DIPLOMAT CONSULTING

Rare Earth Elements, Arctic Sovereignty, and Global Trade

Canada's Strategic Path Forward

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Authors: Naomi Mison, Sylvain Bedard, and Ivan Ross Vrána

Rare Earth Elements, Arctic Sovereignity, and Global Trade - Canada's Strategic Path Forward

Introduction

Rare Earth Elements (REEs) are a group of 17 critical minerals that are an ever-present — but rarely noticed — part of our daily lives. REEs are the foundation of modern-day technologies, essential in diverse industrial and high-technology applications, including:

- Electronics (i.e., smartphones, tablets, televisions),
- Clean energy (i.e., wind turbines, solar panels, electric vehicle (EV) batteries),
- Aerospace (i.e., actuators, lasers, missile guidance and control systems, radar and sonar systems, satellite communications),
- Automotive (i.e., EVs, where they are essential for the magnets in motors), and
- Defence (i.e., radar systems, guidance systems, and stealth technologies).

In 2021, Canada identified 34 minerals and metals (see Figure 1)[1], but the list was updated in 2024 in consultation with provinces and territories; exploration, mining and manufacturing industries and associations; and Indigenous organizations and communities.

New to the list are three minerals: High-purity iron ore — essential to green steel making and decarbonization; Phosphorous — essential for batteries and food security; and Silicon metal — essential for semiconductors and computer chips.

According to the Canadian Critical Minerals Strategy[2], critical minerals are the building blocks for the green and digital economy. Simply put, there is no energy transition without critical minerals. And with global demand escalating and supply chains dominated by China, we have a generational opportunity for Canada's workers, economy, and a net-zero future.

Possessing one of the largest known reserves and resources in the world[3], the mineral mines, smelters, refineries or advanced projects are in all provinces and territories (except for Prince Edward Island), Canada is poised to become a global player in the REE industry.

This white paper explores the current landscape of REEs, focusing on mining and refining, Arctic sovereignty, Indigenous engagement, global trade dynamics and the prospect for forging strategic alliances with like-minded democracies.

We recognize Canada's pressing need to utilize its own reserves and establish strong, reliable and resilient domestic rare earth supply chains.

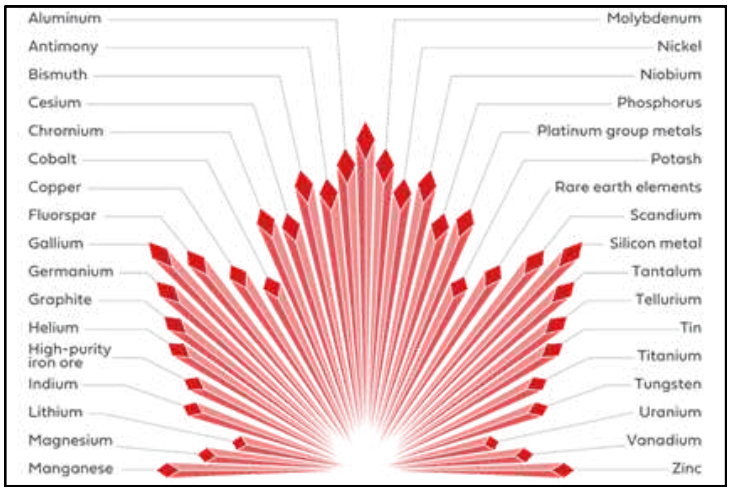


Figure 1: Canada's 34 critical minerals.

1 - "Canada's Critical Minerals", Government of Canada, updated February 21, 2021, https://tinyurl.com/4axybc57
2- "The Canadian Critical Minerals Strategy," Government of Canada, updated September 12, 2023, https://tinyurl.com/2fpyvrrf
3- "Rare Earth Elements," Government of Canada, updated December 20, 2024, https://tinyurl.com/5dtwuv7t

The Global Context

REEs are a set of 17 metallic elements, including the fifteen lanthanides[4] on the periodic table[5] plus scandium[6] and yttrium[7], critical to manufacturing a wide range of high-tech products, from smartphones to electric vehicles to advanced military technologies.

Global rare earths reserves amount to 130 million metric tons (MT). China has the highest concentration of reserves with 44 million MT. The country has emerged as the dominant supplier — given the specialized nature of mining and refining — accounting for 87% of global refined production and 85% of mine-to-metal processing capacity. In 2024, China produced 270,000 MT[8] of the world's 390,000 MT. In terms of specific rare earths mines, the top producer is Bayan Obo mine in Inner Mongolia, an autonomous region in Northern China, which is state-owned by Baotou Iron and Steel Group[9].

China's dominance spans the entire supply chain — from extraction to refining and production of REE-based products. This creates vulnerabilities in the global supply chain, especially for North America and Europe, which depend on these minerals for strategic industries. This control allows China to influence global prices and supply sustainability. The country has also been shutting illegal or environmentally non-compliant[10] rare earths mines and limiting production and exports.

In December 2023, China escalated tensions by banning the export of technology (that makes rare earth magnets) to North America and other regions, adding it to an existing ban on technology to extract and separate critical minerals. This move signaled the geopolitical leverage China holds over the global supply of REEs. As global demand grows, the competition for control over these resources intensifies.

Other countries with significant REE reserves include Australia, the Unite States, and Russia (see Figure 2). Australia is the second largest producer of REEs, primarily due to its operations in the Mount Weld Mine.

The U.S., which has the Mountain Pass Mine in California, also holds substantial reserves, but it relies heavily on imports for processing and refining. The Democratic Republic of Congo is also seen as an increasingly important source for REEs, contributing to approximately 10% of global production.

To reduce reliance on China, efforts are underway to create independent refining and processing infrastructure outside of the country. Tapping into deposits in Canada, Africa, and other parts of the world create more resilient supply chains.

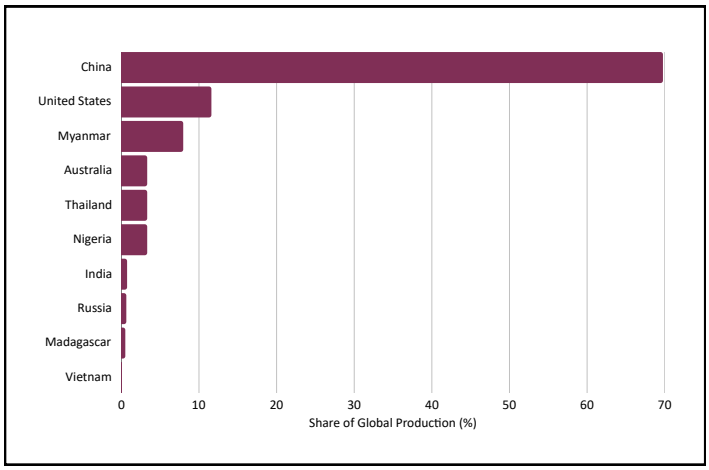


Figure 2: Distribution of rare earths production worldwide as of 2024, by country. Courtesy of Statista.

It is paramount for countries around the world to establish and maintain robust critical mineral value chains that adhere to the highest Environmental, Social, and Governance standards[11]. It is also important that the Government of Canada consult with Indigenous peoples at the onset of any REE project discussions to ensure consideration of environmental impacts, are in the spirit of economic reconciliation and that the long-term benefits of the projects flow to Indigenous communities.

The shifting supply chain dynamics in the REE market reflect broader global trends, including geopolitical tensions, technological advancements, sustainable practices and the need for diversified supply sources.

4, 5 - "Periodic Table of the Elements," Minerals Education Coalition, accessed April 6, 2025, https://tinyurl.com/38u9e5x9
6 - "Periodic Table of the Elements: Scandium," Minerals Education Coalition, accessed April 6, 2025, https://tinyurl.com/yc63pkr5
7- "Periodic Table of the Elements: Yttrium," Minerals Education Coalition, accessed April 6, 2025, https://tinyurl.com/3mv7rje9
8- "Rare Earths Reserves: Top 8 Countries," Investing News Network, updated February 5, 2025, https://tinyurl.com/5n7sz5vz
9 - "Baotou Steel (Shendong) Group Co. Ltd.," BTS Steel Group, accessed April 7, 2025, https://tinyurl.com/3mbwesnv
10 - "China to step up crackdown on rare earth sector: Ministry," Reuters, updated January 9, 2019, https://tinyurl.com/yve6rwck
11 - "The Canada Energy Regulator and ESG – Executive Summary," Government of Canada, updated November 27, 2023, https://tinyurl.com/3epmbcar

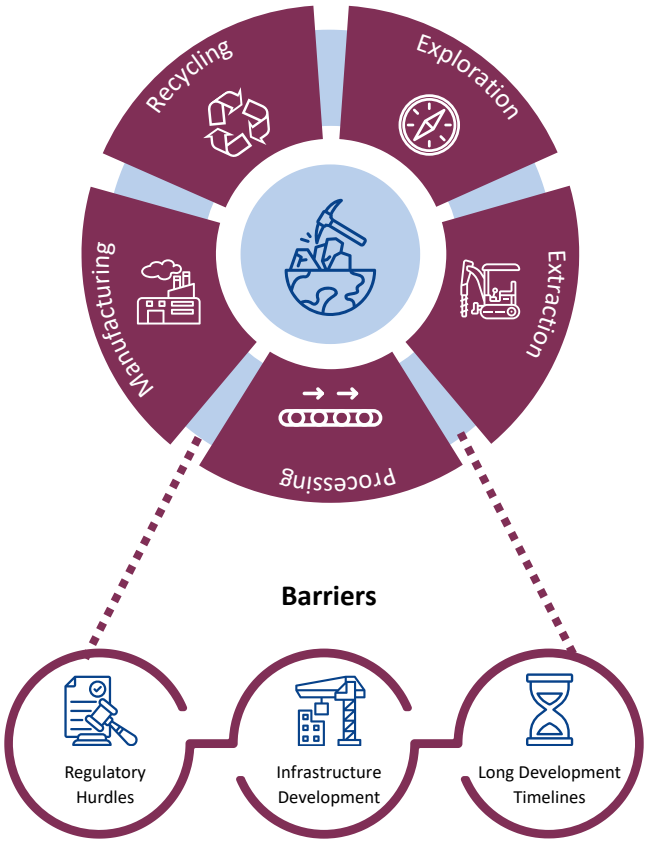
The Canadian Context

Canada, with its vast untapped resources and strategic location in the Arctic, is well-positioned to play a pivotal role in this new REE landscape.

Critical minerals present a generational opportunity for Canada in many areas: exploration, extraction, processing, downstream product manufacturing and recycling — while also strengthening National sovereignty, economic resilience, and defence capabilities. However, despite vast resources, Canada faces significant challenges to becoming a key player in the REE market, such as long development timelines, the need for infrastructure, and regulatory hurdles (See Figure 3).

Mining REEs requires substantial infrastructure and investment, particularly in remote northern regions.

Figure 3: Canada's REE Opportunities



For instance, Galaxy Lithium (Canada) Inc. is proposing the construction, operation, and decommissioning of an open-pit lithium mine located approximately 100 kilometres east of James Bay and the Eastmain Cree Community in Quebec, but it will take an estimated 17.8 years to open a Canadian Mine due to regulatory processes, environmental concerns, and the need for infrastructure, including road access.

In 2022, the Government of Canada[12] released Canada's Critical Minerals Strategy, backed by nearly $4 billion in the Budget. The Strategy sets out a course for Canada to become a global supplier of choice for critical minerals and clean digital technologies.

The Canadian Critical Minerals Strategy will increase the supply of responsibly sourced critical minerals and support the development of domestic and global value chains for the green and digital economy. Accelerating the development of Canada's critical mineral sector, while ensuring environmental sustainability and respecting the rights of Indigenous peoples, is essential if Canada is to position itself as a stable supplier of critical minerals, both at home and abroad.

Substantial investment in infrastructure, processing capacity, and international cooperation will be crucial for Canada to maximize its potential in the global REE market. Cross-border supply chain integration also hinges on stable U.S. policies — unpredictability from Washington could undermine Canada's role as a dependable partner.

As the world moves toward a lower-carbon economy, a key question on which we must collectively focus is how to build on Canada's comparative advantage in a manner that will create jobs, economic opportunity and prosperity.

If will therefore be critical for Canada to establish domestic supply chains to advance economic diversification and industrialization by demonstrating its extraction, refining, and production prowess.

12 - Natural Resources Canada, The Canadian Critical Minerals Strategy: From Exploration to Recycling (Ottawa: Government of Canada, 2022), https://tinyurl.com/2ac6rrmd

Mining and Refining

Rare Earth Elements are not like traditional commodities such as gold and silver, thus requires a unique approach to mining. Miners must excavate huge amounts of ore, subject it to physical and chemical processes to concentrate the rare earths, and then separate them.

The transformation is energy intensive and dirty, requires toxic chemicals, and often generates a small amount of radioactive waste that must be safely disposed of.

REEs are either mined from open pits, like many other metals and minerals, or they are mined through in-situ leaching. The metals are found in hard-rock deposits, ionic clay deposits[13], and mineral sands. Some minerals that are mined for rare earths are bastnäsite, monazite, loparite, and xenotime.

The open-pit mining process for REEs is like that of other minerals: hard rock is mined, ore is separated from tailings, and then it is refined. In-situ leaching[14], which is also a common method of mining uranium, is where miners pump a chemical solution into an orebody (see Figure 4). The solution dissolves the targeted materials into a brine that is then pumped back out of the ore and into collection pools. Rare earths mining also has a final step, which is the separation of the different rare earths from each other.

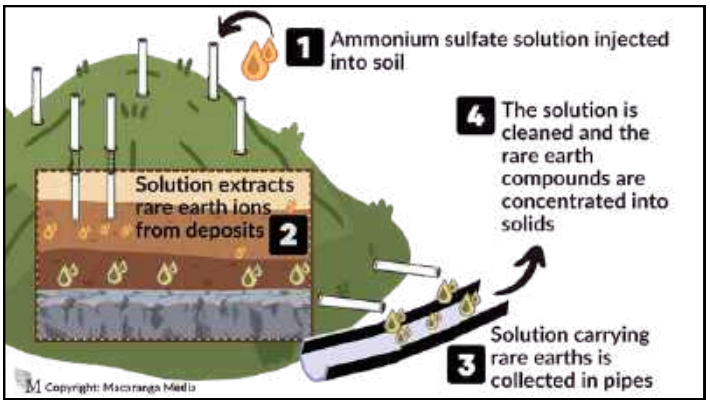


Figure 4: Process of in-situ leaching for Rare Earth Minerals, courtesy of Macaranga Media.

Because the rare earth elements all have similar behaviour to each other, they are very tough to separate, making the process difficult and expensive. The most common separation method is solvent extraction, but it is lengthy and can take hundreds of thousands of cycles to achieve high purity levels, according to the Science History Institute[15].

Rare earth mining poses environmental risks due to toxic chemical releases and potential groundwater contamination, especially when it comes to illegal and unregulated mines. This means even more care needs to be taken to mitigate significant environmental and social impacts.

Mining operations require extensive infrastructure, including transportation networks (roads, railways, ports), power and water systems, communication networks, and processing facilities, often built in remote areas. For instance, the "Ring of Fire" in Northern Ontario[16], a region rich in mineral deposits, is a remote area posing significant challenges for mining and infrastructure development, including access and transportation.

In Canada, there appears to be a political appetite to create the necessary infrastructure to support mining projects. For instance, on February 7, 2025, Commerce Resources Corp.[17] announced that it had received conditional approval for funding of up to a total of $2.6 million CAD from Natural Resources Canada's Critical Minerals Infrastructure Fund[18], for progression of the access road to the company's wholly-owned Ashram REE and Fluorspar Deposit in Nunavik, Quebec (see Figure 5). Roadways improve access, transportation of materials, and the movement of people and equipment, and serve as ice roads in the winter.

13 - "Ionic Clay's Potential for Sustainable Rare Earths Processing," Investing News Network, updated November 1, 2022, https://tinyurl.com/3v9t6t7w
14 - "In-situ leaching: A cleaner, greener, cheaper way to mine," Geology for Investors, updated January 11, 2023, https://tinyurl.com/58bptb58
15 - "Science of Rare Earth Elements," Science History Institute, accessed April 7, 2025, https://tinyurl.com/4vxyzbzs
16 - "Ontario's Ring of Fire," Government of Ontario, updated January 28, 2025, https://tinyurl.com/y8x4j287
17 - "Commerce Resources Receives $2.6M CAD from Canada's Critical Minerals Infrastructure Fund," Commerce Resources Corp., updated February 7, 2025, https://tinyurl.com/4p44duhj
18 - "Critical Minerals Infrastructure Fund," Government of Canada, updated March 18, 2025, https://tinyurl.com/3wtt7pkm

"The Government of Canada is supporting projects that strengthen Canada's supply chains, enhance our a ability to be a reliable supplier of the critical minerals the world is demanding, and foster economic growth while creating good jobs."

--The Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources Canada

The Honourable Jonathan Wilkinson, Minister of Energy and Natural Resources Canada said, "*Developments like this help mines get built faster, and they are a key element in seizing the generational opportunity before us. The Government of Canada is supporting projects that strengthen Canada's supply chains, enhance our ability to be a reliable supplier of the critical minerals the world is demanding, and foster economic growth while creating good jobs.*"

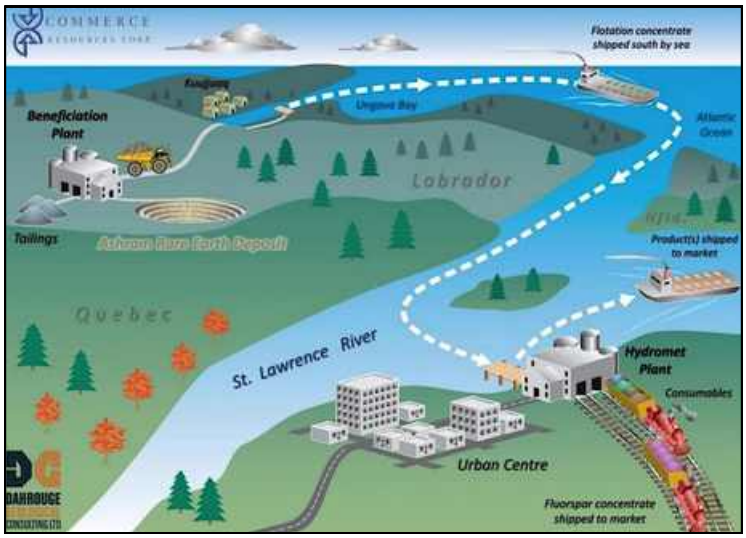


Figure 5: Planned export path for rare earth elements mined in Nunavik, courtesy of Commerce Resources Group.

Ross Carroll, CEO and President of Commerce Resources Group states, "*The funding is critical in enabling the progression of the road which is crucial to the development of Commerce Resources' Ashram REE and Fluorspar deposit, the highest quality deposit of its type in Canada and one of the best globally. In addition to bringing the mine into production, the road will provide significant social and economic benefits to the Indigenous communities in Nunavik. We look forward to working with our government and community stakeholders as we progress the Ashram project.*"

The Canadian government is investing in and developing its rare earth mining and processing capabilities to help meet future demand, diversify who controls the supply — and perhaps make rare earth recovery "greener". While researchers are looking for alternatives to conventional mining, current forecasts show supply deficits[19] if critical mineral production, processing and recycling are not increased.

19 - "Critical minerals supply and demand challenges mining companies face," Ernst & Young, updated April 20, 2022, https://tinyurl.com/ms3425c8

Ultimately, all the mining without refining still is not REE independence. Refining involves further processing of the mined REE ore to produce high-purity metal compounds, such as neodymium oxides or carbonates. The goal of refining is to separate the REEs from each other and to remove impurities, resulting in a concentrated and usable form of the elements. The REE extraction process consists of several stages:

1. **Processing** (converting ores into refined concentrates),
2. **Metallurgy** (further refining for individual elements), and
3. **Magnet Creation** (for high-tech applications, particularly in electronics and defence).

Developing a Canadian refining and processing ecosystem is crucial for capturing more value from these resources domestically.

Permanent magnets require a heavy REE called dysprosium (REE are categorized as either light or heavy based on their atomic number). China is currently the only commercial producer of heavy REE, allowing it to dominate the permanent magnet market.

Low prices and advanced Chinese production capabilities have made the commercial development of rare earth facilities outside of China uneconomic. A new REE mine has not opened in decades and we have no domestic separation and refining facilities, a key step in turning rare earth elements into usable forms. Due to our lack of a REE supply chain, we import the majority of our REE and REE-enabled inputs from China.

To reduce reliance on China and support its net-zero goals, Canada is continuing to strengthen critical mineral supply and promote innovation and sustainable practices across critical mineral value chains. However, the global clean energy transition is upon us and represents the largest transformation since the Industrial Revolution.

Despite Canada's growing productivity gap and lack of manufacturing capacity, REE projects designed to reengage the supply chain are underway. For instance, in the summer of 2024, the Saskatchewan Research Council (SRC), a government-funded scientific research and development institution, built a $74 million rare earth minerals processing plant[20] that became the first rare earth processing[21] plant to operate at a commercial scale in North America.

According to the facility's chief executive, the facility's design can be replicated and licensed[22] across North America, creating the conditions for greater rare earth production as the demand for the metals is expected to increase by three to seven times by 2040 (see Figure 6)[23].

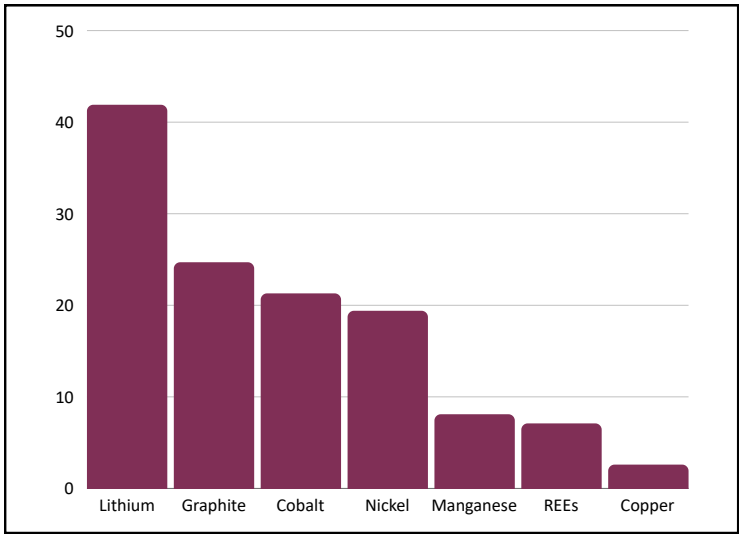


Figure 6: Growth in demand for selected minerals from clean energy technologies by sustainable development scenario, 2040 relative to 2020. Adapted from the International Energy Agency.

Looking further down the supply chain, there is very little midstream processing at scale at present. However, there are a few midstream processing facilities currently under development. SRC's Rare Earth Processing Facility is one of those.

20, 22 - Canada opens new critical minerals hub in push to end China's dominance," Financial Times, accessed April 5, 2025, https://tinyurl.com/yz9vhxvp
21 - "Saskatchewan processing plant first to produce rare earth metals in North America," Mining.com, updated September 18, 2024, https://tinyurl.com/mrxrvah8
23 - "The Role of Critical Minerals in Clean Energy Transitions," International Energy Agency, updated January 10, 2021, https://tinyurl.com/yckyhrww

While the U.S. remains Canada's largest trading partner, importing nearly 60%[24] of this country's mineral exports, the recent tariff measures[25] — including those on critical minerals — have prompted Canada to seek new trading opportunities. The turbulent relationship with the U.S., combined with dependence on China, exposes a vulnerability that could severely impact defense production and readiness. For a country in which trade accounts for two thirds[26] of Gross Domestic Product (GDP) and supports one-in-six jobs — this underscores the urgent need to diversify export markets and bolster economic resilience.

Canada should also work to forge stronger trade relationships with Asian nations to establish itself as a reliable alternative supplier of REEs. Canada must strengthen trade relationships with countries such as Japan, South Korea, and India, all of which are major consumers of REEs and increasingly looking to diversify their supply sources.

Sustainability in Mining

Collectively, we must ensure that all mining operations respect environmental standards. To achieve this, we need to develop sustainable mining practices that minimize environmental damage and contribute to Canada's green economy goals.

The Rare Earth Processing Facility in Saskatchewan is the most environmentally sustainable in the world. While plants typically use large quantities of water and chemicals, the Saskatchewan facility will not emit a single litre of chemical or water and everything will be recycled and reused.

As we move forward with the development of this sector, Canada must institute the highest level of environmental compliance and secure free, prior, and informed consent for natural resource projects. Environmental stewardship will set Canada apart from other parts of the world.

Arctic Sovereignty and the Northwest Passage

The Arctic Region, including the Northwest Passage (see Figure 7), contains ample reserves of critical minerals, including REEs, which are essential for technologies like wind turbines, electric vehicles, and defence applications. The area is rich in other natural resources, including nickel, iron ore, phosphate, copper, cobalt, uranium, and gold. The Region[27] is also home to numerous diverse Indigenous peoples, including the Inuit, Saami, Aleut, Yupik, and Chukchi, who face challenges from climate change and the need to adapt to a changing environment while preserving their cultures and traditional ways of life.

Figure 7: The Northwest Passage - A historic Arctic sea route connecting the Atlantic and Pacific Oceans through the Canadian Arctic Archipelago, increasingly navigable due to climate change, and of growing geopolitical and commercial interest. Image courtesy of Britannica.

In its 2024 Economic Report[28], the Arctic Economic Council highlighted the potentially pivotal role mining in Arctic nations could play in fuelling the world's increasing demand for critical raw materials. It stated that the Arctic region, which encompasses parts of eight separate countries, is home to 31 of the 34 minerals identified as essential for clean energy technology.

24 - "Mineral Trade," Government of Canada, updated January 16, 2025, https://tinyurl.com/2cn94vxr
25 - "How do Canada's critical minerals fit into tariff tensions?," CTV News, updated February 15, 2025, https://tinyurl.com/49b4hcu6
26 - "State of Trade 2024: Supply chains," Government of Canada, updated October 3, 2024, https://tinyurl.com/3u4mfvb5
27 - "Arctic Indigenous Peoples," University of Lapland, accessed April 4, 2025, https://tinyurl.com/yzux28bj
28 - Arctic Economic Council, Arctic Mining Report 2024, (Tromsø: Arctic Economic Council, September 2024), https://tinyurl.com/fettuz6u

According to the International Energy Agency, demand for critical minerals[29] will nearly triple by 2030, growing to more than 3.5-times the current levels by 2050. This, alongside the fact that the Arctic is feeling the effects of climate change more keenly than anywhere else —warming four-times faster[30] than the rest of the world, according to research in *Nature* —has given some urgency to the Arctic discussion.

Mining in the Arctic presents unique challenges, including harsh environmental conditions, logistical difficulties, and the need to protect fragile ecosystems and Indigenous communities. In 2019, Guggenheim Partners, an investment firm that helped develop the Arctic Investment Protocol alongside the World Economic Forum, projected that to establish the infrastructure needed for a connected Arctic, $1 trillion USD would be needed over the next 15 years.

The Region has significant implications for global trade in the future. As climate change accelerates and the Arctic becomes more navigable, it is potentially opening new shipping routes and making access to resources easier. The Northwest Passage route is 7,000km shorter than the current route through the Panama Canal, and the Northeast Passage route is one-third of the distance of the traditional route through the Suez Canal.

The Northwest and Northeast Passages have up until now been used relatively infrequently, and as a result, not all of the potential routes have been fully mapped or surveyed. However, considering the growing strategic and economic importance of the Northwest Passage, Canada faces mounting pressure to assert is sovereignty over the region. Canada must ensure it has the capacity to defect its Arctic borders and control access to resources, including REEs, in the region. However, the U.S., Russia, and China all contest Canada's sovereignty over this passage, and it is currently recognized as international waters by these countries.

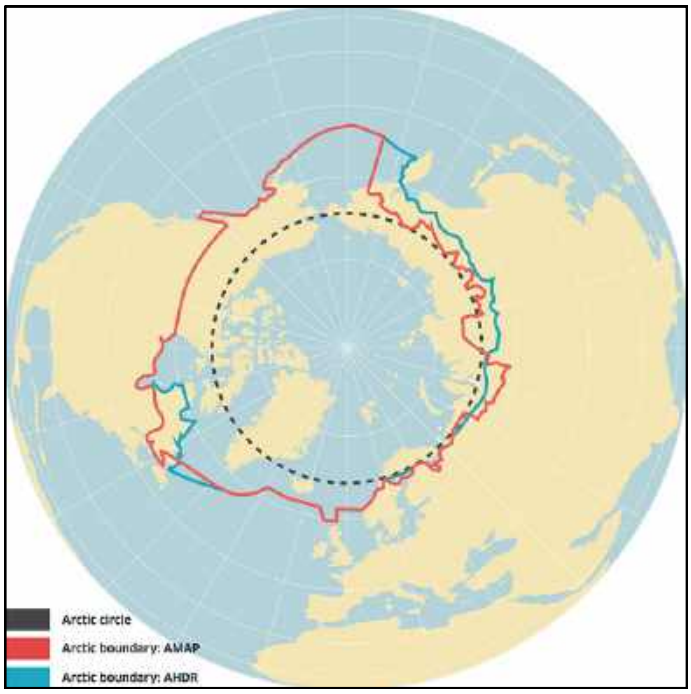


Figure 8: Arctic boundaries used by the Arctic Monitoring and Assistance Program (AMAP) and the Arctic Human Development Report (AHDR). Courtesy of Discovering the Arctic.

According to Discovering the Arctic[31], international law states that no one owns the North Pole, or the oceans immediately surrounding it (see Figure 8). The five 'Arctic Nations' (U.S., Russia, Canada, Norway and Denmark-Greenland) adjacent to the Arctic Ocean can each claim as an exclusive economic zone (EEZ) the 200 nautical miles of ocean off their coastline. However, there is much dispute over whether other parts of the seas in this region form a country's national waters or internal waters.

The ongoing security challenges in the Arctic and potential geopolitical conflict over access to REEs highlight the need for increased defence spending. According to Climate Action Network Canada[32], Canada's NATO commitment currently stands at 1.1% of GDP, but there are calls to increase this to 2%, which would translate into an additional $25-28 billion per year. This funding could be used to bolster Canada's defence capabilities, particularly in missile defence systems and Arctic sovereignty.

29 - "Global Critical Minerals Outlook 2024," International Energy Agency, updated January 15, 2024, https://tinyurl.com/22z6t87w
30 - Mika Rantanen et al., "The Arctic has warmed nearly four times faster than the globe since 1979," Communications Earth & Environment no.3 (2022): 168, https://tinyurl.com/4remu7y3
31 - "About Discovering the Arctic," Royal Geographic Society, accessed April 7, 2025 https://tinyurl.com/cjuupepk
32 - Climate Action Network, Spending What it Takes: Transformational climate investments for long-term prosperity in Canada, updated February 9, 2023, https://tinyurl.com/ypx58d7r

Resource scarcity, propelled by climate breakdown and the depletion of vital ecosystems, is reshaping the dynamics of global security. The demand for renewable and non-renewable resources is intensifying, setting the stage for heightened competition and potential confrontation. The adverse impacts cut across sectors, from agriculture to energy, triggering inequities with far-reaching consequences.

Given the direct link between REEs and the strategic importance of the Arctic for National sovereignty, such investments are critical to safeguard national interest. To that end, Canada should echo the U.S. approach towards strategic stockpiling, investing in domestic REE production/manufacturing, and diversify supply sources to mitigate potential geopolitical risks.

Indigenous Engagement

Many proposed REE projects are located on traditional Indigenous lands. Some Indigenous communities are concerned that mining developments will lead to water contamination[33] or have other damaging environmental effects on the land. Many environmental groups also oppose any future exploitation of the Arctic region.

An increase in the numbers of cargo ships using the Arctic Sea routes may have a very specific impact on climate change. The melting of ice in the Arctic region may affect the livelihoods of Indigenous peoples and their ability to hunt for food.

The success of Canada's critical mineral development is tied to the active participation of Indigenous peoples, achieved by integrating diverse Indigenous perspectives through ongoing engagement, collaboration, and benefits-sharing. Indigenous peoples are the stewards, right holders and, in some cases, title holders to the land upon which mineral and industrial development takes place.

In some provinces, First Nation communities are leading proposed road projects to support mine development, such as in the case of the Ring of Fire (see Figure 9).

Communities are assessing any potential social and environmental impacts, as well as maximizing opportunities for First Nations people. However, large amounts of red tape often slow down progress or halt it altogether. Stringent regulatory frameworks in the Arctic are expected to help facilitate sustainable development to a degree.

If done correctly, a fully-fledged mining industry could bring significant benefits to local Arctic economies and communities as well as the global stage. Consequently, mine development needs to be done sustainably and with awareness of the Arctic's unique landscapes and the impact the industry would have on the environment, and Indigenous peoples.

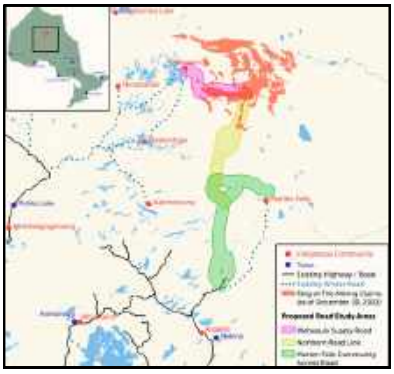


Figure 9: Ontario's Ring of Fire. Map showing proposed road corridors to support mineral development in the Ring of Fire, located near several Indigenous communities. Image courtesy of Ontario.ca

Global Trade Dynamics

In 2023, Rare Earth Metal Compounds were the world's 631st most traded product, with a total trade of $3.52 billion (USD). Between 2022 and 2023 the exports of Rare Earth Metal Compounds grew by 3.49%, from $3.4 billion to $3.52 billion USD. Trade in Rare Earth Metal Compounds represents 0.016% of total world trade.

In 2024, the rare earth market experienced its third consecutive year of adjustments, with price fluctuations amplified by geopolitical factors and supply-demand dynamics (see Figure 10). In May, rare earth prices rebounded due to anticipated demand from China, with dysprosium (Dy) oxide prices increasing by 10% month-to-month, making it the strongest-performing rare earth product. Meanwhile, neodymium-praseodymium oxide saw a more moderate price increase. However, after this brief recovery, rare earth prices began to decline again.

33 - "Inside the battle over Ontario's Ring of Fire," CBC News, updated October 10, 2023, https://tinyurl.com/22f9sxwk

At the same time, the pace of quota growth in the rare earth sector slowed, but industry consolidation has accelerated. China's dominance in the rare earth market will remain a key driver of industry developments in 2025[34]. China exerts a powerful influence on rare earth pricing, with most international transactions tied to Chinese domestic pricing benchmarks. Maintaining stable and lower prices will support demand for key rare earth products within the Chinese market. However, concerns about concentrated supply chains are driving global consumers to diversify supply sources.

As demand for rare earths continues to grow, especially in high-tech applications like electric vehicles, drones, and robotics, the rare earth market in 2025 will face complex dynamics shaped by both supply-demand imbalances and geopolitical challenges.

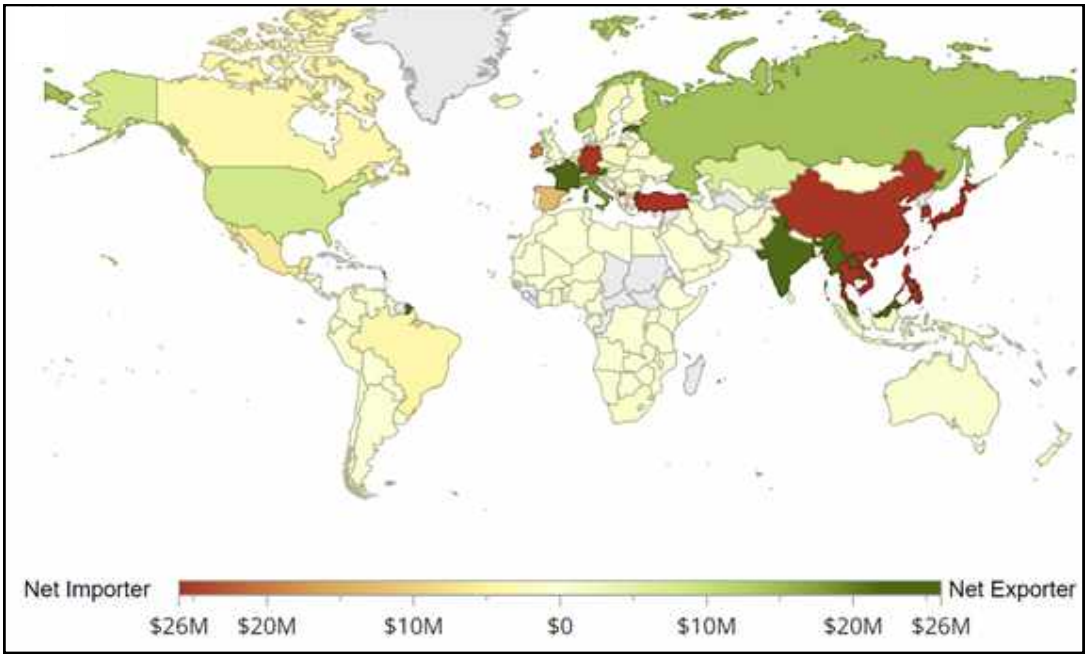


Figure 10: Trade balance in Rare Earth Metal Compounds for 2024. Colours represent the difference between each country's import and export values. Courtesy of the Observatory of Economic Complexity (OEC).

Forging Strategic Alliances with Like-Minded Democracies

In terms of political obstacles, China dominates 90% of the entire supply chain — from the extraction of rare earths right through to the production of, for example, neodymium and praseodymium metals and magnets.

As other parts of the world, specifically North America, look to develop their own supply chain, the Chinese government may take the opportunity to manipulate the market, particularly in terms of the quantity and price of rare earth ore and rare earths, causing a significant political impact on market development.

That is one of the reasons why governments around the world have taken the lead in stimulating and catalyzing the rare earth sector, from mining incentives right through to the funding of midstream processing facilities, such as SRC's Rare Earth Processing Facility, which is mainly funded by the government.

34 - "Key Trends to Shape Global Rare Earth Market Dynamics in 2025," NAI 500, updated January 14, 2025, https://tinyurl.com/3yuehxrx

There are several reasons for this including: to demonstrate that technology can be developed and operated efficiently; to prove the commercial viability of the sector; and, to develop supply chains that are going to be necessary outside of China to deliver to the industry effectively.

In 2022, Canada joined the Sustainable Critical Minerals Alliance[35] with Australia, France, Germany, Japan, the United Kingdom and the U.S., and was joined by Sweden in 2024, to promote sustainable and responsible mining, processing, and recycling practices.

Recommendations

The following policy actions are recommended:

01

Invest in Infrastructure Development

Prioritize the development of transportation and refining infrastructure to unlock Canada's REE potential. This includes building roads to remote mining areas and investing in processing and metallurgy facilities to capture more value from REEs domestically.

02

Strengthen Arctic Sovereignty

Increase funding for Arctic defence, environmental monitoring, and infrastructure development. Assert Canadian sovereignty over the Northwest Passage and the Arctic's vast resource deposits to prevent external powers from gaining control.

03

Enhance Trade Relations with Asia

Forge stronger trade agreements with countries like Japan, South Korea, and India to establish Canada as a trusted partner in the REE supply chain. This includes securing long-term supply contracts and fostering technological and research partnerships.

04

Invest in Defence Spending

Consider raising defence spending to meet NATO's 2% GDP target and invest in strategic defence initiatives, particularly in the Arctic. This would ensure Canada's military readiness in the face of increasing geopolitical tensions.

35 - "Our critical minerals strategic partnerships," Government of Canada, updated March 11, 2025, https://tinyurl.com/4yf7v5fm

Conclusion

Canada's vast reserves of rare earth elements, combined with its strategic position in the Arctic and growing ties with Asia, provide a unique opportunity to reshape its role in the global economy.

Unfortunately, Canada's ongoing productivity gap, lack of manufacturing capacity, and slow-moving infrastructure development present major barriers to scaling up REE mining operations.

The current rare earth supply chain in North America is still very much nascent and remains under development. When compared to China, North America is in an early-stage catch-up phase. Currently, there is just one active mine in Canada and one in the U.S.

Development of processing facilities and a sustainable rare earth supply chain are essential to the economies of Canada and North America. The thought is that if we don't act now to build a resilient, domestic REE supply chain, we will lose out on a once in a generation opportunity and remain dependent on the inputs of other countries that are less sustainable.

The defence sector relies on a domestic supply of Rare Earth Elements for much of its modern military hardware. Both economically and from a national sovereignty standpoint, having a healthy, growing, and viable rare earth supply chain in North America is vital. In short, rare earths are indispensable for modern defence technologies, and controlling their supply is a matter of national security.

The next federal government will need to make bold decisions about infrastructure, trade, defence, and environmental stewardship to ensure Canada capitalizes on its natural resources while securing its sovereignty in the Arctic. To deliver on these outcomes, Canada should define a national strategy for domestic production and diversification of rare earth sources.

The team at Diplomat Consulting are here to guide you and your business to assess opportunities for alignment with government objectives, as well as support your understanding in any political risk.

For more information, please contact Diplomat Consulting at: **hello@diplomatconsulting.com** or visit us at: **diplomatconsulting.com**

Images courtesy of Pexels.

Glossary

Arctic Region: A geographic region spreading around the North Pole that includes the Northwest Passage; also known as the Arctic.

Electric Vehicle (EV): A motor vehicle whose propulsion is powered fully or mostly by electricity.

International Energy Agency (IEA): A Paris-based autonomous intergovernmental organization, established in 1974, that provides policy recommendations, analysis, and data on the global energy sector.

Metric Tons (MT): A unit of mass equal to 1,000 kilograms; also known as a tonne.

Northwest Passage: A historic Arctic sea route connecting the Atlantic and Pacific Oceans through the Canadian Arctic Archipelago.

Rare Earth Elements (REEs): A group of 17 metallic elements, including the 15 lanthanides (cerium through luteium), as well as scandium and yttrium.

Ring of Fire: A vast, mineral-rich region located in the remote James Bay Lowlands of Northern Ontario, Canada.

Saskatchewan Research Council (SRC): A government-funded scientific research and development institution that built the first Rare Earth processing plant to operate at a commercial scale in North America.

Sustainable Critical Minerals Alliance: Member states (i.e., Canada, Australia, Germany, Japan, the United Kingdom, and the United States) voluntarily work on developing sustainable and inclusive mining practices and sourcing critical minerals.

DIPLOMAT CONSULTING

Contact Us

Edmonton: 780-953-1106

Ottawa: 613-222-7723