

Climate Goals rely on Mining

How Nova Scotia can contribute to global climate goals
and generate economic opportunity



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Table of Contents

- Executive Summary 5
- Nova Scotia’s “2030 Clean Power Plan” relies on Mining 8
- Industry Economic Impact 10
- Examples of Nova Scotia’s Critical Minerals Potential 12
- Other Minerals Essential to Climate Goals 15
- Ethical Minerals 16
- Policy Recommendations 18
- Summary of Recommendations 25

**Critical mineral supply must increase sixfold
to achieve net zero emissions by 2050.**



Electric vehicles require about six times more minerals to build than conventional vehicles.¹ As many as 50 new lithium mines are needed by 2030 to achieve climate goals.²

¹ <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>, page 89.

² <https://www.iea.org/reports/global-ev-outlook-2022>, page 176

Executive Summary

Climate goals rely on mining.

That might sound paradoxical to some, but the reality is green technologies like electric vehicles, wind turbines and solar panels are largely made of minerals. The International Energy Agency (IEA) estimates that supply of critical minerals must increase sixfold to achieve net zero emissions by 2050.³

In fact, hundreds of new mines are needed – quickly – to supply the minerals necessary for clean energy.⁴ Many reports by global experts predict there will be mineral shortages because there simply are not enough mines in the world to meet the demand.

Nova Scotia has had many mines that produced what we now call “critical minerals” – minerals needed for climate goals and for which there are supply concerns – including copper, tin, zinc, graphite, antimony, manganese and molybdenum. The province also has potential for critical minerals such as lithium, rare earth elements, indium, uranium and titanium.⁵

The global rush to source critical minerals creates an extraordinary economic opportunity for places like Nova Scotia that have the potential to provide them. The province can contribute to global supply while also generating jobs and government revenues to help pay for programs like health and education.

The Government of Nova Scotia should do everything it can to help the province’s mining industry find and develop critical mineral deposits.

Unfortunately, a series of long-standing policy issues discourage investment in Nova Scotia’s critical minerals potential, and harm the industry in general. Resolving these issues would facilitate economic development and help Nova Scotia contribute to critical mineral supply. For example, the provincial government should:

- Fund Minerals Play Fairway, a proposed airborne geophysical exploration program that would help identify areas with potential for critical minerals and increase our understanding of the province’s geology.
- Lift the four-decade-old ban on uranium exploration and mining. Natural Resources Canada says uranium is a critical mineral because it is the key nuclear fuel and nuclear provides vast quantities of baseload energy without generating any greenhouse gas

³ <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>

⁴ <https://www.iea.org/reports/global-ev-outlook-2022>

⁵ See Natural Resources Canada’s list of critical minerals at <https://www.canada.ca/en/campaign/critical-minerals-in-canada/critical-minerals-an-opportunity-for-canada.html>

emissions. Almost two dozen countries, including Canada, have committed to tripling nuclear energy as part of achieving Net Zero.⁶

- Reform permitting and cut red tape to help expedite mineral exploration and development. There is a growing global consensus that permitting for new mines needs to be reformed to help achieve climate goals because it takes, on average, 17 years to get from mineral deposit discovery to actual mining.⁷ The IEA argues for “a cut in permitting times to just one year – the minimum time required to prepare a thorough environmental assessment and ensure adequate safeguards.”⁸
- Add some sensible flexibility to protected areas policy. Protected areas overlap or are in close proximity to over 400 known critical mineral occurrences in Nova Scotia, which hinders or outright prevents exploration and extraction of materials that are essential to meeting climate goals. This creates a situation in which two environmental goals – land conservation and climate change – are at odds with each other. Flexibility in protected areas policy would solve this problem.
- Use tax and royalty policy to make Nova Scotia a more attractive place to invest for mineral exploration and development. Other provinces support their mining industries more than Nova Scotia does, and many are taking significant additional steps to attract investment in their critical minerals. Nova Scotia is not competitive with other Canadian provinces in this regard.

Governments, like Nova Scotia’s, that set ambitious climate goals also need to work with their mining industries to help achieve those goals. To date, the Government of Nova Scotia has not made any policy changes to support the critical minerals sector and its draft critical minerals strategy contains no specific targets or actions.

If we do not extract minerals in stringently regulated democracies like Canada, more mining will be done in countries that do not take proper care of the environment or worker safety. In other words, blocking a mining project in Canada does nothing to protect the environment – it just offshores impacts to a jurisdiction where they will likely be worse. We need to do more mining here, and less in countries that do not share our values.

Nova Scotia has the potential to supply a number of critical minerals. The provincial government needs to support that effort by cutting red tape, removing policy obstacles and working with the mining industry to attract interest in the province’s amazing geology.

⁶ <https://www.euractiv.com/section/politics/news/macron-at-cop28-nuclear-energy-is-back/>

⁷ <https://iea.blob.core.windows.net/assets/d5a18261-96c5-4f3c-b052-f7405a93cf10/EnergyTechnologyPerspectives2023.pdf>, page 160

⁸ <https://iea.blob.core.windows.net/assets/d5a18261-96c5-4f3c-b052-f7405a93cf10/EnergyTechnologyPerspectives2023.pdf>, page 66



Photovoltaic solar power systems require about seven tonnes of critical minerals per megawatt of capacity, including 5.5 tonnes of copper.⁹ Critical minerals needs to quadruple by 2030 to meet global targets for solar power adoption and achieve net zero emissions by 2050.¹⁰

⁹ <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>

¹⁰ <https://iea.blob.core.windows.net/assets/4eedd256-b3db-4bc6-b5aa-2711ddfc1f90/SpecialReportonSolarPVGlobalSupplyChains.pdf>, page 55

Nova Scotia’s “2030 Clean Power Plan” relies on Mining

The Government of Nova Scotia’s 2030 Clean Power Plan¹¹ will only be achievable if the global mining industry can provide the vast quantities of minerals needed for things like electric vehicles, renewable energy and batteries.

Here are some examples of why the Plan – and all climate goals – rely on mining:

The Plan says Nova Scotia will add 1000 megawatts (MW) of new wind power by 2030. Onshore wind turbines use about 11 tons of critical minerals per megawatt of capacity, so 1000 MW would require 11,000 tons.¹²

For example, onshore wind turbines use over three tons of copper per MW because most electrical wiring is made of copper. Offshore turbines require even more copper – nine tons per MW - to carry the power to shore.

Wind turbines also require six tons of zinc per MW, because it is used to galvanize steel. Wind turbines are mostly made of steel and zinc protects them from the elements and extends their life.

Nova Scotia has had past-producing copper and zinc mines.

The Plan says Nova Scotia will have 300 MW of solar power by 2030. Solar systems use about seven tons of critical minerals per MW so the Plan’s target would require 2100 tons of critical minerals. The International Energy Agency (IEA) says the world needs four times more critical minerals by 2030 to meet global targets for solar power adoption.¹³

The Plan says Nova Scotia will need 300 MW of batteries by 2030 to store energy for when the wind is not blowing and the sun is not shining. Batteries are one of the most mineral-intensive parts of clean energy systems. They are the main reason electric vehicles require six times more minerals than regular vehicles. Grid-scale rechargeable batteries are bigger and more powerful, and therefore require far larger quantities of minerals.

The Atlantic Loop may be abandoned but stronger electricity distribution links to New Brunswick are still part of the Plan. According to the IEA, the world’s electricity transmission and

¹¹ <https://beta.novascotia.ca/sites/default/files/documents/1-3582/nova-scotia-clean-power-plan-presentation-en.pdf>

¹² Unless otherwise noted, all figures in this section are from <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>

¹³ <https://iea.blob.core.windows.net/assets/4eedd256-b3db-4bc6-b5aa-2711ddfc1f90/SpecialReportonSolarPVGlobalSupplyChains.pdf>

distribution lines currently contain about 150 million tonnes of copper and 210 million tonnes of aluminum. The need for those metals is increasing as electricity grids are expanded to accommodate electrification.

The Plan calls for other mineral-intensive technologies to be deployed, such as residential heat pumps, which typically contain more than twice as much aluminum and 15 times more copper and brass than their condensing gas boiler equivalents. Up to 46 pounds of copper can be found in air-source heat pumps.¹⁴

Governments, like Nova Scotia's, that set ambitious climate goals also need to work with their mining industries to help achieve those goals. To date, the Government of Nova Scotia has not made any policy changes to support the critical minerals sector and its draft critical minerals strategy contains no specific targets or actions.

Onshore wind turbines require about 11 tons of critical minerals per megawatt of capacity. Offshore wind turbines require about 17 tons per megawatt.¹⁵



¹⁴ <https://copperalliance.org/wp-content/uploads/2022/02/ICA-IR-HomeOffice-202202-R4.pdf>

¹⁵ <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>, page 26

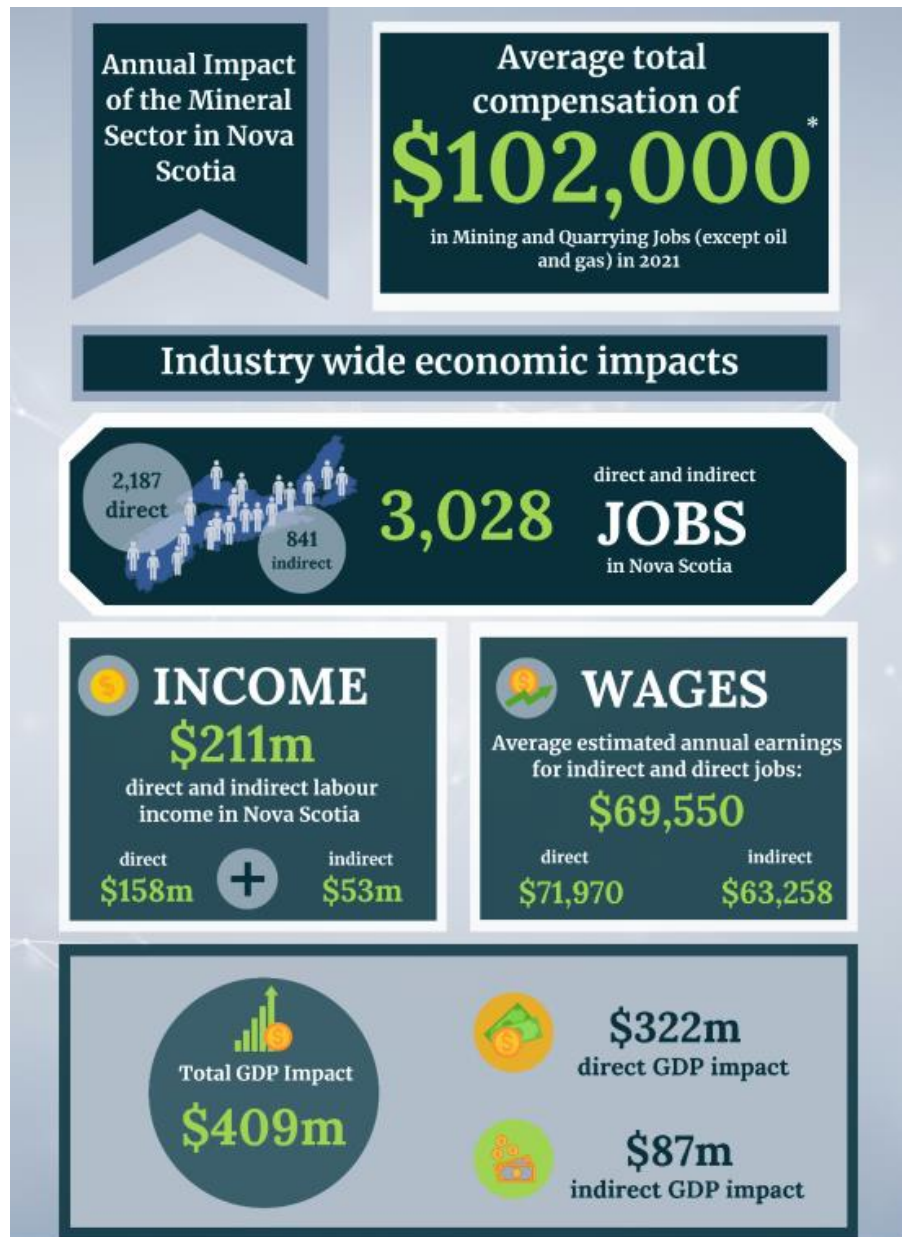
Industry Economic Impact

Nova Scotia's mining and quarrying industry employs over 3000 Nova Scotians, mostly in rural areas, and its average total compensation (wages and benefits) is \$102,000 per year.¹⁶

The industry has great potential to create more jobs and government revenues. In particular, the global effort to supply critical minerals creates exciting opportunities to grow the industry, generate more government revenue to help pay for programs like health and education, and contribute to global supply of these essential materials.

According to the International Energy Agency, "Driven by rising demand and high prices, the market size of key energy transition minerals doubled over the past five years, reaching USD 320 billion in 2022...."¹⁷

The Government of Nova Scotia should do everything it can to help the province's mining industry take advantage of this extraordinary opportunity.



The Mining Association of Nova Scotia's economic impact includes prospecting and exploration, mineral and aggregate production, including mining and quarrying (except oil and gas), support activities for mining, primary metal manufacturing, and non-metallic mineral product manufacturing, including cement and concrete product manufacturing.

*Compensation data source: Statistics Canada Table: 36-10-0480-0; all other data is based on economic impact modeling.

¹⁶ Statistics Canada Table: 36-10-0480-01

¹⁷ <https://www.iea.org/reports/critical-minerals-market-review-2023/key-market-trends>



Residential heat pumps typically contain more than twice as much aluminum and 15 times more copper and brass than their condensing gas boiler equivalents.¹⁸ Up to 46 pounds of copper can be found in air-source heat pump evaporators, condensers, compressors, piping, connection, control and sensor cabling.¹⁹

¹⁸ <https://iea.blob.core.windows.net/assets/01324438-d634-4d49-95d8-3d08aaab00d5/TheFutureofHeatPumps.pdf>, page 79

¹⁹ <https://copperalliance.org/wp-content/uploads/2022/02/ICA-IR-HomeOffice-202202-R4.pdf>

Examples of Nova Scotia's Critical Minerals Potential

Nova Scotia has had many mines that produced what we now call critical minerals – minerals needed for climate goals and for which there are supply concerns – including copper, tin, zinc, graphite, antimony, manganese and molybdenum. The province also has potential for critical minerals such as lithium, rare earth elements, indium, uranium and titanium.²⁰

Here are some examples of advanced exploration critical mineral projects and past-producing mines that extracted critical minerals.

Brazil Lake: Lithium

Nova Scotia had a staking rush in the province's lithium potential in 2023 and there is a known lithium deposit in Brazil Lake, Yarmouth County, which was discovered in 1960. The deposit contains spodumene, a mineral that sometimes occurs in pegmatite and which is an important ore of lithium (meaning lithium can be extracted from spodumene).

Exploration at the site has taken place for decades and a Nova Scotia company, Champlain Mineral Ventures Ltd., has shown that the deposit also contains other critical minerals, such as tantalum and rubidium.²¹

Scotia Mine: Zinc

A zinc-lead deposit was discovered in Gays River, Halifax County, in 1973, and mining took place intermittently between the 1970s and early 2000s. The Scotia Mine is expected to return to production as soon as 2024.²²

Zinc's main use is in alloys to galvanize (protect) steel. Zinc oxidizes/rusts more quickly than the metal it is protecting, and the underlying metal will not corrode until all the zinc has been sacrificed. This extends the life of a wide range of products and infrastructure and makes galvanized steel one of the strongest construction materials. About 60% of global zinc supply is used for galvanizing.

Zinc is important in green technologies. Wind turbines require about six tons of zinc per megawatt of capacity because they are mostly made of steel that needs to withstand the elements. Galvanized steel is also used in electric vehicle bodies and in various parts of EVs and solar panels.

²⁰ See Natural Resources Canada's list of critical minerals at <https://www.canada.ca/en/campaign/critical-minerals-in-canada/critical-minerals-an-opportunity-for-canada.html>

²¹ <https://goldfieldsns.com/locations/brazil-lake/>

²² <https://www.edmresources.com/>

Coxheath: Copper

Copper was first found at Coxheath, Cape Breton, in 1875, and the site was mined intermittently in the late 1800s and early 1900s. Today, it is being actively explored and it has great potential to be returned to production.²³

Copper is arguably the most important metal for clean energy because it is used in most electrical wiring. An electric vehicle can use as much as 176 pounds of copper, four times the amount used in a typical combustion engine vehicle. Onshore wind turbines require about 11 tons of critical minerals per megawatt of capacity, including three tons of copper. Solar panels contain 5.5 tons of copper per megawatt.

Copper is also used in a wide range of other products, such as electronics, telecommunications infrastructure, construction and water pipes.

East Kemptville: Tin and Indium

A tin deposit was discovered in East Kemptville, Yarmouth County, in 1979. Mining started in 1985 but a collapse of world tin prices caused the mine to temporarily shut down. Mining started again in 1988 and the mine became the largest tin concentrator in the world. The mine also produced copper and zinc concentrates. Unfortunately, another drop in global tin prices caused the mine to shut down in 1992.

Today, we refer to it as a tin-indium deposit because it contains what are believed to be economically-viable amounts of indium, in addition to other metals like the copper and zinc mentioned above. Indium is a critical mineral because it is a key ingredient in things like electronics' touch screens and solar panels.

The East Kemptville mine has great potential to return to production and provide multiple critical minerals.²⁴

²³ <https://novacopper.ca/>

²⁴ <https://www.avalonadvancedmaterials.com/>



Solar panels at the Moose River gold mine.

Other Minerals Essential to Climate Goals

While critical minerals – minerals needed for climate goals and for which there are supply concerns – are a global focus right now, many other minerals are also essential to achieving climate goals, even though they are not referred to as critical. For example:

Coal - Metallurgical coal from mines like Cape Breton's Donkin Mine is essential to clean energy because green technologies like electric vehicles, wind turbines and solar panels are partly made of steel. Steel is mainly iron and carbon, with the carbon being derived from metallurgical coal. For example, an electric vehicle (EV) typically contains about one tonne of steel. That means an EV contains about 0.8 tonnes of metallurgical coal.

Gold - Electric vehicles contain twice as many computer chips as regular cars so gold, which is in all electronics, plays an important role in making EVs run safely and efficiently.

Electrical signals can be interrupted by corrosion at contact points in circuitry. This can affect the proper functioning of electronics, so gold is used at contact points to ensure the signals flow properly through them.

Gold is expensive so we only use it when its unique characteristics make it the best material. Electric vehicles are a good example – we need the car's systems to work properly to keep us and our families safe, so the cost of the gold is well worth it.

A typical electric car contains about 2000 computer chips that run the car's systems.

In fact, an EV uses about 2.3 times more computer chips than a regular car, which means we will need more gold for EVs as they are more widely-adopted.

Aggregates – Aggregates are the literal foundation of all our infrastructure. They comprise about 60-80% by volume of concrete and 94% of asphalt. Aggregates make possible the huge foundations that hold wind turbines up and the roads that electric vehicles drive on. Nova Scotia needs about 10-15 million tons of aggregate each year to build and maintain its infrastructure.

Mining contributes to everything in our daily lives by providing the raw materials that most things are made of. A wide range of minerals and metals are essential to achieving climate goals and to keep society running, regardless of whether they referred to as "critical minerals."

Ethical Minerals

Mining contributes to everything in our daily lives by providing the raw materials most things are made of. That means minerals need to be mined somewhere – our homes, medicines, electric cars, electronics, food and everything else depend on it.

If we do not extract minerals in stringently regulated democracies like Canada, more mining will be done in countries that do not take proper care of the environment or worker safety. In other words, blocking a mining project in Canada does nothing to protect the environment – it just offshores impacts to a jurisdiction where they will likely be worse.

Russia's invasion of Ukraine is a reminder that ensuring stable, ethical supply of minerals must include sourcing them as much as possible from countries that share our values. Russia is one of the top global suppliers of many minerals. For example, it supplies 20% of the global battery-grade nickel used in electric vehicle batteries.²⁵

Buying minerals and other products from Russia indirectly contributes to financing Russia's war in Ukraine.

Through mining and refining, China controls much of the global supply of minerals used in things like electric cars, wind turbines and solar panels. According to the International Energy Agency, "more than half of all lithium, cobalt and graphite processing and refining capacity is located in China."²⁶ In addition, China produces three-quarters of all lithium-ion batteries and has 70% of the production capacity for cathodes and 85% for anodes, both of which are essential components of batteries. More than half of all electric cars in 2021 were assembled in China, and the country is poised to maintain its manufacturing dominance."

China's mining and refining industry, much of which is state-owned, is widely seen as environmentally damaging.²⁷

China has also sometimes proven to be an unreliable trading partner. For example, in 2023, it imposed export restrictions on gallium and germanium for use in computer chips and other components – a move widely seen as retaliation for U.S. curbs on technology sales to China. In 2010, China reportedly halted exports of rare earths to Japan for two months over a fishing dispute.

²⁵ https://www.iea.org/news/global-electric-car-sales-have-continued-their-strong-growth-in-2022-after-breaking-records-last-year?utm_content=buffere067c&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer, page 6

²⁶ Ibid., page 7

²⁷ https://www.washingtonpost.com/world/asia_pacific/chinese-metal-mines-feed-the-global-demand-for-gadgets-theyre-also-poisoning-chinas-poorest-regions/2019/12/29/c90eac2c-0bcb-11ea-8054-289aef6e38a3_story.html

The Democratic Republic of the Congo, where an estimated 40,000 children work in cobalt mines, provides about 70% of the world's cobalt, the main use of which is in electric vehicle batteries.²⁸

We need to do more mining in stringently regulated democracies like Canada, and less in countries that do not share our values or take proper care of the environment and safety.

²⁸ <https://www.mining.com/us-government-includes-li-ion-batteries-in-list-of-goods-produced-by-child-labor/>

Policy Recommendations

The Government of Nova Scotia should do everything it can to help the province's mining industry find and develop critical mineral deposits.

Unfortunately, a series of long-standing policy issues discourage investment in Nova Scotia's critical minerals potential, and harm the industry in general. Resolving these issues would facilitate economic development and help Nova Scotia contribute to critical mineral supply.

Minerals Play Fairway

Minerals Play Fairway is a proposed \$19.5 million airborne geophysical exploration program that would help identify areas with potential for critical minerals and increase our understanding of the province's geology.²⁹

Minerals Play Fairway is modelled on the highly successful Nova Scotia oil and gas Play Fairway Analysis. In 2008, the Department of Energy commissioned a \$15 million Play Fairway Analysis and geoscience data package program with the goal of stimulating offshore petroleum exploration activity. The resulting data was made available for free to the global oil and gas industry and attracted over \$2 billion in investment in Nova Scotia's offshore.³⁰

The Minerals Play Fairway report is the first step toward building a minerals version of Play Fairway – a free, best-in-class database of geophysical knowledge that will help attract investment and job creation to Nova Scotia. The oil and gas Play Fairway was a made-in-Nova-Scotia success story and copying it for the mining industry would help the industry grow and create jobs for Nova Scotians.

Many jurisdictions help reduce the time, risk and cost of exploration by offering free geophysical data to exploration companies. This is a common and effective way of attracting interest and investment.

While Minerals Play Fairway's main focus is to help find mineral deposits and stimulate exploration, Nova Scotians would also benefit several other ways:

- The surveys would help find potential geohazards, such as sinkholes and deadly radon gas, and help protect Nova Scotians from them.
- They would help find and manage underground water sources, which is particularly important given climate change.
- They would help identify bedrock prone to acid rock drainage so we can better-manage this environmental issue.

²⁹ More details about Minerals Play Fairway are available at www.tmans.ca/minerals-play-fairway

³⁰ <https://energy.novascotia.ca/oil-and-gas/offshore/play-fairway-analysis>

Lift the Uranium Ban

The Government of Nova Scotia should lift the four-decade-old ban on uranium exploration and mining.

Natural Resources Canada says uranium is a critical mineral because it is the key nuclear fuel and nuclear provides vast quantities of baseload energy without generating any greenhouse gas emissions. Canada and many other countries have committed to tripling nuclear energy as part of achieving Net Zero.³¹

Nova Scotia had a boom in uranium exploration from approximately 1976 to 1981. Tens of millions of dollars were spent on exploration. Companies like Shell Canada, Esso Minerals, Gulf Minerals and others were actively exploring in the province.

Uranium occurrences were documented all over Nova Scotia. Other minerals were also discovered during this period as a result of exploration for uranium.

Unfortunately, the Government of Nova Scotia put in place a politically-motivated moratorium on exploration and mining of uranium in 1981-82. The moratorium, imposed in the middle of an election campaign, has no basis in scientific evidence but it is still in place four decades later.

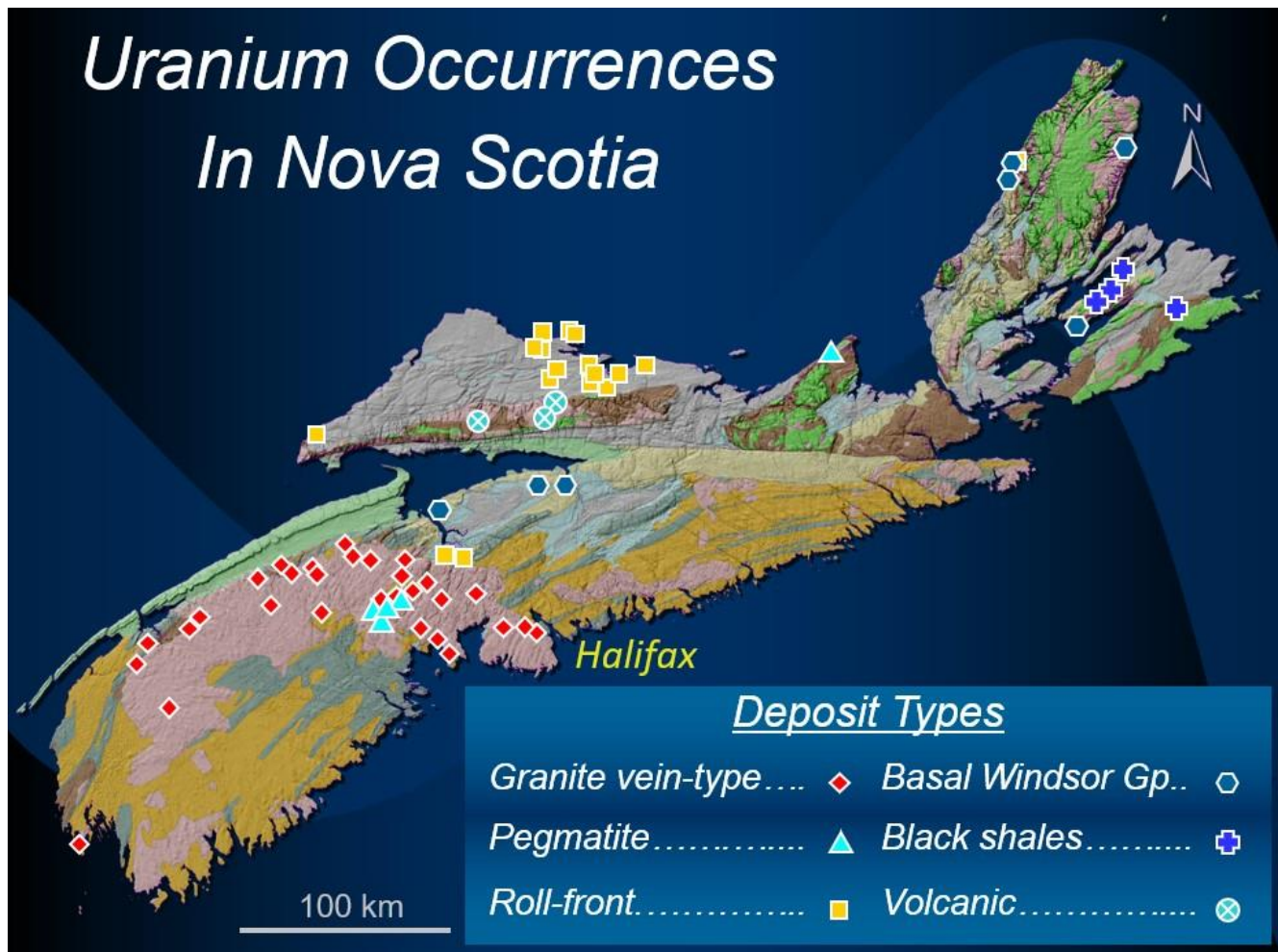
Despite that ban, Nova Scotia still imports nuclear power from New Brunswick and the Nova Scotia government's 2030 Clean Power Plan suggests Nova Scotia will import more nuclear energy from New Brunswick.

The global importance of nuclear power was recently reaffirmed when it received a remarkable endorsement at COP28, the global climate conference. Twenty-two countries, including Canada, agreed to triple the amount of nuclear power generated each year.

Lifting the uranium ban would help create jobs and attract investment to Nova Scotia. It would also potentially allow the province to contribute to global supply of this important fuel.

³¹ <https://www.euractiv.com/section/politics/news/macron-at-cop28-nuclear-energy-is-back/>

Uranium Occurrences In Nova Scotia



Permitting Reform

There is a growing global consensus that permitting for new mines needs to be reformed to help achieve climate goals.

The net-zero goal requires that significant reductions in emissions be achieved by 2030, according to climate plans. However, many reports predict there will be mineral shortages because there are not enough mines in the world to provide the minerals needed for green technologies like electric vehicles, wind turbines and solar panels.

Permitting needs to be reformed because it takes, on average, 17 years to get from deposit discovery to actual mining, according to the International Energy Agency.³² The International Monetary Fund says it takes an average of 19 years.³³

In other words, a mineral deposit discovered today would not be put into production until at least 2040, too late to achieve climate goals.

The International Energy Agency argues for “a cut in permitting times to just one year – the minimum time required to prepare a thorough environmental assessment and ensure adequate safeguards.”³⁴

Critical minerals strategies by other governments in Canada are increasingly confirming the need to reform permitting and cut red tape.

The Government of Canada, in its 2022 critical minerals strategy, commits to “streamline project assessments and permits” and “reduce duplication and increase efficiency and certainty in the regulatory process.”³⁵

In its 2023 budget, the Government of Canada committed to “outline a concrete plan to improve the efficiency of the impact assessment and permitting processes for major projects, which will include clarifying and reducing timelines, mitigating inefficiencies, and improving engagement and partnerships.”³⁶

³² <https://iea.blob.core.windows.net/assets/d5a18261-96c5-4f3c-b052-f7405a93cf10/EnergyTechnologyPerspectives2023.pdf>, page 160

³³ <https://www.imf.org/en/Publications/WEO/Issues/2021/10/12/world-economic-outlook-october-2021>, page 35

³⁴ <https://iea.blob.core.windows.net/assets/d5a18261-96c5-4f3c-b052-f7405a93cf10/EnergyTechnologyPerspectives2023.pdf>, page 66

³⁵ <https://www.canada.ca/content/dam/nrcan-rncan/site/critical-minerals/Critical-minerals-strategyDec09.pdf>

³⁶ <https://www.budget.canada.ca/2023/pdf/budget-2023-en.pdf>

The Government of Ontario announced in 2023 that it is expediting permitting with the *Building More Mines Act*, saying, “It shouldn’t take 15 years to open a mine. This process is too time consuming and costly, leading to project delays and lost opportunities for Ontario’s mineral exploration and mining sector. We need to get building.” The Act proposes several meaningful reforms designed to help mines reach the production stage faster.”³⁷

The Government of Saskatchewan’s 2023 critical minerals strategy commits to “undertake a review of environmental exploration permitting with the goal of enhancing transparency and improving the efficiency of processes. Building on recent actions that have included the reallocation of staffing resources, enhancing data management, and working collaboratively with industry on more flexible permitting options.”³⁸

The Government of Newfoundland and Labrador’s 2023 critical minerals strategy highlights the need to streamline permitting with commitments to “Provide regulatory information and guidance for critical mineral projects to facilitate timely and efficient permitting,” ensure “Executive support will be available to advanced mining projects to assist with navigation of project permitting,” and to “Map critical mineral permitting provincially and collaborate with the Government of Canada on similar federal permit mapping initiatives.”³⁹

While there is a growing global consensus that permitting for new mines needs to be reformed to help achieve climate goals, permitting in Nova Scotia is a particular challenge requiring significant reform.

In a January 2024 Mining Association of Nova Scotia member survey, 90% of respondents said Nova Scotia’s permitting system is worse than those of other provinces and territories and 77% said the province’s permitting system has gotten less clear in the past ten years. 97% of respondents said Nova Scotia’s permitting system is an obstacle to attracting investment. These results are consistent with past surveys.

An annual survey of global mining executives conducted by the Fraser Institute regularly finds that Nova Scotia is seen as the least attractive Canadian jurisdiction in which to invest, and our permitting system is a main reason.⁴⁰

The Government of Nova Scotia should support the critical minerals sector by reducing red tape in its permitting process while still ensuring the highest environmental standards are applied.

³⁷ <https://news.ontario.ca/en/release/1002766/ontario-building-a-stronger-mining-sector>

³⁸ <https://www.saskatchewan.ca/government/news-and-media/2023/march/27/critical-minerals-event>

³⁹ <https://www.gov.nl.ca/iet/files/Critical-Minerals-Plan-Our-Critical-Minerals-Advantage.pdf>, page 28

⁴⁰ <https://www.fraserinstitute.org/studies/annual-survey-of-mining-companies-2022>

Protected Areas

While Nova Scotia's mining and quarrying industry supports protecting natural lands for future generations, the need for critical minerals creates a situation in which two environmental goals – land conservation and climate change – are at odds with each other. Adding some sensible flexibility to protected areas policy would solve this problem.

Areas identified for protection in Nova Scotia's 2013 Parks and Protected Areas Plan overlap or are in close proximity to at least 413 known critical mineral occurrences, which hinders or outright prevents exploration and extraction. The occurrences overlapped include a range of critical minerals such as copper, zinc, molybdenum, germanium, gallium and magnesium.

Increasing the amount of protected land in Nova Scotia from the current 13.4% to 20%, as the Government intends, will no doubt dramatically increase the number of overlaps, further limiting Nova Scotia's ability to contribute to global critical mineral supply.

These overlaps highlight the need to establish a land swap mechanism in protected areas policy that would allow mining and quarrying companies to access protected land by purchasing land of at least equal size and ecological value outside of the protected areas and arranging for it to be protected instead. This would allow companies to explore for, and develop, mineral deposits while continuing to fulfill the goals of the Parks and Protected Areas Plan.

The principle behind land swaps already exists in other provincial government policies:

For example, our land swap policy proposal is similar to the Government's wetlands compensation policy, in which a company that impacts wetlands has to create or improve offsetting wetlands, often at a 2:1 ratio, to ensure there is no net loss of wetlands in the province.⁴¹ This approach benefits Nova Scotians both environmentally and economically, and we believe it would also work in context of protected lands.

Nova Scotia's Department of Natural Resources and Renewables has several policies related to Crown lands that are based on this balanced approach. The Department allows Crown land exchanges⁴² – land swaps – and for Crown land to be sold to, among other things, "support or promote economic activity."⁴³ As with our land swap proposal, these transactions are stringently regulated to ensure "a clear benefit to the province."

Nova Scotia's protected areas policy needs some sensible flexibility to both protect land and supply the critical minerals needed for climate goals.

⁴¹ <http://www.novascotia.ca/nse/wetland/compensation.asp>

⁴² <http://novascotia.ca/natr/land/exchanges.asp>

⁴³ <http://novascotia.ca/natr/land/pdf/Sale-of-Crown-Land-Policy.pdf>

Tax and Royalty Policy

The Government of Nova Scotia should use tax and royalty policy to make Nova Scotia a more attractive place to invest for mineral exploration and development. Other provinces support their mining industries more than Nova Scotia does, offering supports such as royalty holidays, flow through share investment tax credits, improved deductibility of expenses and allowing reclamation bonds to be a deductible expense. Many are taking significant additional steps to attract investment in their critical minerals.

Nova Scotia is not competitive with other Canadian provinces in this regard. The Government should implement policies such as those mentioned above in order to attract investment in our critical minerals and the industry in general.

The best way to increase government tax and royalty revenues is to work with the industry to open new mines and quarries, which results in far greater revenues, particularly personal income tax revenue through job creation.

Summary of Recommendations

- Fund Minerals Play Fairway, a proposed airborne geophysical exploration program that would help identify areas with potential for critical minerals and increase our understanding of the province’s geology.
- Lift the four-decade-old ban on uranium exploration and mining. Natural Resources Canada says uranium is a critical mineral because it is the key nuclear fuel and nuclear provides vast quantities of baseload energy without generating any greenhouse gas emissions. Almost two dozen countries, including Canada, have committed to tripling nuclear energy as part of achieving Net Zero.⁴⁴
- Reform permitting and cut red tape to help expedite mineral exploration and development. There is a growing global consensus that permitting for new mines needs to be reformed to help achieve climate goals because it takes, on average, 17 years to get from mineral deposit discovery to actual mining.⁴⁵ The IEA argues for “a cut in permitting times to just one year – the minimum time required to prepare a thorough environmental assessment and ensure adequate safeguards.”⁴⁶
- Add some sensible flexibility to protected areas policy. Protected areas overlap or are in close proximity to over 400 known critical mineral occurrences in Nova Scotia, which hinders or outright prevents exploration and extraction of materials that are essential to meeting climate goals. This creates a situation in which two environmental goals – land conservation and climate change – are at odds with each other. Flexibility in protected areas policy would solve this problem.
- Use tax and royalty policy to make Nova Scotia a more attractive place to invest for mineral exploration and development. Other provinces support their mining industries more than Nova Scotia does, and many are taking significant additional steps to attract investment in their critical minerals. Nova Scotia is not competitive with other Canadian provinces in this regard.

⁴⁴ <https://www.euractiv.com/section/politics/news/macron-at-cop28-nuclear-energy-is-back/>

⁴⁵ <https://iea.blob.core.windows.net/assets/d5a18261-96c5-4f3c-b052-f7405a93cf10/EnergyTechnologyPerspectives2023.pdf>, page 160

⁴⁶ <https://iea.blob.core.windows.net/assets/d5a18261-96c5-4f3c-b052-f7405a93cf10/EnergyTechnologyPerspectives2023.pdf>, page 66