BRITISH COLUMBIA
Canada

Critical Minerals

Mining innovative products for a clean future

British Columbia, *Naturally.*

BritishColumbia.ca

British Columbia (B.C.), Canada is a leading producer of the minerals and metals needed to transition to a low-carbon future.

As global demand increases for the minerals and metals essential to economic and energy security, B.C. is at the forefront, with more than 1,100 exploration and mining companies headquartered in Vancouver.

B.C.'s abundant mountains and river valleys throughout the province contain a variety of minerals in global demand – from copper and molybdenum to gold and silver. B.C. based mining companies have adopted high tech and clean tech solutions to minimize waste and enhance environmental stewardship.

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

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

With over 150 years of mining history, mineral products have long been one of B.C.'s top exports. In 2024, B.C. produced an estimated $16.7 billion worth of mine products, from high value metals to metallurgical coal and construction aggregates. That same year, the mining and mineral industries contributed approximately $6.8 billion to B.C.'s GDP. Mining represents almost 30 percent of British Columbia goods exports with copper and metallurgical coal as its top export products.

B.C.'s Top Annual Export Products (2024)	
Copper Ores and Concentrates	**$4.4 billion**
Unwrought Aluminum	**$1.3 billion**
Unwrought Zinc	**$1.01 billion**

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 ten metal mines operating in B.C.. The key metals mined in B.C. are copper, gold, silver and molybdenum. There are currently six metallurgical coal mines operating in B.C.– providing coal used for steelmaking. Metallurgical coal was produced at four large open-pit operations in the southeastern part of the province and two open-pit operations in the northeast. 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. More than 1,000 aggregate mines and quarries and approximately 30 industrial mineral mines were in operation in 2024.

B.C. also has two smelters, in Kitimat and Trail, which produce aluminum, zinc, lead and a variety of precious and specialty metals, such as germanium, chemicals and fertilizer products.

Access Global Markets from British Columbia

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

B.C. is highly capable of supplying growing economies, specifically in Asia, the Middle East and Europe, with the metals, minerals and energy they demand. With locations up to three days closer than U.S. west coast ports, B.C. 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.

B.C. 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 B.C. 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.

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 B.C. high voltage transmission grid to the northwest region, providing clean electricity to support mining developments in the area.

Tap into British Columbia's Top Talent

British Columbia is internationally recognized as a centre of expertise in mining and related fields, such as, 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 approximately 40,000 people working in the mining sector.

As part of the B.C. 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 diploma, Geographic Information Systems (GIS)
- **Camosun College:** Mining Engineering Bridge to University of British Columbia (UBC), Advanced Diploma
- **Simon Fraser University (SFU):** Environmental Geoscience and Geology, Engineering Geology and Resource Geotechnics
- **University of British Columbia (UBC):** GIS and Mining Engineering, and Geological Sciences
- **UBC Okanagan:** Battery innovation Centre
- **University of Victoria:** Earth and Ocean Sciences
- **Vancouver Island University:** Master of GIS Applications, Advanced Diploma in GIS Applications

Industry Profile

Critical Minerals

Critical minerals are crucial to modern technologies, economic security and transitioning to a clean energy 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, and there is international focus on diversifying and strengthening critical minerals supply chain with reliable partners.

In December 2022, the Government of Canada initiated the Canadian Critical Minerals 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.

Build Lasting Partnerships with First Nations

In British Columbia, First Nations' governments are important partners and 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. It is mandatory for all major land and resource project proposals to consult with First Nations. The Province 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 2024, 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 Mining and Critical Minerals 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 B.C., 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.

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. In addition, many B.C. mining technology companies offer innovative solutions that enhance sustainability, improve efficiency and strengthen the supply chain for critical mineral materials that are essential to the clean energy transition.

Examples of innovative technologies include Mangrove Lithium, based in Delta, B.C., is pioneering sustainable lithium refining with its patented electrochemical process. This innovative technology directly converts various lithium feedstocks—including brines, hard rock, clays, and recycled batteries—into high-purity battery-grade lithium hydroxide or carbonate.

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 and human safety while bringing substantial environmental benefits, including a reduction in greenhouse gas emissions and explosives use.

MineSense was originally conceived as a research project at the 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.

Environmental, Social & Governance (ESG) Practices

B.C. is a global leader in having a robust regulatory framework aligned with ESG metrics. Supported by the CleanBC Industry Fund, B.C. mines are implementing electrification and energy efficiency initiatives, forecasted to slash greenhouse gas emissions by over 107,000 tonnes C02e by 2030. This fund, managed by the government, directs a portion of the B.C. carbon tax revenue toward companies engaged in emission reduction endeavors.

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.

In addition, B.C. has emerged as a global leader in digital innovation through its Energy & Mines Digital Trust (EMDT) initiative, a collaboration between the Province, private-sector and industry associations that enables major mining operators in B.C. to receive and share provenance and ESG data as digital credentials. Through collaboration and leadership with the United Nations, EMDT is aligning with the United Nations Transparency Protocol (UNTP), a global framework to standardize and facilitate the exchange of supply chain data using technologies like digital credentials. The pioneering work of British Columbia in digital trust and sustainability reporting is directly informing international efforts to enhance transparency in critical raw material supply chains. These advancements provide B.C. producers with the opportunity to differentiate producers adhering to sustainable practices and enable them to stand out in competitive global markets.

Critical Mineral Opportunities in B.C.

Aluminum	Essential for lightweight structures in electric vehicles (EVs) and renewable energy systems like solar panels.
Antimony	Used in large-scale renewable energy storage solutions, such as liquid metal batteries.
Chromium	Vital for corrosion-resistant alloys used in wind turbines and other renewable energy infrastructure.
Cobalt	Key component in lithium-ion batteries for EVs and energy storage systems.
Copper	Crucial for electrical wiring in renewable energy systems, EVs, and grid infrastructure.
Gallium	Used in photovoltaic cells for solar panels and in LEDs for energy-efficient lighting.
Germanium	Important for fiber optics and high-efficiency solar cells.
Graphite	Main material for anodes in lithium-ion batteries, essential for EVs and energy storage.
Indium	Used in indium tin oxide for touchscreens and photovoltaic cells.
Magnesium	Lightweight material for EV components and used in carbon capture technologies.
Molybdenum	Enhances the strength and corrosion resistance of steel used in renewable energy infrastructure.
Nickel	Critical for high-energy-density batteries in EVs and energy storage.
Niobium	Strengthens steel used in wind turbines and other renewable energy applications.
Phosphorus	Used in lithium iron phosphate batteries for energy storage.
Platinum Group Metals	Essential for catalytic converters in hydrogen fuel cells and other clean energy technologies.
Rare Earth Elements (REEs)	Permanent magnets used in EV motors.
Tantalum	Important for capacitors in electronics and renewable energy systems.
Tungsten	Used in high-temperature applications like wind turbine blades.
Zinc	Key for galvanizing steel to protect renewable energy infrastructure from corrosion.

Associations, Organizations and Research Institutions

Associations and Organizations

Association for Mineral Exploration British Columbia is the lead association for the mineral exploration and development industry 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. Mining Alliance is a regional partnership between Indigenous groups, industry and provincial government representatives.

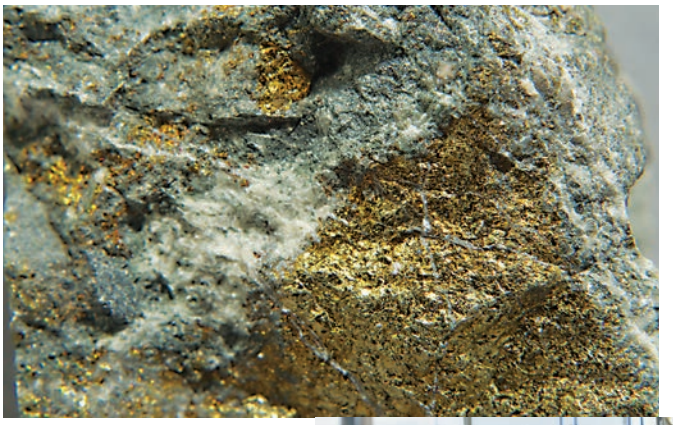
Mining Association of BC is the voice of mining in British Columbia, speaking on behalf of operating coal, metal, industrial mineral producers and smelters, as well as advanced development companies in the province.

Mining Suppliers Association of B.C. is committed to promoting the sustainability of mining valuable resources.

Metal Tech Alley is a cluster of industry, academia and government working together towards a circular economy system for long-term stability and environmental sustainability.

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.

Women in Mining BC is a non-profit, volunteer-based organization focused on connecting and inspiring a diverse workforce in the mining industry in British Columbia.



Research Institutes

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.

British Columbia is a world-class mining jurisdiction that is already producing or has the high potential to produce over half of Canada's identified critical minerals in addition to being Canada's largest copper and only molybdenum producer.

Supportive Government

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.

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**
- **Manufacturing Jobs Fund**

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**

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 British Columbia 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 and continues to seek innovative ways to expedite and streamline permitting and approval processes.

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:

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

Other Resources:

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

Join top companies in B.C.'s mining sector:

- B2Gold Corp
- Centerra Gold
- Glencore
- Hudbay Minerals
- Newmont
- New Gold
- Rio Tinto Alcan
- Teck Resources
- Wheaton Precious Metals

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