



## Critical Minerals

Mining innovative products for a clean future



**British Columbia,** *Naturally.*

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# British Columbia is a leading producer of the minerals and metals needed to transition to a low-carbon future.

## Discover new prospects in British Columbia's extractive industries

As global demand for the minerals and metals needed for transitioning to a low-carbon future increases, British Columbia is at the forefront, with more than 1,100 exploration and mining companies headquartered in Vancouver, British Columbia (B.C.). B.C.'s abundant mountains and river valleys contain a variety of minerals in global demand – from copper and molybdenum to gold and silver. B.C.'s mining companies have adopted high tech and clean tech solutions to minimize waste and enhance environmental stewardship. Plus, B.C.'s West Coast location offers the fastest shipping times to Asia – opening up a world of opportunity with growing global markets.

British Columbia, well known as a global centre of expertise in innovative mining methods, is already experiencing rising demand, with its prime Pacific Rim location, abundant mineral and coal resources, and being Canada's only molybdenum producer.

Throughout B.C., Provincial and First Nation governments, industry and communities are working together to support an innovative, competitive and responsible mineral

exploration and mining sector. These advantages, together with geoscientific expertise, sophisticated geological data systems, clean electricity and our supportive business environment, attract investors from around the world to British Columbia's mining sector.

With over 150 years of mining history, mineral products have long been one of B.C.'s top exports. In 2023, British Columbia produced an estimated \$16.4 billion worth of mine products, from high value metals to metallurgical coal and construction aggregates. Mining represents around 30 percent of B.C. exports with copper and metallurgical coal as its top export products.

## Explore British Columbia's vast resources

British Columbia holds minerals the world needs, from vital building blocks for green technologies such as cobalt, nickel and copper to precious metals such as gold and silver. There are currently nine metal mines operating in British Columbia. The key metals mined in B.C. are copper, gold, silver, zinc and molybdenum. There are currently seven metallurgical coal mines running in B.C. -- providing coal used for steelmaking. B.C. also produced more than 30 industrial minerals including gypsum, magnesite, limestone and dimension stone. Many quarries in the province produce sand and gravel or crushed aggregate. Metallurgical coal was produced at four large open-pit operations in the southeastern part of the province and three open-pit operations in the northeast. More than 1,000 aggregate mines and quarries and approximately 30 industrial mineral mines were in operation in 2023.

### B.C.'s Top Critical Mineral Export Products Annual Exports (2023)

Copper Ores and Concentrates	<b>\$3.7 billion</b>
Unwrought Aluminum	<b>\$1.2 billion</b>
Unwrought Zinc	<b>\$1.04 billion</b>

B.C. is a world-class mining jurisdiction with 16 of Canada's 31 critical minerals and it's Canada's largest copper and only molybdenum producer.



## Access global markets from British Columbia

Efficient supply chains, superior transportation linkages and the shortest sea route between North America and Asia make British Columbia a supplier of choice for minerals and metals.

British Columbia is highly capable to supply growing economies, specifically in Asia and Europe, with the metals, minerals and energy they demand. With locations up to three days closer than U.S. west coast ports, British Columbia ports reduce the shipping costs for mineral resources destined for Asia. Continuous investment in port facilities increases their capacities and improves handling efficiencies, resulting in modern, high-throughput terminals connected to an efficient rail and road network.

British Columbia is a gateway on the west coast of the Americas served by three Class 1 railways. The Canadian National Railway, Canadian Pacific Railway and U.S.'s Burlington Northern Santa Fe Railway connect British Columbia ports with double-stack capability, linking key markets throughout Canada, the United States and into Mexico. Our terminals connect directly into the Northwest Transportation Corridor, a modern rail and road network engineered and built to carry massive volumes.

## Tap into British Columbia's top talent

British Columbia is internationally recognized as a centre of expertise in mining and related fields, such as metallurgy, environmental engineering, mine safety and the geosciences, explored at top universities and research centres that continue to develop new knowledge and information. With an educated and skilled labour force of more than 2.8 million people, the province has over 35,000 people working in the mining sector.

As part of the BC Critical Minerals Strategy, the StrongerBC Future Ready Action Plan Skills Training & Workforce Development plan, will optimize programs to meet workers and critical minerals sector skills and training needs.

### Sought after programs that are developing the workforce include:

- **British Columbia Institute of Technology:** Mineral Exploration and Mining Technology Bachelor of Engineering, Mineral Exploration and Mining Technology diploma, Geographic Information Systems (GIS)
- **Camosun College:** Mining Engineering Bridge to University of British Columbia (UBC), Advanced Diploma
- **UBC:** GIS and Mining Engineering, and Geological Sciences
- **University of Victoria:** Earth and Ocean Sciences
- **Vancouver Island University:** Master of GIS Applications, Advanced Diploma in GIS Applications

In 2023, mining and mineral industries have contributed approximately \$7.5 billion to B.C.'s GDP.

# Industry Profile

## Critical Minerals

Critical minerals are crucial to transitioning to a low-carbon future. As projected by the International Energy Agency, the energy sector's overall demand for critical minerals could surge by up to six times by 2040. The North American zero-emission vehicle (ZEV) market alone is expected to hit \$174 billion by 2030.

In December 2022, the Government of Canada initiated the Canadian Critical Mineral Strategy to seize upon the escalating need for these minerals. The strategy aims to bolster the supply of responsibly sourced critical minerals and foster the development of both domestic and global value chains for the green and digital economy.

### B.C.'s Top Opportunities in Mining

<b>Cobalt</b>	EV and portable batteries.
<b>Copper</b>	Solar photovoltaic (PV) cells, wind turbines, EV and portable batteries, and electricity networks.
<b>Molybdenum</b>	Solar PV, wind turbines and aerospace and defence uses.
<b>Nickel</b>	Solar PV cells, wind turbines, EV batteries, hydrogen and portable batteries.
<b>Rare Earth Elements (REEs)</b>	Permanent magnets used in EV motors.
<b>Silica</b>	Microchips, EV batteries and solar PV, while silica sand has applications in solar panel glass.
<b>Silver</b>	Low-carbon technologies such as solar PV and high-tech electronics.
<b>Zinc</b>	Galvanized steel, solar photovoltaic cells, wind turbines, energy transmission and zinc-ion batteries.

## Innovation

Many mining methods and technologies that B.C. uses have been emulated around the world such as incorporating artificial intelligence, machine learning, big data, 3D technologies, robotics, autonomous vehicles, Internet of Things, 5G and more.

Examples of innovative technologies include Langley-based Sepro Mixing and Pumping which won the Mining Association of BC's first Mining Innovation Challenge in 2021-22 with Foresight Canada for their innovative large scale, linear fluid-driven peristaltic pump.

Additionally, pH7 Technologies, with support from the Province's Innovative Clean Energy Fund, has created a proprietary closed-loop process using advanced chemistry to extract and refine critical metals that will help the mining sector transition to renewable energy in an environmentally and economically sustainable way.

Rigid Robotics is another B.C. company that is making waves with their precision mining technology that assists open-pit mining operations in achieving lower variability in shovel digging and loading activities. Their innovative solutions significantly boost operational efficiency, human safety while reducing greenhouse gas emissions and explosive use.

MineSense was originally conceived as a research project at University of British Columbia and later incorporated in 2008. As a seven-time Global Cleantech 100 Hall of Fame award recipient, they provide revolutionary technology and data solutions that help mines maximize global metals while minimizing global impacts, with their robust sensors that are used at the start of the ore mining process to characterize minerals for optimized metal recovery.

## Build lasting partnerships with First Nations

In British Columbia, First Nations' governments continue to play a key role advancing and supporting resource development.

Mining is one of the largest employers of Indigenous people in Canada as many mines and projects are located on First Nation lands. In 2022, Indigenous workers averaged 12 percent of the mining and quarrying workforce. By contrast, they represented less than 4 percent of Canada's overall workforce. From 2007 to 2022, Indigenous representation in mining has nearly tripled, pointing to a favourable trend for Indigenous employment outcomes in the mining sector.

It is mandatory for all major land and resource project proposals to consult with First Nations. The interests of First Nation communities typically relate to potential impacts on Aboriginal rights and title, including traditional practices, cultural resources and environmental concerns. British Columbia guides project proponents to work with First Nations to ensure resource management decisions respect their rights, interests, knowledge and values. Responsible and sustainable resource development rooted in local partnerships is the new way of doing business – and B.C. is leading the way.

B.C.'s Critical Minerals Strategy launched in 2023, aims to build a clean economy by expanding the critical minerals sector in alignment with the B.C. Declaration on the Rights of Indigenous Peoples Act.

The Ministry of Energy, Mines and Low Carbon Innovation is committed to transforming B.C.'s mining regulatory system, including modernizing the Mineral Tenure Act (MTA) which regulates how mineral claims are granted in British Columbia, so that it shares the interests and values of First Nations. The Province will continue to work with First Nations including the First Nations Leadership Council, industry associations, environmental and non-governmental organizations to help inform MTA reform and implementation.

### Partnership Agreements:

- B.C. has instituted mineral tax revenue sharing with First Nations through Economic and Community Development Agreements (ECDA).
- The Province has 54 signed ECDA's with 49 First Nations communities for 25 mines.
- The 54 agreements represent individual revenue streams to First Nations (e.g. revenue from one mine to one nation equals one revenue stream), with over \$300 million shared to date.



## Environmental, Social & Governance (ESG) Practices

B.C. is a global leader in having a robust regulatory framework aligned with ESG metrics. In early 2024, the Province launched the new ESG Centre of Excellence to provide concierge-type services to businesses, at no cost, to help them navigate their ESG journey.

In 2021, B.C. became the first jurisdiction in North America to establish an independent Chief Mines Auditor. Its first audit compared 13 key elements of tailings management and tailings storage facility engineering in B.C. with other mining jurisdictions. The audit concluded that B.C.'s laws and regulations governing tailings management rank among the world's best.

Moreover, recently, British Columbia launched the Energy & Mines Digital Trust, a collaboration between the Province, private-sector and industry associations, whereby major mining operators in B.C. can now receive their Mines Act Permit as a digital credential for international ESG reporting compliance. This will help differentiate producers that are adhering to sustainable practices and enable them to stand out amongst competitors.

## Partners, Associations, Educational Institutions, Centres of Excellence

### Associations:

- **Association for Mineral Exploration British Columbia** is the lead association for the mineral exploration and development industry based in British Columbia.
- **British Columbia First Nations Energy and Mining Council** supports and facilitates responsible energy and mining resource development that protects the environment and ensures the cultural, economic and political well-being of First Nations in British Columbia.
- **B.C. Regional Mining Alliance** is a regional partnership between Indigenous groups, industry and provincial government representatives.
- **Mining Association of BC** is the voice of mining in British Columbia, speaking on behalf of operating coal, metal, industrial mineral producers and smelters, as well as advanced development companies in the province.
- **Mining Suppliers Association of B.C.** is committed to promoting the sustainability of mining valuable resources.
- **Metal Tech Alley** is an association / cluster of industry, academia and government working together towards a circular economy system for long-term stability and environmental sustainability.
- **Women in Mining BC** membership includes lawyers, accountants, support staff, community relations coordinators, analysts, stockbrokers and geoscientists, from across the spectrum of the sector.

### Research Institutes:

- **B.C. Centre of Training Excellence in Mining** is a province-wide virtual hub that facilitates collaborative and innovative training opportunities for the B.C. mining industry.
- **Bradshaw Research Initiative for Minerals and Mining** connects scientists and engineers across UBC to promote cross-disciplinary research spanning the entire life-cycle of mining.
- **Critical Minerals Centre of Excellence** leads the development and coordination of Canada's policies and programs on critical minerals, in collaboration with industry, provincial, territorial, Indigenous, non-governmental and international partners.
- **The Mineral Deposit Research Unit** is an international research group based out of UBC committed to solving exploration problems through industry-partnered programs.
- **The Norman B. Keevil Institute of Mining Engineering**, within the Faculty of Applied Science at UBC, is one of North America's largest and most advanced centres for mining engineering education and research.

## Rely on robust industry supports

British Columbia provides many incentives to encourage business investment and innovation. Royalty credits, tax credits and refunds are available for research and development, machinery and equipment investment, and other sector-specific activities.

### Get your projects underway with streamlined processes

Companies that invest in British Columbia's rich mineral resources benefit from well-defined, transparent review processes for proposed major projects.

The Government of B.C. uses a coordinated approach, bundling multiple authorizations and permits as a single

project rather than a group of individual permits and authorizations. Combining authorization and permitting processes for major projects eliminates duplicated effort, reduces timelines and protects environmental standards. B.C. has made significant progress on exploration-permitting timelines, including a 52 percent reduction in the backlog of permits.

## Get essential data anytime, anywhere

British Columbia's award-winning digital data access systems are readily available online, wherever you are in the world.

[www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining](http://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining):

- **British Columbia Geological Survey**
- **MapPlace**
- **Mine Approval Process**

### Other Resources:

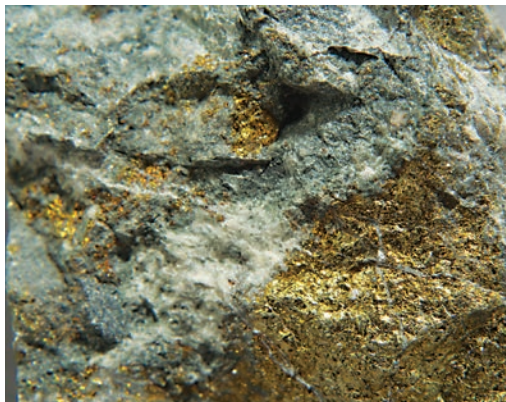
- **British Columbia Mine Information**  
[www.mines.nrs.gov.bc.ca/](http://www.mines.nrs.gov.bc.ca/)
- **Mineral Titles Online**  
[www.mtonline.gov.bc.ca/mtov/home](http://www.mtonline.gov.bc.ca/mtov/home)
- **ImapBC**  
[maps.gov.bc.ca/ess/hm/imap4m/](http://maps.gov.bc.ca/ess/hm/imap4m/)

## Lower your costs with our clean, reliable electricity

Over 98 percent of electricity in British Columbia originates from renewable sources, providing reliable, environmentally sustainable power at rates that are among the lowest in North America. A robust transmission and distribution system delivers uninterrupted power to all regions, ensuring extraction costs remain low. The Northwest Transmission Line, completed in 2014, extends British Columbia's high voltage transmission grid to the northwest region, providing clean electricity to support mining developments in the area.

### Provincial Programs:

- **B.C. Mining Flow Through Share Tax Credit**
- **CleanBC Industry Fund**
- **Innovative Clean Energy Fund**
- **Investment Allowance**
- **The Mining Exploration Tax Credit**
- **New Mine Allowance**
- **Reclamation Tax Credit**



## British Columbia's Competitive Advantages



- **Prime location on Canada's West Coast**
- **Strong collaboration across all levels of government and with Indigenous partners**
- **A leader in ESG practices**
- **Expert researchers and centres of excellence that produce innovative mining methods**
- **Renewable, reliable, low-cost power**
- **World-class geoscience data to identify critical minerals opportunities across the province**
- **Competitive taxes and strong fiscal incentives**
- **Diverse, skilled and educated workforce**

## You are in Good Company: World class mining companies choose to invest in B.C. operations.

- Centerra Gold
- Hudbay Minerals
- Newmont
- New Gold
- Rio Tinto Alcan
- Teck Resources
- Wheaton Precious Metals



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