a broad consensus that current timelines of 10–15 years need to be and can be shortened without losing requirements for good planning, environmental protection and Indigenous consent.⁷⁷ Delays and uncertainty are risks to international mobile capital that has options to take investments elsewhere. Across all jurisdictions, there is pressure to accelerate review, permitting and approvals processes. Investors are keen to know, sooner than later, if projects are “go or no-go.”

Notably, Canada is perceived as slow compared to Australia, our closest comparator (see Box G). The Mining Association of Canada has criticized uncoordinated duplication between federal and provincial assessments and approval processes, including Indigenous engagement.⁷⁸

75 PwC, 2022. Enhancing Domestic Critical Mineral Supply Chains, Canadian Chamber of Commerce

76 Karen Hanghøj, Director of the British Geological Survey. IRTC Conference, Lille, France. February 17, 2023.

77 Mining Association of Canada, 2022. <https://mining.ca/resources/reports/project-permitting-in-canada-and-the-mining-industry/>

78 <https://mining.ca/resources/reports/project-permitting-in-canada-and-the-mining-industry/>

Our recommendation is to expedite decision-making on funding applications for critical mineral operations. This amplifies comments previously made by the Canadian Chamber in 2022 on regulatory review and decision making for critical minerals⁷⁹ and aligns with statements in the Canadian Critical Minerals Strategy to streamline critical mineral permitting processes via a “one project, one assessment” system.

Recommendation 3: Build a critical minerals digital information hub for Canada.

Ease of access to high quality and current information hastens planning and permitting processes, adds transparency, helps stakeholder confidence, prepares and eases investment decisions and assists stakeholders in their own assessments.

Canada should work with other levels of government and with industry to build a world-class digital information hub for critical minerals in Canada. One exemplar is the state of South Australia, which provides a free online public portal that combines 12 databases on geoscience and geospatial data, legal and environmental information, good ESG practices and transparency for mineral development.⁸⁰

Recommendation 4: Embed Indigenous reconciliation in critical minerals development.

Fundamental to Canada’s position in the competition for international capital are environmental sustainability and Indigenous reconciliation. The Canadian Critical Minerals

Strategy Objective 3 is to advance reconciliation with Indigenous peoples. Reconciliation and consent involve a complex mix of measures by industry, national, provincial, local, territorial, Indigenous and international partners.

Indigenous groups can be both champions and opponents of critical minerals projects. Areas for action include building Indigenous leadership capacity in the industry and updating economic and legal frameworks in Canada’s mineral resource sector; for example, in mineral prospecting and accessing Indigenous territory.⁸¹



B. Leveraging opportunity

Recommendation 5: Modernize our workforce for critical minerals.

The minerals industry needs new workers, who in turn need to be educated and skilled. International investors want to be confident in Canada’s critical minerals workforce. Our critical minerals strategy, like those for other countries, identifies the need for a new diverse and inclusive workforce,⁸² but more details are required to define and address labour challenges.

The plan might start with an uncomfortable recognition and then work to grow and modernize the workforce. The sector can offer desirable, meaningful and lucrative jobs.

- The mining and the minerals industry have a poor reputation. Perceptions of an antiquated, dirty and non-progressive industry need to be confronted. The profile of critical minerals as a climate solution needs to be raised.

79 PwC, 2022. Enhancing Domestic Critical Mineral Supply Chains, Canadian Chamber of Commerce

80 <https://map.sarig.sa.gov.au/>

81 P Tortell, N Kunz, A Edzerza, D Porter (February 2023). A critical look at critical minerals. <https://policyoptions.irpp.org/magazines/february-2023/critical-minerals-indigenous-prosperity/>

82 [The Canadian Critical Minerals Strategy](#). Objective 4.

- Geoscience, mining, metallurgy, engineering and trades need to highlight new characteristics of industrial work like robotics, remote control, gaming and artificial intelligence.
- Leadership, including Indigenous leadership, must be consciously built in Canada’s minerals resource sector.⁸³
- Women and other equity seeking groups need to be accommodated in the industry. For example, youth have heightened ESG expectations of the companies they work for. Concerted efforts are necessary to make business attitudes and work cultures more appealing.

Recommendation 6: Support small minerals companies.

Most critical minerals discovery and early-stage validation is done by junior mining companies. Majors have shifted away from exploration and instead seek to acquire resource investments after validation. But junior firms are often ill-equipped for the social and environmental assessments needed for project planning and acceptance, including consultations with Indigenous groups and stakeholders. These soft-skills gaps are exasperated by a lack of workforce diversity (see Recommendation 5). The government can provide financial and service support, for example, by offering direct assistance and standardized tools and templates on ESG, subsidizing third-party service providers and facilitating industry mentorships.

This recommendation appears to align with part of the function of the Critical Minerals Centre of Excellence to help companies to apply for permits.⁸⁴

Recommendation 7: Fill the midstream gap for critical minerals production.

Midstream processing is qualitatively different than upstream and downstream activities — and Canada has an opportunity to fill the midstream production gap with targeted investment stimulus.

Most critical minerals are produced at low volumes,⁸⁵ and specialized industry experience is often scarce. Processing and refining are often technically challenging. Each project has its own mineralogy, chemistry and customer specifications. It takes years and significant costs for mineral processing projects to ramp up to profitable capacity. Midstream metallurgy is specific to chemistry, resulting in “lock-in” of processing to a feedstock: it is not trivial to re-tool a smelter or refinery if inputs or products change.

We recommend targeted attention and investment by government to support metallurgical companies, mitigate risks and help overcome timelines and market uncertainties. Canada has significant engineering, metallurgical and technical expertise that can be leveraged more deliberately to critical minerals. Already our nation has tried to do this for rare earth elements processing.⁸⁶

Recommendation 8: Recognize equipment manufacturers and minerals service providers.

Critical minerals development requires equipment, reagents and services for exploration, mining, metallurgy and processing. International investment and development in critical minerals will benefit our Canadian companies that supply the industry.⁸⁷ Canada also has technology and engineering companies that serve the global mining, metals and minerals industry⁸⁸ that could be explicitly supported with tax credits. With new

83 <https://policyoptions.irpp.org/magazines/february-2023/critical-minerals-indigenous-prosperity/> & <https://www.futureminerals.ubc.ca/>

84 Government of Canada. [The Canadian Critical Minerals Strategy](#).

85 Excluding established larger volume commodities like aluminum, copper, cobalt, magnesium, manganese, molybdenum, nickel, potash, tin and zinc.

86 Canadian Rare Earth Element Network, now the Canadian Critical Minerals and Materials Alliance (C2M2A) <https://c2m2a.org/>

87 For example, Hitachi Construction Truck Manufacturing in Guelph, Ontario and Maclean Engineering, a global manufacturer of underground mining vehicles, based in Collingwood, Ontario.

88 For example, SNC-Lavalin and Hatch Ltd, both with massive international reach.

directions in robotics, automation, remote control, modelling, artificial intelligence and information systems, Canada can leverage multiple advantages to serve critical minerals development in Canada and internationally.



C. Thinking ahead

Recommendation 9: Fix the existing value chain misalignment.

A central dilemma to critical minerals development is the problem of timeline “misalignment” along the value chain.⁸⁹ The upstream, midstream, downstream and recycling stages of critical minerals each operate on a different schedule. This complicates the risk calculation for investors. For example, whereas a manufacturing facility like a battery Gigafactory can be planned and constructed in two to three years, a mine or mineral processing plant will take at least double that: five years is fast (see Box G), 10 or 15 years is common. New downstream capacity does not immediately result in upstream or midstream development, which presents a risk of supply constraints in areas like battery materials.

The coordination and connection between stages is a role for governments, both domestic and international; creative fixes are needed. For example, we suggest battery recycling facilities, which are growing in number in Canada, should be incentivized to accept primary mineral concentrates to help alleviate critical minerals processing while waiting the next decade for electric vehicle batteries to reach end-of-life.

Recommendation 10: Strengthen Canada’s financial institutions for critical minerals.

Canada is already a major global centre for minerals finance. About 40% of the world’s public mining companies are listed on TSX and TSXV, particularly small and junior companies that want to be visible to investors and to access capital.⁹⁰ Canadian banks are longstanding participants in the mining industry, providing financing, advisory and credit services. Canadian banks are major lenders to minerals projects worldwide — and have made commitments to a net-zero economy.⁹¹

The Government of Canada can strengthen these institutions to advance critical minerals development and attract international financing. For example, through specific financial support to education programs in mineral resource banking, along with programs in sustainability and financial management, as well as reinforcing oversight procedures to better support small companies in mineral development, while ensuring global corporate responsibility.

Recommendation 11: Add demand-side incentives.

Canada’s strategy currently gives scant attention to demand-side measures like direct government purchasing, mineral stockpiling, price guarantees or de-risking company offtake contracts. For producers like critical minerals refineries⁹², low prices or lack of long-term sale contracts can break projects. Demand-side measures reduce risks and support investor confidence.⁹³

Consuming regions like Europe and the United States have mineral stockpiling plans, mostly intended to bolster defence needs. Australia, as a

89 This was raised at the Canadian Chamber of Commerce *Executive Summit Series on Critical Minerals* (2 March 2023) and is noted elsewhere.

90 Toronto Stock Exchange. <https://www.tsx.com/listings/listing-with-us/sector-and-product-profiles/mining>

91 Canadian Banker’s Association. <https://cba.ca/banks-in-canada-committed-to-a-net-zero-economy-by-2050>

92 For example, Vital Metals paused construction of Canada’s only rare earths processing facility, in Saskatchewan in April 2023, citing lack of sales. <https://www.cbc.ca/news/canada/north/vital-metal-plant-pause-1.6817464>

93 The VW deal, announced April 2023 by the Federal government, is technically a demand-side measure, as it subsidizes sales from a new facility.

producing nation more like Canada, includes in its strategy securing commercial offtake agreements by increased government engagement to help incentivize foreign investment. Offtake agreements often set a price even before a project is producing to guarantee a market for the future production of a mineral resource. We recommend Canada add demand-side incentives like purchase guarantees or insurance backstops.

Recommendation 12: Lead on international ESG standards.

Sustainability standards programs provide an external reference of acceptability for investors and support the brand value of end products. Standards can also help authorities make approval decisions confidently and more rapidly.

Extractive industries in Canada have a long history of issue-specific frameworks and guidance (e.g., cyanide, tailings, site rehabilitation, safety, bribery, forced labour, conflict). Overarching ESG standards consolidate multiple sustainability and management expectations, adding requirements for mineral traceability, reporting and assurance.⁹⁴ Committing to an ESG standard is a long-term investment for a mining company or metals producer. A dominant ESG standard has not emerged, although downstream industry will influence preferred schemes for upstream suppliers.⁹⁵

Canada can continue to lead and define ESG standards. We already have *Towards Sustainable Mining*, led by the Mining Association of Canada, but we need to engage with multistakeholder

programs like IRMA and ResponsibleSteel⁹⁶ and with emerging mechanisms like “battery passports” that track material composition, manufacturing history and sustainability data from mine to recycling.

Recommendation 13: Coordinate investment criteria with Canadian allies.

Objective 5 of the Canadian Critical Minerals Strategy is to “enhance global security and partnership with allies.” Several collaborations are already underway, like the **Minerals Security Partnership (MSP)** with Australia, Finland, France, Germany, Japan, South Korea, Sweden, the United Kingdom, the United States and the European Commission.

Aligning incentives, like the recommendations in this report, with like-minded nations can facilitate and encourage responsible investment. Allied nations are reaching outside their borders for new critical minerals, and Canada can follow suit. For example, many junior mining companies headquartered in our country will benefit from growth in critical minerals overseas, supported by coordinated investment expectations. One area of alignment could be investment taxonomies that guide national investment directions in clean energy and climate finance.⁹⁷

94 Relevant standards programs include those from the Responsible Minerals Initiative, International Council on Mining and Metals, Initiative for Responsible Mining Assurance (IRMA) and Towards Sustainable Mining (TSM).

95 Automobile companies BMW and Tesla endorse the IRMA standard. See https://www.tesla.com/ns_videos/2022-tesla-impact-report.pdf

96 Steel is the single largest direct user of numerous critical minerals (Cr, Mo, Nb, Ni, Ta, W, Mn, V, Zn). ResponsibleSteel is the dominant ESG program for that industry, with membership from miners, steel producers and end-use companies.

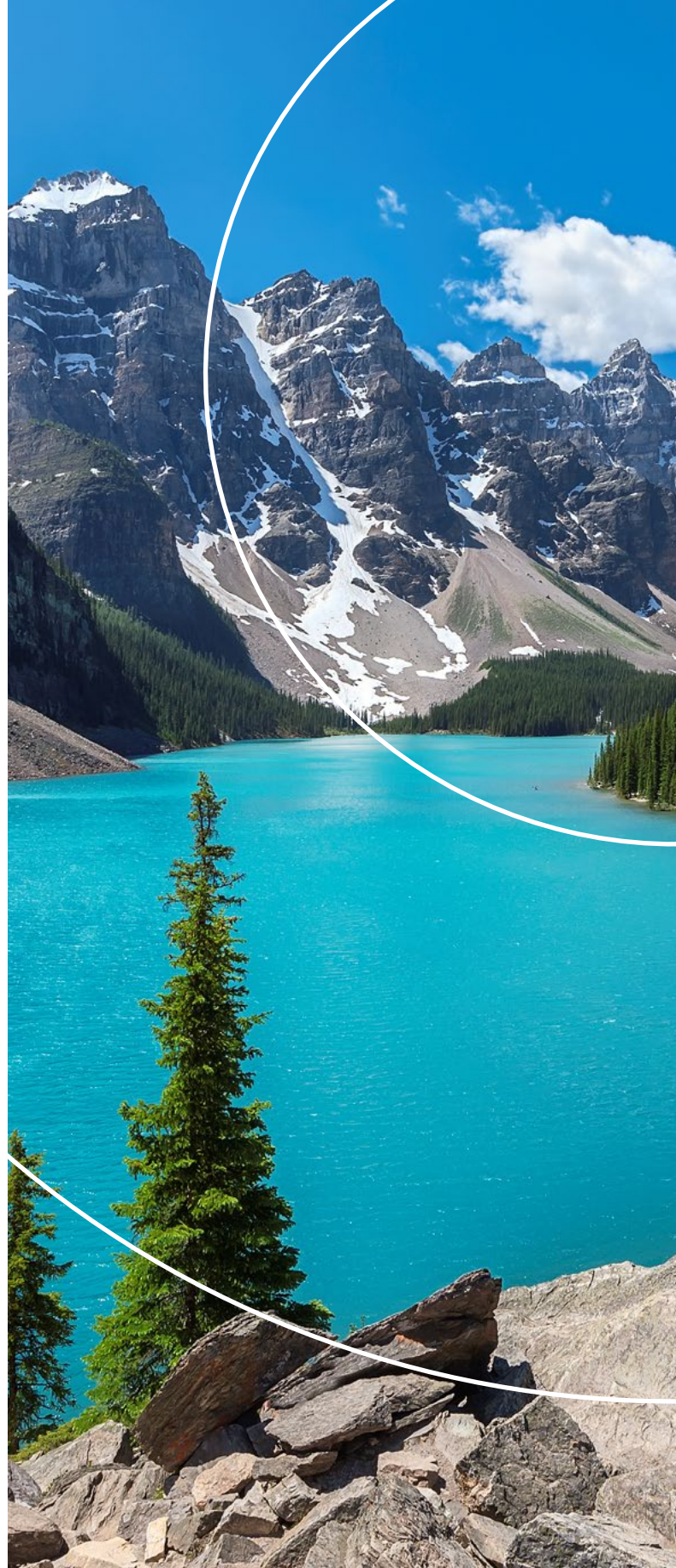
97 <https://www.canada.ca/en/department-finance/programs/financial-sector-policy/sustainable-finance/sustainable-finance-action-council/taxonomy-roadmap-report.html>



Final Remarks

The urgency for Canada to act is driven by its own environmental sustainability expectations, including 2050 net-zero targets, but also by competing jurisdictions — notably Australia and the U.S. — that are more advanced than Canada in their critical minerals incentive programs.

Canada needs to develop expeditious and competitive mechanisms to derisk and secure investment in upstream mining and midstream processing infrastructure as well as mineral exploratory initiatives. Our report identifies gaps in Canada's critical minerals investment attraction policy suite and provides recommendations to the federal government on how Canada can better compete for investments in this important and rapidly growing sector.





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