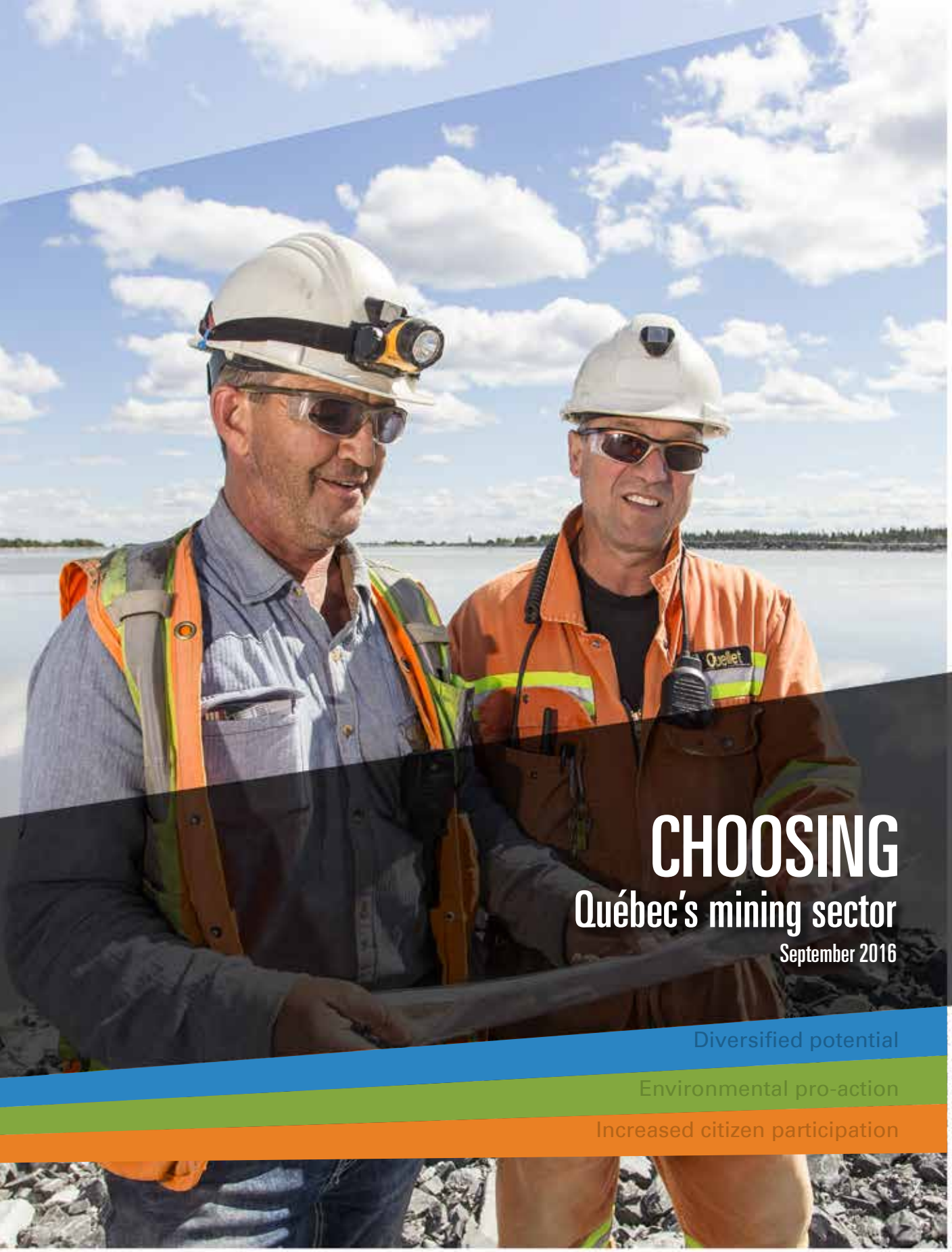

# CHOOSING
## Québec's mining sector
September 2016

Diversified potential

Environmental pro-action

Increased citizen participation

ENSEMBLE on fait avancer le Québec

Québec

**Note to the reader**

This report provides a portrait of mining activities for metals (iron and titanium; gold; nickel, platinum group elements and cobalt; copper; zinc; niobium and tantalum; lithium; rare earths). The report also examines graphite, phosphate and diamonds. Mining activities related to the industrial minerals: feldspar, mica, salt and silica **are not addressed** in this report.

For each metal or mineral substance presented in this report, the authors have described the mining context, recent production data, and notable mining and exploration projects. The mineral reserves and mineral resources for mining projects that have, at minimum, passed the preliminary economic assessment phase are presented as tables.

For each metal or mineral substance presented, a location map shows the active mines, mining projects and exploration projects for which NI 43-101 resources have been published within the last five years.

Finally, to underscore the most promising areas for exploration, the report presents mineral deposits with established tonnages and showings recorded in the *Système d'informations géominières du Québec* (SIGÉOM) database, but these are not identified individually. Deposits and showings are only presented for mineral substances that are considered to be new and under-exploited commodities.

The information in this document is current as of may 2016, unless otherwise indicated.

Cover photo :

Mathieu Dupuis, Photographer.



Ministère de l'Énergie et des Ressources naturelles

Legal deposit – Bibliothèque et Archives nationales du Québec, 2016

ISBN 978-2-550-76352-9 (PRINT)

ISBN 978-2-550-76355-0 (PDF)

N° publication : M01-02a-1608

# A WORD FROM THE MINISTER OF ENERGY AND NATURAL RESOURCES AND MINISTER RESPONSIBLE FOR THE PLAN NORD PIERRE ARCAND

## MINING DEVELOPMENT ANCHORED IN THE 21ST CENTURY

Mining development in Québec has changed significantly in recent years. The form of development in which we are now engaged is based on best current practices, and we hope it will be acknowledged as a reference throughout the world.

To adjust to the new environmental, social and economic landscape, the Québec Government has published a Strategic Vision for Mining Development containing three main guidelines based on the principles of sustainable development.

**Advance existing mining industries and develop new ones**

To encourage the industry to invest in Québec's rich mineral potential, the Québec Government has introduced a variety of tax-related measures for both exploration and mining. By stimulating R&D investments, we are also working to strengthen existing industries and encourage the emergence of new ones in areas such as electric transportation and information technology.

**Promote transparency and citizen participation**

Recent changes to Québec's laws have led to the introduction of measures designed to ensure that mining projects will coexist harmoniously with host communities. In future, companies will be required to work with the communities before implementing their projects. The Government has also undertaken to support the mining companies in order to promote the hiring of local and Aboriginal workers on mine construction sites. The Ministère de l'Énergie et des Ressources naturelles (MERN) is also working to implement the Act respecting transparency measures in the mining, oil and gas industries, and earlier this year a Green Paper was tabled, setting out the MERN's guidelines for social acceptability. Thanks to these commitments, Québec has moved ahead of other jurisdictions in the areas of social acceptability and citizen participation.

**Prevent and mitigate environmental impacts**

Environmental factors have become essential conditions for mining development in Québec. Québec has taken a proactive approach that includes valorization of mine waste and the promotion of mineral-based energy innovation. Québec has also become a model in the field of mine rehabilitation, by introducing measures that require companies to submit rehabilitation plans before beginning operations, and to pay financial guarantees equivalent to 100% of estimated rehabilitation costs, within three years of being granted a mining lease.

**Plan Nord**

Last but not least, with the Plan Nord the Government has laid the foundations for a 20-year cycle and a unique model designed to achieve planned, congruous development of Northern Québec and its tremendous mining potential.

**Choosing Québec's mining sector**

All this is just a taste of the mining potential available in Québec. This document presents an overview of our mining sector and current exploration and mining conditions, and clearly shows that Québec is able to offer one of the most investment-friendly mining environments in the world!

Pierre Arcand

Minister of Energy and Natural Resources and minister responsible for the Plan Nord

Photo: MERN

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Photo: MERN

# INVESTING IN QUÉBEC'S MINING SECTOR

## THE PROVINCE OF QUÉBEC AND ITS MINING SECTOR

Québec is the largest federated State in Canada (1.7 million km$^2$), and has a population of 8.2 million inhabitants. Strategically positioned, bordering the northeastern United States, near major population centres and industrial hubs, Québec also benefits from deep-sea ports that provide easy access to Europe and Asia.

Québec accounts for a fifth of Canada's mineral production. It is the most diversified producer in Canada given its production and beneficiation of 15 metallic and 13 non-metallic minerals. This diversification will increase with the realization of new mining projects for lithium, rare earths and phosphate, and the start-up of a diamond mine slated for 2016.

Québec has tremendous mineral potential, such that mineral resources for commodities already being mined may be replenished, and new resources may be discovered for metals and mineral substances that will be in demand in the years to come.

The tax regime for companies in Québec is competitive, and its policies are stable and appropriate. Investors can take advantage of a number of incentives when they come to Québec to do business.[1]

The latest survey from the Fraser Institute[2] demonstrates investor interest in Québec, which ranks eighth among the world's most attractive jurisdictions for mining investment.

## STRATEGIC VISION FOR MINING DEVELOPMENT IN QUÉBEC[3]

On March 15, 2016, the Ministère de l'Énergie et des Ressources naturelles (MERN) published the Strategic Vision for Mining Dévelopment in Québec. It encompasses three broad guidelines based on the principles of sustainable development: advance existing mining industries and develop new ones, prevent and mitigate environmental impacts, and promote transparency and citizen participation.

It ties in well with other government policies, such as the Plan Nord and the Maritime Strategy, and many of the actions proposed in those policies are reiterated in the Strategic Vision.

The first guideline focuses on economic development measures for exploration and mining, primary metal manufacturing, and the network of suppliers and equipment manufacturers.

To accelerate the permitting process for new mining projects, the Strategic Vision announced that the MERN, the Ministère du Development durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) and the Ministère des Forêts, de la Faune et des Parcs will set up a system with a single point of access to coordinate the delivery of the various permits involved. The Strategic Vision also sets forth measures to meet both labour needs and the training needs of local and Aboriginal communities in the mining sector.

1 www.investquebec.com/international/en/why-quebec/tax-incentives.html
2 www.fraserinstitute.org/sites/default/files/survey-of-mining-companies-2015.pdf
3 mern.gouv.qc.ca/english/mines/vision/documents/vision-mines-long-ang.pdf

Other measures of the Strategic Vision concern mine site rehabilitation, the optimization of metal consumption, the valorization of tailings, reductions in greenhouse gas emissions and the adoption of clean technologies.

Several objectives revolve around the notions of social acceptability and transparency. The Strategic Vision includes measures for corporate social responsibility and citizen participation.

The Strategic Vision aims to mobilize all stakeholders in the mining industry to create a business environment conducive to advance the industry's development. It will implement interministerial cooperation to foster the development of the entire sector using best practices. The Strategic Vision integrates the notions of environmental protection, social acceptability and transparency, while contributing to the government's objective of regulatory simplification.

## INFRASTRUCTURE

Québec is a major producer of electricity, as well as the fourth-largest hydropower generator in the world. Ninety-eight percent of this production comes from renewable sources.

Québec offers investors green and renewable power, available over much of its territory through a reliable distribution network.[4] Companies can also take advantage, based on their consumption, of highly competitive power rates.

Québec has many deep-sea ports, including the port of Sept-Îles, the largest ore-shipping port in North America, which also offers a rail link to the Labrador Trough.

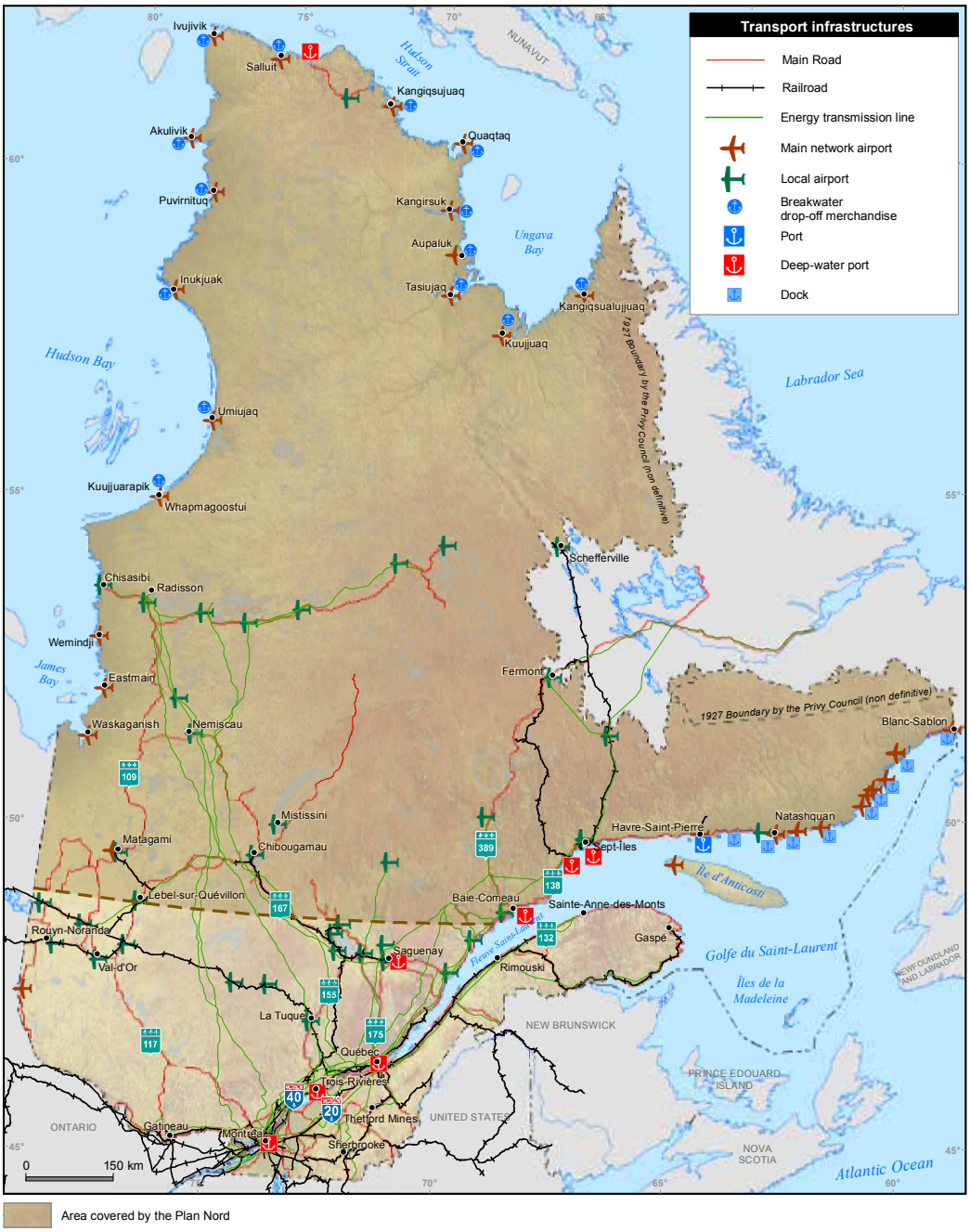
Québec's territory is accessible via an extensive network of road, rail, maritime and air transportation infrastructure.[5] Map 1 shows many of the infrastructure components.

The Government of Québec has made it a priority to develop access to the vast expanse of land targeted under the Plan Nord[6], both in terms of transportation infrastructure (road, rail, maritime and air) and power supply infrastructure (hydroelectricity and natural gas).



4 www.hydroquebec.com/majorcustomers
5 www.investquebec.com/international/en/why-quebec/transportation-infrastructure.html
6 The Plan Nord represents the territory north of the 49th parallel, as shown on Map 1.

## Map 1 – Transportation infrastructure in Québec




Source: Ministère de l'Énergie et des Ressources naturelles.
Date: July 2016.

## KNOWLEDGE MANAGEMENT

The acquisition of new geoscience knowledge across Québec's territory is vital for the development of its mining sector. In 2009, the government agreed to provide the Mining Heritage Fund with CA$200 million over a period of ten years. Of this amount, CA$120 million will be earmarked for geoscience knowledge acquisition. Moreover, in the 2015–2016 budget, the Government of Québec committed to increase its investments in the characterization work conducted by the MERN on the Plan Nord territory by $3 million annually over a period of three years (2015–2018). This additional budget will improve the geological knowledge of the Plan Nord territory and will attract investors.

Québec created the SIGÉOM[7] database, which contains all the geoscience information collected over more than a century by the industry and the MERN. This online database, accessible through an interactive map, is widely acknowledged as one of the most comprehensive in the world.

In Québec, mining titles are managed electronically through the online GESTIM Plus[8] application. This system provides real-time access to information recorded in the province's public register of real and immovable mining rights. It can be used to obtain claims through map designation, renew existing claims and pay the prescribed fees in a secure online environment.

The Government of Québec also encourages investments in research and development[9],as well as mineral processing activities within its borders.

## WORKFORCE

The quality of Québec's workforce is recognized worldwide. As a long-time mining producer, Québec has skilled workers in every administrative region, as well as a wide range of suppliers specializing in the mining sector, whether for mineral exploration, mining or mine site rehabilitation. More than 30,000 people in Québec work for the mining sector, either directly or indirectly.[10]

There are a number of quality learning institutions in Québec that provide workforce training for the mining sector. One of these, the Institut national des mines[11], is dedicated entirely to providing training for the mining sector.

## COMMUNITY RELATIONS

Québec encourages a collaborative approach between members of the mining industry and the local and Aboriginal communities where mining activities take place. Some amendments were made to the Mining Act in December 2013 to this effect, and the Strategic Vision for Mining Development in Québec is in line with this approach. In addition, Québec has already signed treaties with three First Nations (Cree, Inuit and Naskapi).

On February 16, 2016, the MERN released the Green Paper on the social acceptability guidelines of the MERN.[12] It sets out five guidelines:

- Make the MERN's roles and responsibilities in the area of land-use planning and land management better known;
- Make the land-use planning and harmonization mechanisms in public land-use plans more transparent, participatory and up to date;
- Establish predictable information and consultation processes at all project stages;
- Promote the sharing of benefits from energy and mining development projects with host communities; and
- Enhance the MERN's ability to analyze the impacts, economic benefits and repercussions of projects by taking social acceptability factors into account.

7 sigeom.mines.gouv.qc.ca/signet/classes/I1102_indexAccueil?l=a
8 gestim.mines.gouv.qc.ca/MRN_GestimP_Presentation/ODM02401_ie.aspx
9 www.investquebec.com/quebec/en/financial-products.html
10 This includes mining activities, activities that support mining, and certain processing activities (for example, for zinc, copper, cement, clay and lime).
11 www.inmq.gouv.qc.ca
12 mern.gouv.qc.ca/english/territory/acceptability/green-paper.PDF

## LEGAL FRAMEWORK

Access to mineral resources is possible over the vast majority of the province (the domain of the State) in order to discover metal and mineral deposits in the Earth's crust.

Applicants are on equal footing for obtaining mining titles. The first person who submits a valid application is granted the exclusive right to explore for all mineral substances in the domain of the State on the land designated by the claim.

Once a project reaches the commercial production stage, the operator pays a mining tax, the amount of which is calculated from its declaration to that effect under the mine-by-mine concept set out in the *Mining Tax Act*. The value added by processing activities is taxed under the *Taxation Act*.

Mining is governed by several laws, three of which are specific to the industry: the *Mining Act* (CQLR, chapter M-13.1), the *Mining Tax Act* (CQLR, chapter I-0.4) and the *Act Respecting Transparency Measures in the Mining, Oil and Gas Industries* (CQLR, chapter M-11.5).

The laws and regulations of Québec may be consulted free of charge online at Publications du Québec.[13]

## MINING ACT

The *Mining Act* was amended in December 2013 to foster dialogue with communities, to encourage mineral processing in Québec, to promote environmental protection and to increase transparency to gain greater social acceptance. Some of the changes include the following:

- A public consultation must be held by the Bureau d'audiences publiques sur l'environnement (BAPE)[14] for any metal mine project or metallic ore processing plant of more than 2,000 tonnes per day, and for any rare earth mining project;
- A public consultation must be held by the proponent of a project for any metal mine with a production capacity of less than 2,000 tonnes per day;
- A monitoring committee must be established and maintained by the mining company to foster the involvement of local communities in the project as a whole;
- A scoping and market study on ore processing in Québec must be submitted when requesting or renewing a mining lease;
- A feasibility study must be submitted to demonstrate the project's economic viability;
- A rehabilitation and restoration plan must be approved before the mining lease can be granted;
- A financial guarantee covering 100% of the anticipated rehabilitation costs for the entire mine site is required;
- The quantity and value of the ore extracted by mining companies and the amount of royalties paid to the State must be made public to ensure greater transparency; and
- The inclusion of a new chapter devoted to consultations with Native communities, which includes the development of a Native Communities Consultation Policy for the mining sector. This policy will clarify the roles and responsibilities of different stakeholders. It should be published in 2017.

13 www3.publicationsduquebec.gouv.qc.ca/loisreglements.en.html
14 www.bape.gouv.qc.ca/sections/english

## MINING TAX ACT

Québec's tax regime offers several measures supporting investment for exploration and pre-production development, including:

- A credit on duties refundable for loss – a unique measure in Canada – which grants a refund of up to 16% of eligible work (exploration and pre-production development);
- A tax credit for resources, refundable up to 38.75% of eligible exploration expenditures incurred in Québec; and
- A flow-through share regime, through which individual investors may claim up to 120% of their investment cost.

The *Mining Tax Act* also stimulates mining, especially in northern Québec, and promotes the processing and transformation of extracted mineral substances.

For example, the acquisition of processing assets entitles an allowance, calculated as a percentage of cost of assets, based on the intended processing activity. This allocation allows for tax exemptions up to 75% of a company's mining profit. Thus, only the value of the extracted ore is subject to the mining tax, and not the value added by processing the substance.

Since January 1, 2014, mining companies pay the greater of the following two amounts as mining tax:

- a minimum mining tax based on the gross output value at the mine shaft head, 1% on the first $80 million of this value and 4% on the surplus; and
- a mining tax on the annual profit based on progressive rates, varying from 16% to 28% based on the operator's profit margin.

## ACT RESPECTING TRANSPARENCY MEASURES IN THE MINING, OIL AND GAS INDUSTRIES

The Act Respecting Transparency Measures in the Mining, Oil and Gas Industries (CQLR, chapter M-11.5) came into force on October 21, 2015. It obliges companies to declare the amounts they pay each year to the different levels of government, government agencies or their mandataries and, as of June 1, 2017, to the Aboriginal communities and the agencies that conduct political functions on their behalf. The information obtained while implementing the Act will be made public.

The reporting obligation applies to businesses listed on one of the Canadian stock exchanges and whose headquarters are in Québec. It also applies to large businesses, whether or not they are listed on a stock exchange.

The payments in question are those of $100,000 or more paid to one government in a single payment category such as mining tax, royalties, mining duties, company income tax, municipal taxes, contribution to construction or improvement of infrastructure. These payments can be made in kind or in cash.

In an effort to prevent the increase of the administrative burden on businesses, the Act is harmonized with those of G8 countries, particularly with the requirements of the European Union's Transparency Directive. The government may recognize the requirements of another government as equivalent to those provided for in the Act. Therefore, businesses will not have to present different reports in each country in which they have facilities.

## INCREASING INVESTMENTS AND CREATING VALUE

The Government of Québec is intent on making its corporate tax regime compare favourably with that of its trade partners. Québec wants to offer companies a climate that fosters investment and innovation.

The Government of Québec grants a ten-year tax holiday for large investment projects.[15] This tax holiday applies to corporate income tax and contributions to the Health Services Fund.

The government wants to quickly spur development north of the 49th parallel. Major investments will be made to support previous efforts undertaken under the Plan Nord, the most important being the creation of the fund Capital Mines Hydrocarbures. This fund enables the government to acquire equity interests in companies that mine mineral substances in the domain of the State or that transform them, under certain conditions. It will have a budget allowance of CA$1 billion, half of which will be invested in the territory targeted by the Plan Nord. This budget does not include the CA$250 million allocated for the capitalization of Ressources Québec, the subsidiary of Investissement Québec dedicated to the mining and hydrocarbon sectors.[16]

## PLAN NORD[17]

In April 2015, the government unveiled Plan Nord Toward 2035 and its 2015–2020 action plan.

The goal of the Plan Nord is to develop the mining, forestry, energy, social, cultural and tourism aspects of the province's land north of the 49th parallel. By harmonizing the economic, social and environmental foundations of the Plan Nord, the Government of Québec hopes it will become a benchmark of responsible and sustainable northern development, and a unifying project for Québec society.

The Plan Nord establishes a favourable context for mining development by focusing on the territory's diverse resources. This includes the potential for mineral resources, such as nickel, cobalt, platinum, zinc, iron, ilme-nite, gold, apatite, diamonds, lithium, vanadium, rare earths and graphite.

The Plan Nord also aims to facilitate access to the territory, whether by road, rail, sea or air, and to improve both the telecommunications infrastructure and the supply of clean energy to northern regions. It also supports the growth of scientific knowledge in the territory.

The Société du Plan Nord (SPN) is the organization tasked with implementing the Plan Nord. The SPN contributes to the planning and integrated and coherent development of the Plan Nord territory in collaboration with several ministries and agencies of the Government of Québec, representatives of Aboriginal regions and nations, and the private sector. With regional points of service and advisors in the city of Québec, the SPN plays a major role in supporting communities and stakeholders that have projects in the territory. Through its commercialization office, it also offers companies support in marketing their products and services to prime contractors, as well as advice about investors.

## ENERGY POLICY

Launched in April 2016, the province's 2030 energy policy — *Energy in Québec: A Source of Growth* — reiterates some priorities of the Plan Nord on beneficial energy for the mining sector, including:

- ensuring a supply of liquefied natural gas at a competitive price to enhance the profitability of mines, reduce GHG emissions and attract new investments;
- ensuring a supply of electricity on competitive terms for mining development;
- supporting projects that convert electric power generation from fossil fuels to renewable energy sources.

15 www.revenuquebec.ca/fr/salle-de-presse/nouvelles-fiscales/2013/2013-01-25.aspx
16 www.investquebec.com/quebec/fr/a-propos-de-nous/nos-filiales/ressources-quebec.html
17 www.plannord.gouv.qc.ca

## QUÉBEC MINES CONVENTION

Québec Mines[18] is a major mining convention that takes place annually in the city of Québec. The convention covers all aspects of the mining industry: exploration, mining, processing and mine site rehabilitation. It is the largest mining convention in the French-speaking world. It allows experts from around the world to present the results of their research in exploration, mining or rehabilitation, or in the fields of social acceptability or economics.

Québec Mines is an important meeting place and exchange platform for the pro-vince's players in mining development and those from around the world.



18 quebecmines.gouv.qc.ca

# OVERVIEW OF MINING ACTIVITIES IN QUÉBEC[19]

Québec is growing as a mine producer across all sectors. With output accounting for one-fifth of the total Canadian value, Québec is the most diversified mining producer in the country given its production and beneficiation of 15 metals and 13 non-metallic minerals.

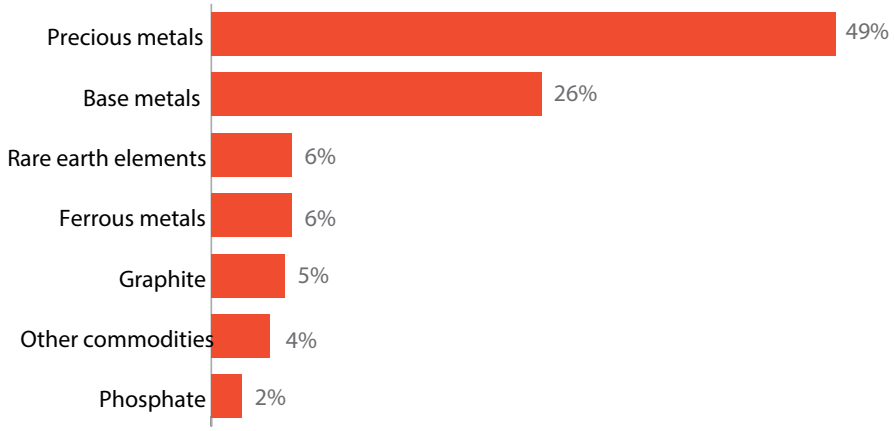
Most notably, Québec produces iron, precious metals, copper, nickel, zinc, mica, salt, graphite, silica, architectural stone, peat and lime.

Québec is one of the world's few producers of niobium, titanium dioxide, cobalt and platinum. The province's bedrock also harbours great potential for commodities such as graphite, lithium, diamonds, rare earths and tantalum.

As of December 31, 2015, there were 130,407 active mining titles in Québec, representing a total surface area of 6.1 million hectares or 3.68% of the province.

Mineral exploration and deposit appraisal expenditures reached CA$220 million in 2015, represented by 600 different projects across the province. Exploration and deposit appraisal commitments for 2016 amount to CA$260 million.

**Figure 1:** Distribution of exploration and deposit appraisal expenditures by commodity, 2015.



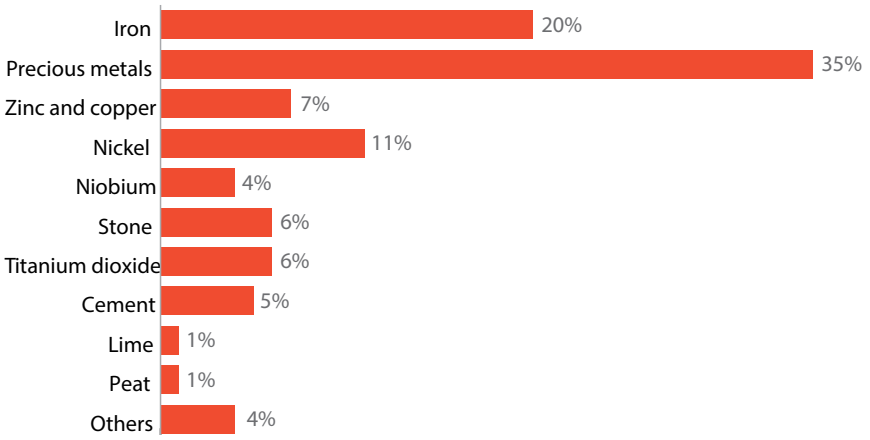

Source: Preliminary data from the Institut de la statistique du Québec

19 For more information, particularly for details on the mining regime and land access, consult www.mern.gouv.qc.ca/english/mines/index.jsp.
The following annual publication provides a summary of mining activities in Québec and information on topical issues: mern.gouv.qc.ca/english/mines/publications/publications-report.jsp
Many statistics on the mining sector are also available at the following address: mern.gouv.qc.ca/mines/statistiques

Total mining investments in Québec (exploration, deposit appraisal and mine complex development) reached a peak of CA$5.1 billion in 2012, reflecting significant growth since the early 2000s. In 2015, investments slowed but remained at relatively high levels. Although the investments are primarily concentrated in three large administrative regions — Abitibi-Témiscamingue, Côte-Nord and Nord-du-Québec — they are found in all parts of the province.

The value of Québec's mineral shipments reached CA$7.7 billion in 2015. The principal mined commodities were gold and silver, iron, nickel, ilmenite (titanium), zinc, nickel and all types of stone.

**Figure 2:** Distribution of mineral shipments by commodity, 2015.




Source: Preliminary data from the Institut de la statistique du Québec

In June 2016, there were 23 active mines in Québec (see Map 2).

Québec also has 19 primary manufacturing plants (excluding aluminum smelters): one copper smelter and two refineries (copper and zinc; Glencore), a titanium slag and pig iron smelter and a steel foundry (Rio Tinto), two other steel foundries (ArcelorMittal), a ferroniobium plant (Niobec), a ferrosilicon plant (Elkem), a silicon metal plant (Silicium Québec) and nine plants for cement, lime and aluminous clay.

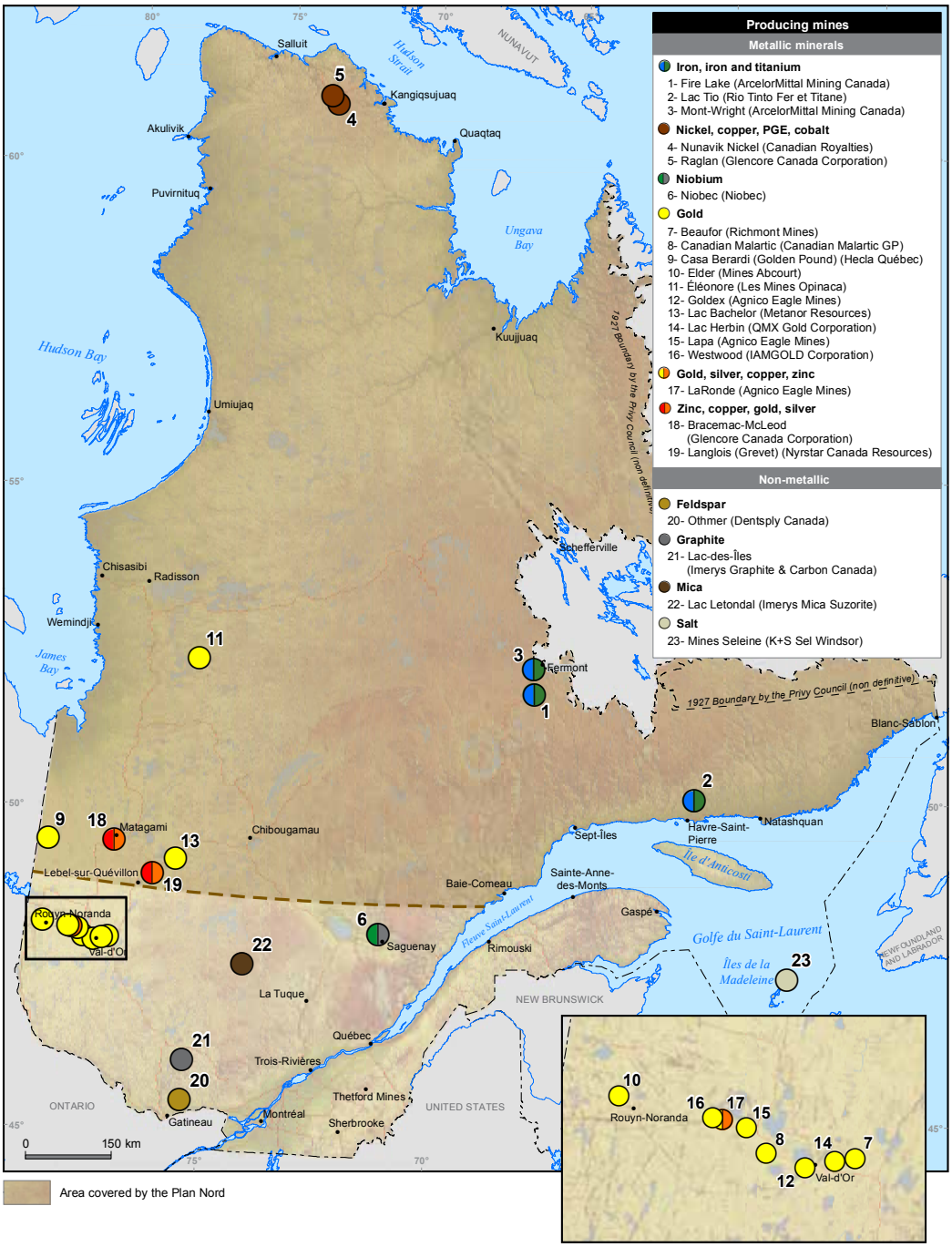
In June 2016, a total of 26 mining projects were at the deposit appraisal stage and three at the development stage (construction, start-up, ramp-up). These projects are spread across the province, and several could add to Québec's mining diversity. These projects are not only for iron, gold and nickel, but also diamonds, lithium, phosphate, graphite and the rare earth elements (see Map 3).[20]

Added to this are many exploration projects at various stages of advancement that will contribute to the province's stream of new mining projects, mining operations and processing activities. In 2015, more than 600 exploration and deposit appraisal projects were being carried out by nearly 200 mining and mineral exploration companies.



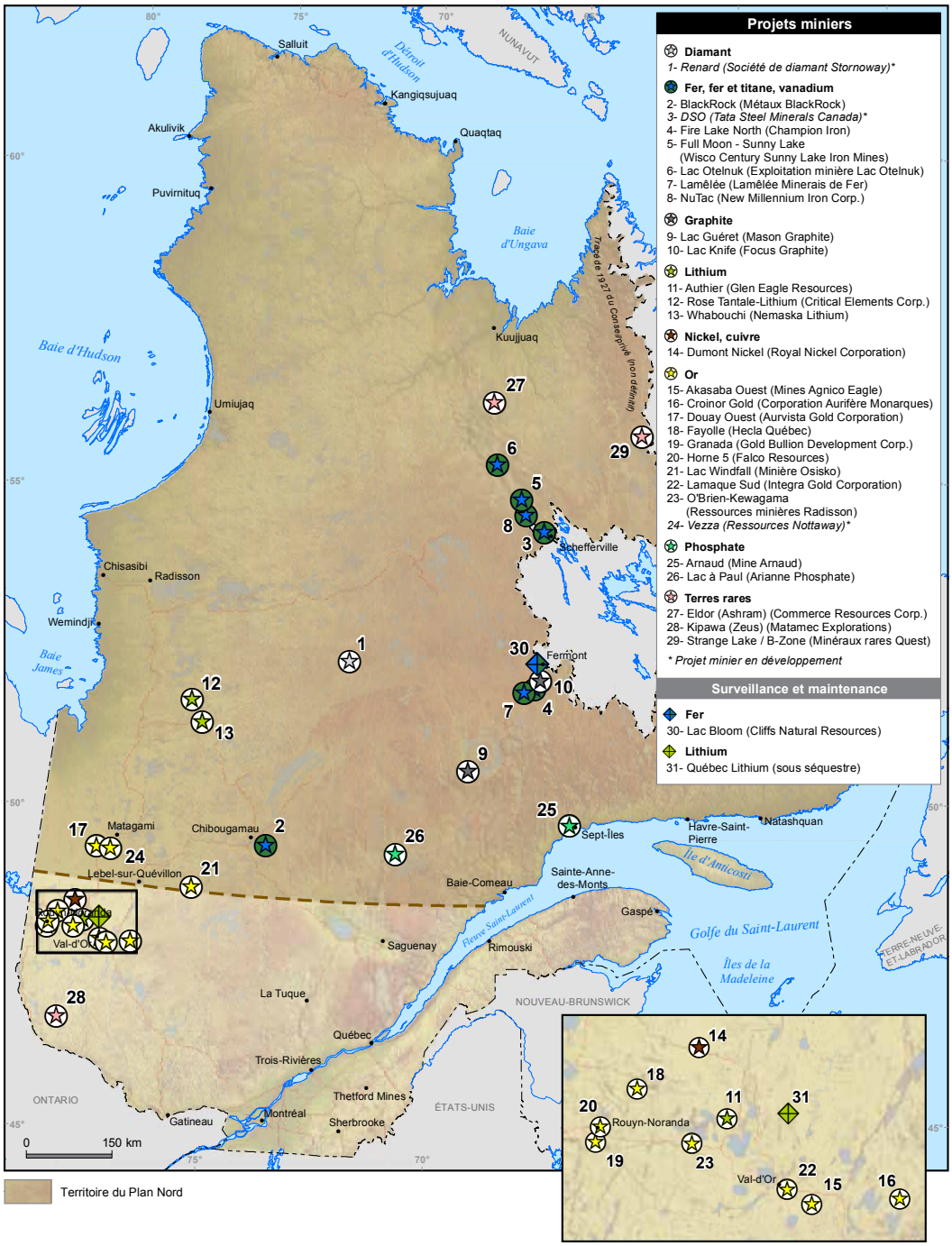
20 These maps and many others are periodically updated: mern.gouv.qc.ca/english/mines/publications/publications-maps.jsp

## Map 2 – Producing Mines




Source: SIGÉOM.
Date: July 2016.

## Map 3 – Mining projects at the deposit appraisal or development stage




Source: SIGÉOM.
Date: July 2016.

# GEOLOGICAL POTENTIAL OF QUÉBEC

Almost 90% of Québec's bedrock is composed of Precambrian rocks belonging to the Canadian Shield (north of the Saint Lawrence River). The remainder consists essentially of Paleozoic rocks: the St. Lawrence Platform surrounding the Saint Lawrence River and the Appalachians to the south of the river. These geological environments offer significant discovery potential for mineral deposits.

Québec is divided into seven main geological provinces: Superior, Nain, Churchill, Grenville, Appalachian, St. Lawrence Platform and Hudson Bay Platform. These are illustrated on Map 4.

The Superior Province (4.3 to 2.5 billion years [Ga]) occupies a large part of the North American continent and also covers half of Québec, for a total surface area of 750,000 km². It is known around the world for its numerous gold, copper, zinc, nickel and silver deposits. The Superior Province is subdivided into several subprovinces, of which the most well known, the Abitibi Subprovince, is famous for its gold, copper, zinc and silver deposits.

The Churchill Province (2.9 to 1.1 Ga) covers an area of about 200,000 km² in the northern part of Québec, to the north and northeast of the Superior Province. It is characterized by four distinct zones:

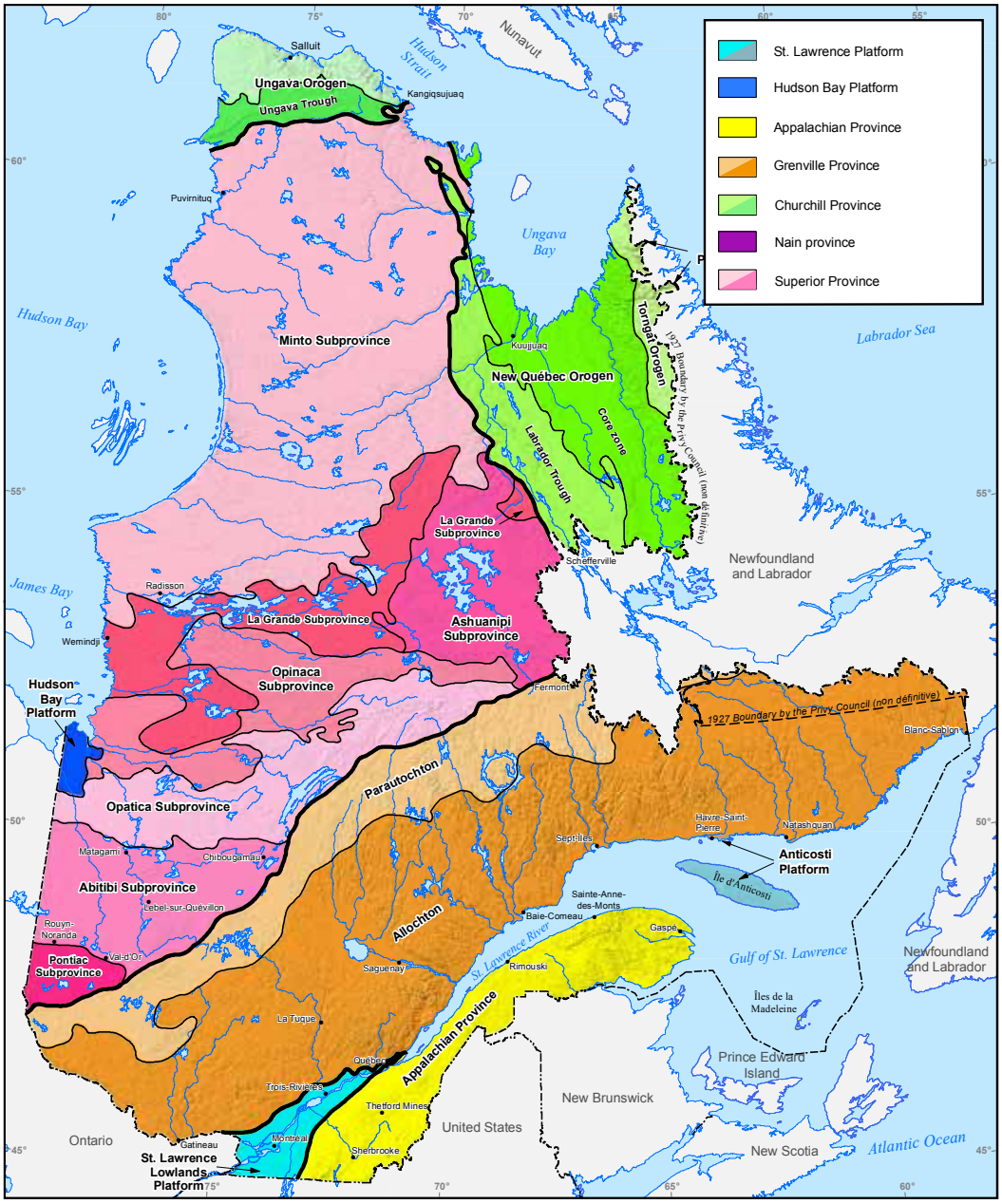
- the Ungava Trough, known for its nickel-copper deposits;
- the Labrador Trough, which hosts massive iron deposits as well as many copper, nickel and platinum group element (PGE) deposits;
- the Torngat Orogen (2.1 to 1.75 Ga), where the bedrock has been injected by kimberlites with a potential to host diamonds; and
- the Core Zone.

The Grenville Province (2.7 Ga to 600 million years [Ma]) covers an area of 600,000 km². It forms the southeast limit of the Superior Province. It is known for its iron and ilmenite mines, and for its industrial minerals.

The Appalachian Province (600 to 300 Ma) developed along the edge of the Canadian Shield during the Paleozoic era, and covers an area of roughly 80,000 km². The Mines Gaspé copper deposits are found in this geological province.

The St. Lawrence Platform (570 to 430 Ma) developed at the end of the Proterozoic era and during the Paleozoic, with the formation of the Saint Lawrence rift. It covers an area of more than 30,000 km² and overlies rocks of the Grenville Province. The main resource is limestone. Two carbonatite intrusions, Saint-Honoré (Grenville Province) and Oka (St. Lawrence Platform), host niobium deposits. Québec is the world's second-largest producer of this rare metal.

## Map 4 – Main geological subdivisions of Québec




Source: Ministère des Ressources naturelles, Direction de l'information géologique

Date: november 2013

# DETAILS OF MINING ACTIVITIES

Photo: Tourisme Sept-Îles

# IRON – PRODUCTION AND MINING PROJECTS

## CURRENT SITUATION

Québec is the largest producer of iron concentrate in Canada. The province's entire production comes from two active mines in the Côte-Nord region. Production reached 26 million tons of concentrate in 2015, more than half the Canadian total. The grade of the iron ore mined in Québec hovers around 30%. The ore is typically concentrated to a grade of about 65% before being used at steel plants. In terms of geological distribution, most of the deposits are located in the Labrador Trough.

Québec is the only ilmenite producer in North America. Ilmenite ore is mined at the Lac Tio mine belonging to Rio Tinto Iron & Titanium (RTIT). The ore is processed in the province into titanium slag, remelt iron and steel. RTIT is working to extend the life of its mine beyond 2050.

Production of iron and ilmenite concentrate in Québec, 2015

| | Shipments | | | Number of workers |
|---|---|---|---|---|
| | Quantity (t) | Value (CA $M) | Canadian shipments (%) | |
| Iron | 25,659,557 | c | c | 2,454 |
| Ilmenite | c | c | 100% | > 300 |

c: confidential information.

Source: Preliminary data from the Institut de la statistique du Québec and Natural Resources Canada.

Photo:
Francis Fontaine
for MERN

## NOTABLE MINING PROJECTS

ArcelorMittal Mines Canada invested CA$1.5 billion over the course of the last few years. As a result, production at the Mont-Wright mine increased to 26 million tonnes of iron concentrate per year. The company aims to produce nearly 30 million tonnes of concentrate in the near future. At the DSO project, Tata Steel Minerals Canada started up its new wet processing plant in the fall of 2015. The plant has a nameplate capacity of 4 million tonnes per year of iron concentrate. However, after a short ramp-up period, the company decided to put its mill on care and maintenance mode until 2018. The company has stated that the plant would likely not be profitable based on the forecasted price of iron from now until 2018. In 2016 and 2017, the company will produce concentrate using only the less costly dry process.

Near Chibougamau, BlackRock Metals published prefeasibility studies on the mining and metallurgical operations at its BlackRock project (iron-vanadium-titanium). The entire project (mining and metallurgy components combined) is estimated at CA$920 million. The company aims to complete a feasibility study on both aspects in the coming months.

A feasibility study was completed on the Taconite-KéMag project, recently renamed the NuTac project (New Millennium Iron Corp.), situated north of Schefferville. The company continues to seek financing to commission its project.

The Fire Lake North (Champion Iron), Full Moon–Sunny Lake (Wisco Century Sunny Lake Iron Mines) and Lamêlée (Lamêlée Iron Ore) projects are at less advanced stages.

## EXPLORATION AND POTENTIAL

In addition to exploration projects that focus exclusively on iron, Québec also has several exploration projects for iron, titanium, vanadium and chromium. The province's iron potential remains very high, as shown by several projects at the exploration or appraisal stage. All project proponents are hoping the iron market will improve.

**Choosing Québec's mining sector – Iron projects [1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Fire Lake<br>ArcelorMittal Mines Canada G.P.<br>www.arcelormittal.com/minescanada | Active mine | Iron | n/a | n/a | OP | The resources, the reservesand the production data are included in the production figures for the Mont-Wright site.<br>The site is expected to operate until 2040. |
| Lac Tio<br>Rio Tinto Iron & Titanium<br>www.rtft.com | Active mine | Ilmenite | 115.00 Mt<br>$TiO_2$: 43.75% | 11.00 Mt<br>$TiO_2$: 44.7% | OP | The resources do not include reserves.<br>Maximum capacity is roughly 3 Mt/yr of ilmenite ore.<br>Market conditions for iron and titanium suggest that difficult years are to come for this mine. Production in 2016 will be below maximum capacity.<br>The mine is expected to operate until at least 2026. |

## Choosing Québec's mining sector – Iron projects [1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Mont-Wright<br>ArcelorMittal Mines Canada G.P.<br>www.arcelormittal.com/minescanada | Active mine | Iron | 2 140,00 Mt<br>Fe: 28,65% | 3 588,00 Mt<br>Fe: 30% | OP | The resources do not include reserves.<br>The annual production of iron concentrate is 26 Mt.<br>The site is expected to operate until 2040. |
| DSO<br>Tata Steel Minerals Canada<br>www.tatasteelcanada.com | Development | Iron | 64.11 Mt<br>Fe: 58.87% | 98.90 Mt<br>Fe: 59.307% | OP | The resources include reserves.<br>The mines on the Québec side will not be operational before 2018. |
| BlackRock<br>BlackRock Metals<br>www.blackrockmetals.com | Appraisal | Iron<br>Ilmenite<br>Vanadium | 140.61 Mt<br>Fe: 26.49%<br>$TiO_2$: 8.258% | 100.96 Mt<br>Fe: 21.942%<br>$TiO_2$: 7.487%<br>$V_2O_5$: 0.009% | OP | The resources do not include reserves.<br>The start-up date for this mine has not yet been determined. |
| Fire Lake North<br>Champion Iron<br>www.championironmines.com | Appraisal | Iron | 464.59 Mt<br>Fe: 32.364% | 755.30 Mt<br>Fe: 31.568% | OP | The resources do not include reserves.<br>The start-up date for this mine has not yet been determined. |
| Full Moon - Sunny Lake<br>Wisco Century Sunny Lake Iron Mines<br>www.centuryiron.com | Appraisal | Iron | n/a | 7,259.60 Mt<br>Fe: 30.18% | OP | The start-up date for this mine has not yet been determined. |
| NuTac (formerly Taconite-KéMag)<br>New Millennium Iron Corp.<br>www.nmliron.com | Appraisal | Iron | 1,890.00 Mt<br>Fe: 31.276% | 2,383.00 Mt<br>Fe: 31.634% | OP | The resources include reserves.<br>The start-up date for this mine has not yet been determined. |
| Lac Otelnuk<br>Lac Otelnuk Mining<br>www.adrianaresources.com | Appraisal | Iron | 4,993.00 Mt<br>Fe : 28,688 % | 20 640,00 Mt | CO | The resources do not include reserves. |
| Lamêlée<br>Lamêlée Minerais de Fer<br>www.lameleeiron.com | Appraisal | Iron | n/a | n/a | CO | The start-up date for this mine has not yet been determined. |

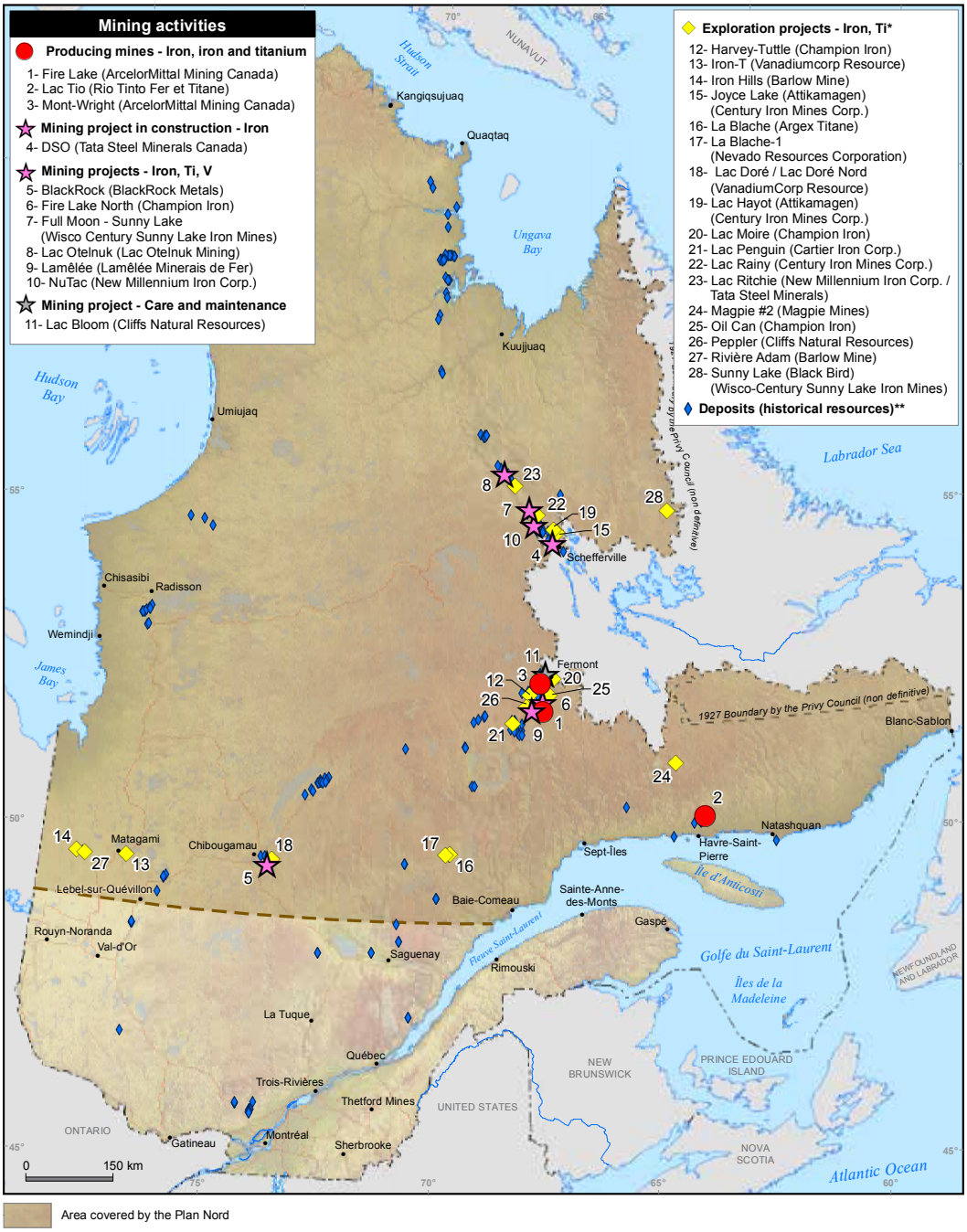
(1) Includes Ti, V and P projects. Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); Mt/yr: million tonnes per year; %: percentage.

(4) OP: open pit.

# Iron – Mining activities in Québec




* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# GOLD – PRODUCTION AND MINING PROJECTS

## CURRENT SITUATION

The value of Québec's gold shipments reached CA$2.4 billion in 2015, accounting for more than one quarter of the Canadian total. Québec is the second-largest gold producer in Canada. Gold is produced mainly at eleven mines in the province, eight of which are in the Abitibi-Témiscamingue region in western Québec where gold has been mined since the beginning of the 20th century. The three other mines are located in the Nord-du-Québec region.

Québec has extensive expertise in the field of underground gold mining thanks to a qualified workforce, highly competent teaching establishments, experienced subcontractors and numerous suppliers. This background led to the creation of an internationally renowned centre of mining expertise in the Val-d'Or region, which now includes expertise in open pit gold mining operations.

Among the most famous mines in Québec are the Canadian Malartic open pit mine (Canadian Malartic GP), with a capacity to produce 18,600 kg per year (600,000 oz/yr), the LaRonde polymetallic underground mine (Agnico Eagle Mines), one of the deepest mines in the Western world, and the Éléonore mine (Les Mines Opinaca, a subsidiary of Goldcorp), which started up just recently. Yamana Gold and Agnico Eagle Mines acquired the Canadian Malartic mine in June 2014 and created the company Canadian Malartic GP. The LaRonde mine expects to produce 8,500 kg (275,000 oz) in 2016, with plans to gradually ramp up production to 11,600 kg (375,000 oz) in 2018. In April 2015, commercial production was achieved at the Éléonore mine. The company expects to produce roughly 9,300 kg per year (300,000 oz/yr) and increase its average annual production to the 15,500–18,600 kg range (500,000–600,000 oz) starting in 2018.

On January 1, 2016, the Elder project of Abcourt Mines advanced from the development phase to become an active mine.

**Gold and silver production in Québec, 2015**

| | Shipments | | | Number of workers |
|---|---|---|---|---|
| | Quantity (t) | Value (CA $M) | Canadian shipments (%) | |
| Gold | 50 | 2,373 | 32% | 4,000 |
| Silver | 78 | 51 | 21% | - |

Source: Preliminary data from the Institut de la statistique du Québec and Natural Resources Canada.

Photo:
Francis Fontaine
for MERN

## NOTABLE MINING PROJECTS

Nine projects in the province are at the deposit appraisal stage: Lamaque South (Integra Gold Corp.), Windfall Lake (Osisko Mining), Douay West (Aurvista Gold Corporation), Akasaba West (Agnico Eagle Mines), Fayolle (Hecla Québec), Granada (Gold Bullion Development Corp.), Croinor Gold (Monarques Gold Corporation), O'Brien, which includes the contiguous former Kewagama property (Radisson Mining Resources) and Horne 5 (Falco Resources).

In October 2014, Integra Gold Corp. acquired the former Sigma and Lamaque mine sites adjacent to its Lamaque South project, including the Sigma processing plant. With this transaction, several environmental permits were transferred to Integra, allowing the company to advance the project more rapidly. As for the Granada project of Gold Bullion Development Corp., the MDDELCC issued a certificate of authorization to the company on May 26, 2016, allowing it to start up the project.

Québec is a major gold producer and has been for many years. The renewal of mineral reserves and the emergence of new gold projects will allow the province to produce gold for a long time to come.

## EXPLORATION AND POTENTIAL

Gold exploration continues to be the focus of several dozen projects in the province for both major and junior Québec and Canadian companies. The main centres of exploration are concentrated near known mining camps and active mines, such as the corridor along the Cadillac–Larder Lake Fault, the depths below the Horne smelter and the area around the Éléonore mine in the James Bay region. Exploration has been successful in other areas as well, potentially paving the way for new mining development projects. Among them, the Lac Grasset area (northwest of Matagami), the Urban-Barry and Windfall Lake areas (south of Lebel-sur-Quévillon), and the Lac Des-Vents area southwest of Chibougamau.

**Choosing Québec's mining sector – Gold projects[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments[5] |
|---|---|---|---|---|---|---|
| Beaufor<br>Richmont Mines<br>www.richmont-mines.com | Active mine | Gold | 0.30 Mt<br>Au: 6.57 g/t | 0.84 Mt<br>Au: 6.347 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is 87,000 to 97,000 ounces of gold (2466 to 2750 kg). |
| Bracemac-McLeod<br>Glencore Canada Corporation<br>www.glencore.com | Active mine | Zinc<br>Copper<br>Silver<br>Gold | 5.41 Mt<br>Zn: 6.675%<br>Cu: 1.142%<br>Ag: 24.741 g/t<br>Au: 0.549 g/t | 6.48 Mt<br>Zn: 6.657%<br>Cu: 1.229%<br>Ag: 25.372 g/t<br>Au: 0.635 g/t | UG | The resources include reserves.<br>The mine produces 170 kt/yr of zinc concentrate and 50 kt/yr of copper concentrate. Gold and silver are disseminated in these concentrates.<br>The site is expected to operate until 2021. |
| Canadian Malartic<br>Canadian Malartic GP<br>www.canadianmalartic.com | Active mine | Gold<br>Silver | 110.77 Mt<br>Au: 1.083 g/t | 12.83 Mt<br>Au: 1.519 g/t | OP | The resources do not include reserves.<br>Expected production in 2016 is 560,000 to 580,000 ounces of gold. |

## Choosing Québec's mining sector – Gold projects[1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments[5] |
|---|---|---|---|---|---|---|
| Casa Berardi (Golden Pond)<br>Hecla Québec<br>www.hecla-mining.com | Active mine | Gold | 9.41 Mt<br>Au: 3.968 g/t | 11.39 Mt<br>Au: 3.396 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is 130 koz of gold. |
| Elder<br>Abcourt Mines<br>www.abcourt.com | Active mine | Gold | n/a | 1.18 Mt<br>Au: 6.578 g/t | UG | Current production is roughly 7,500 tonnes per month. The mine's expected production capacity is 12,500 tonnes per month. |
| Éléonore<br>Les Mines Opinaca<br>www.goldcorp.com | Active mine | Gold | 24.57 Mt<br>Au: 6.296 g/t | 5.19 Mt<br>Au: 6.336 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is between 250,000 and 280,000 ounces of gold. |
| Goldex<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Active mine | Gold | 12.94 Mt<br>Au: 1.608 g/t | 34.43 Mt<br>Au: 1.873 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is 3,265 kg of gold. |
| Lac Bachelor<br>Metanor Resources<br>www.metanor.ca | Active mine | Gold | 0.84 Mt<br>Au: 7.381 g/t | 0.84 Mt<br>Au: 7.79 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is 713 tpd for about 40,000 ounces of gold. |
| Lac Herbin<br>QMX Gold Corporation<br>www.qmxgold.ca | Active mine | Gold | n/a | n/a | UG | Expected production in 2016 is roughly 250 kg of gold. |
| Langlois (Grevet)<br>Nyrstar Canada Resources<br>www.nyrstar.com | Active mine | Zinc<br>Copper<br>Lead<br>Silver<br>Gold | 2.54 Mt<br>Zn: 9.189%<br>Cu: 0.808%<br>Pb: 0.317%<br>Ag: 51.032 g/t<br>Au: 0.053 g/t | 4.43 Mt<br>Zn: 10.373%<br>Cu: 0.68%<br>Pb: 0.261%<br>Ag: 52.68 g/t<br>Au: 0.058 g/t | UG | The resources include reserves.<br>Production is on the order of 85 kt/yr of zinc concentrate and 10 kt/yr of copper concentrate.<br>Gold, silver and lead are disseminated in the two concentrates.<br>The mine is expected to operate until 2023. |
| Lapa<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Active mine | Gold | 0.44 Mt<br>Au: 5.49 g/t | 1.14 Mt<br>Au: 4.258 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is 1,865 kg of gold.<br>The mine is expected to close in 2016. |
| LaRonde<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Active mine | Gold<br>Zinc<br>Copper<br>Lead<br>Silver | 18.22 Mt<br>Au: 5.306 g/t<br>Zn: 0.813%<br>Cu: 0.238%<br>Pb: 0.042%<br>Ag: 19.731 g/t | 6.84 Mt<br>Au: 3.49 g/t<br>Zn: 0.82%<br>Cu: 0.24%<br>Pb: 0.07%<br>Ag: 18.25 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is 8,555 kg of gold, 32,000 kg of silver, 4,135 tonnes of zinc in a concentrate, and 5,100 tonnes of copper in another concentrate. |

## Choosing Québec's mining sector – Gold projects[1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments[5] |
|---|---|---|---|---|---|---|
| Nunavik Nickel<br>Canadian Royalties<br>www.canadianroyalties.com | Active mine | Nickel<br>Copper<br>Cobalt<br>Palladium<br>Platinum<br>Gold | n/a | n/a | OP | Nunavik Nickel is a private company. The company is not required to disclose information on reserves, resources and production.<br>The mine is expected to operate until about 2030. |
| Westwood<br>IAMGOLD Corporation<br>www.iamgold.com | Active mine | Gold | 2.46 Mt<br>Au: 7.57 g/t | 1.92 Mt<br>Au: 12.019 g/t | UG | The resources do not include reserves.<br>Expected production in 2016 is between 50,000 and 60,000 ounces of gold. |
| Akasaba West<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Appraisal | Gold<br>Copper | 4.76 Mt<br>Au: 0.92 g/t<br>Cu: 0.52% | 2.83 Mt<br>Au: 0.6 g/t<br>Cu: 0.33% | OP | This is a satellite project of the Goldex mine.<br>The resources do not include reserves.<br>Expected average annual production is 595 kg of gold and 3,500 kg of copper.<br>The mine life is about 6 years. |
| Croinor Gold<br>Monarques Gold Corporation<br>www.monarquesresources.com | Appraisal | Gold | 0.54 Mt<br>Au: 6.774 g/t | 0.80 Mt<br>Au: 9.103 g/t | UG | The resources do not include reserves.<br>According to the feasibility study, average production will be 23,000 ounces of gold per year. |
| Douay West<br>Aurvista Gold Corporation<br>www.aurvistagold.com | Appraisal | Gold | n/a | 2.56 Mt<br>Au: 2.77 g/t | OP/ UG | According to the feasibility study, production will be about 900 tpd. |
| Fayolle<br>Hecla Québec<br>www.hecla-mining.com | Appraisal | Gold | n/a | 0.55 Mt<br>Au: 5.75 g/t | OP | The start-up date has not yet been determined. |
| Granada<br>Gold Bullion Development Corp.<br>www.goldbulliondevelopmentcorp.com | Appraisal | Gold | 0.57 Mt<br>Au: 4.239 g/t | 13.16 Mt<br>Au: 2.213 g/t | OP | The resources do not include reserves.<br>According to the feasibility study, production will be about 550 tpd in the long term, yielding 100,000 ounces of gold per year. |
| Horne 5<br>Falco Resources<br>www.falcores.com | Appraisal | Gold<br>Zinc<br>Copper<br>Silver | n/a | 58.30 Mt<br>Au: 1.82 g/t<br>Zn: 1%<br>Cu: 0.2%<br>Ag: 15.6 g/t | UG | The preliminary economic assessment has been completed (June 23, 2016).<br>Expected annual production is 7,340 kg of gold, 61,500 kg of silver, 7,300 tonnes of copper and 30,500 tonnes of zinc.<br>The mine life is about 12 years. |

## Choosing Québec's mining sector – Gold projects[1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments[5] |
|---|---|---|---|---|---|---|
| Windfall Lake<br>Osisko Mining<br>www.osiskomining.com | Appraisal | Gold | n/a | 2.76 Mt<br>Au: 8.42 g/t | UG | According to the feasibility study, production will be about 1,200 tpd, yielding more than 100,000 ounces of gold per year. |
| Lamaque South<br>Integra Gold Corp.<br>www.integragold.com | Appraisal | Gold | n/a | 5.35 Mt<br>Au: 6.78 g/t | UG | According to the feasibility study, production will be about 109,000 ounces of gold per year. |
| O'Brien<br>Radisson Mining Resources<br>www.radissonmining.com | Appraisal | Gold | n/a | 0.57 Mt<br>Au: 6.53 g/t | UG | The preliminary economic assessment has been completed (January 2016).<br>Expected production is 930 kg of gold per year.<br>The mine life is about 4 years (excluding 2 years of preproduction). |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp)

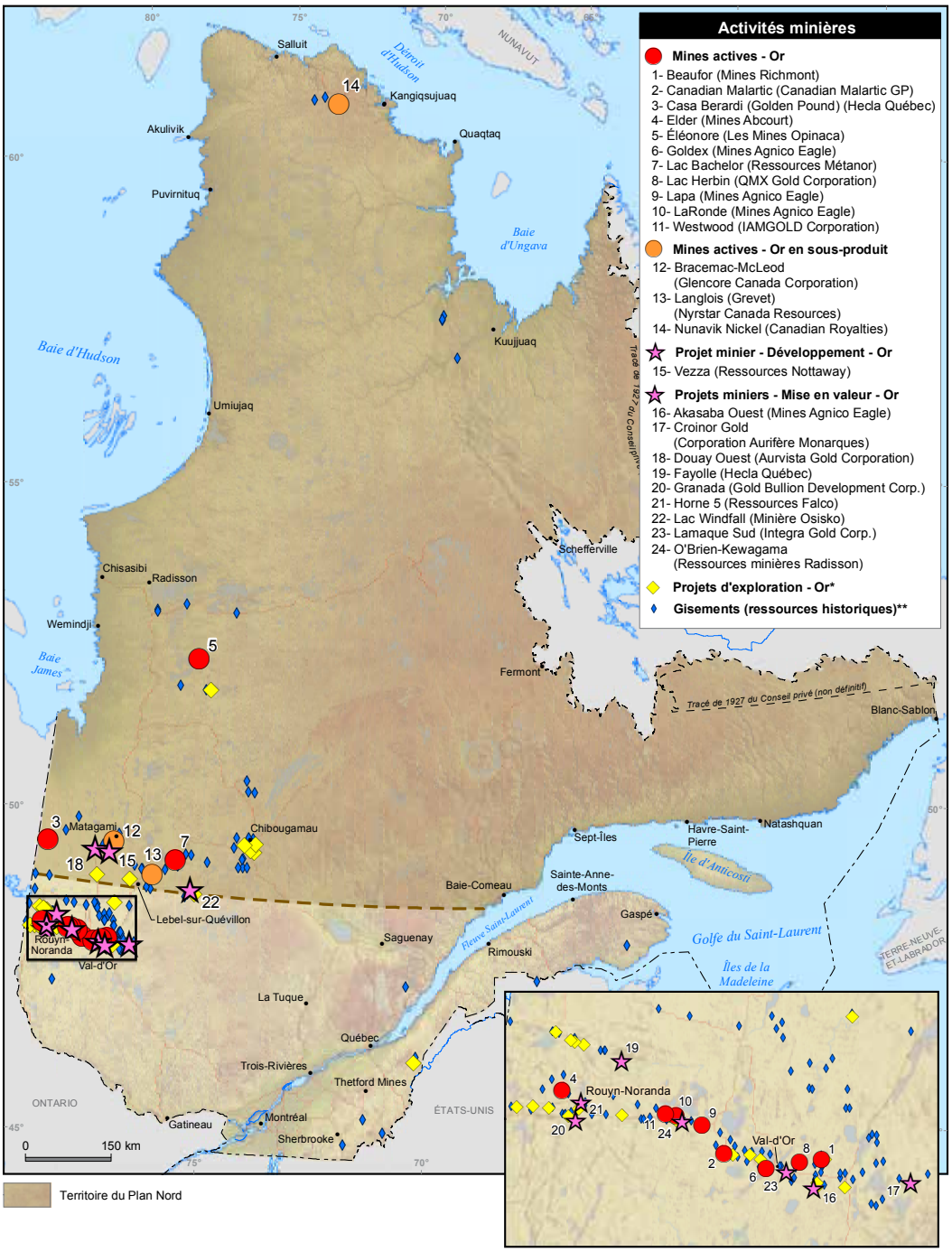
(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part

(3) Mt: million tonnes; g/t: gram per tonne

(4) OP: open pit; UG: underground

(5) tpd: tonnes per day

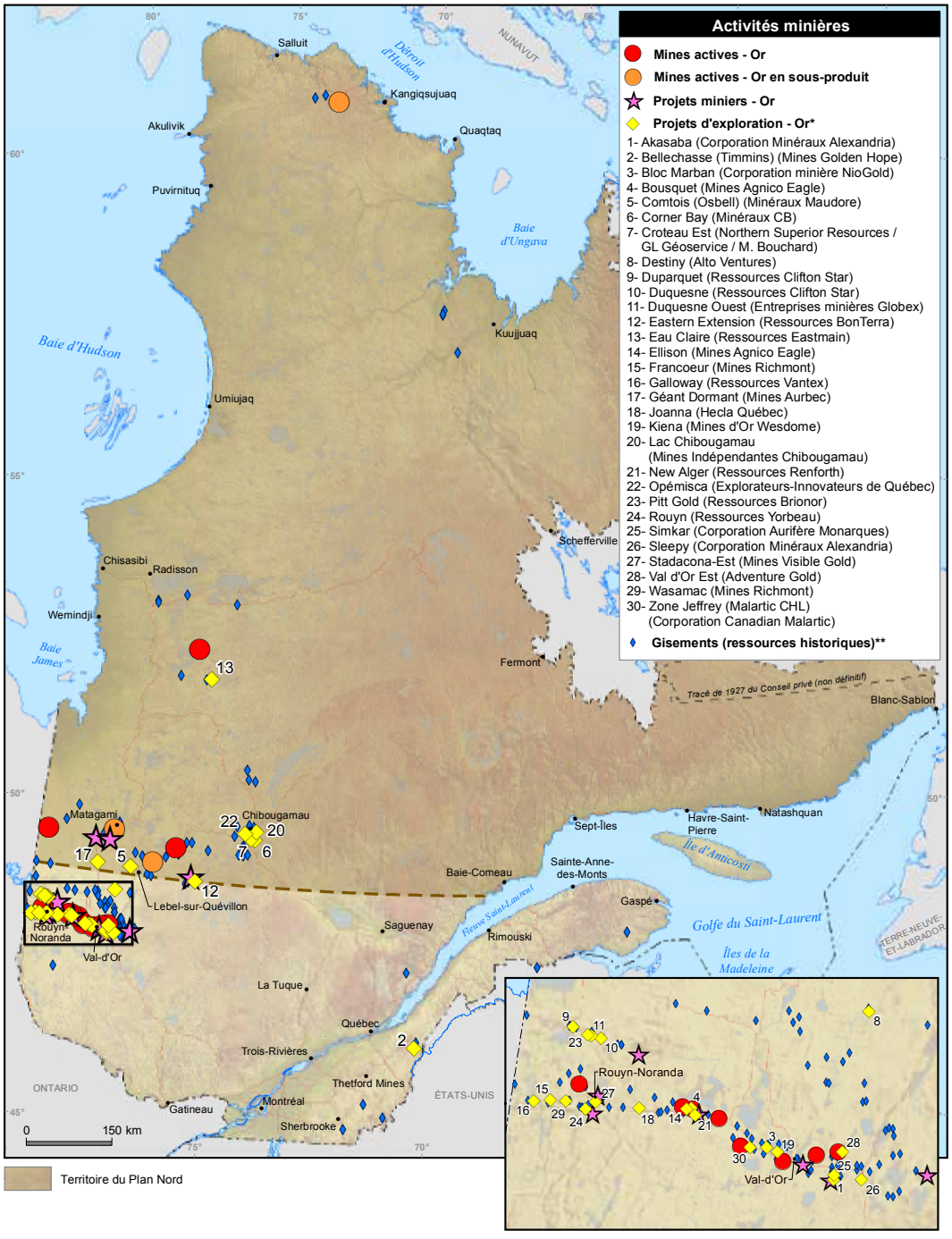
# Gold – Mining activities in Québec




* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

## Gold – Exploration projects




* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# NICKEL, PLATINUM GROUP ELEMENTS AND COBALT – PRODUCTION AND MINING PROJECTS

Photo:
Francis Fontaine
for MERN

## CURRENT SITUATION

Québec's shipments of nickel, platinum group elements (PGE) and cobalt, in the form of concentrates, come from the Raglan and Nunavik Nickel mines in the far north region of the province. Geologically, they are situated in the Ungava Orogen.

Glencore Canada Corporation is studying a CA$1 billion investment project that would allow production to continue beyond 2035 at the Raglan mine. The Nunavik Nickel mine of Canadian Royalties entered into production in 2013.

**Nickel, cobalt and PGE production in Québec, 2015**

| | Shipments | | | Number of workers |
|---|---|---|---|---|
| | Quantity (t) | Value (CA $M) | Canadian shipments (%) | |
| Nickel | 53,451 | 850 | 24% | > 1,000 |
| Cobalt | 1,066 | 39 | 26% | - |
| PGE | > 7 | c | c | - |

c: confidential information.

Source: Preliminary data from the *Institut de la statistique du Québec* and Natural Resources Canada.

## NOTABLE MINING PROJECTS

In the Abitibi-Témiscamingue region, Royal Nickel Corporation is seeking financing to start construction of its future Dumont Nickel mine. The project requires an initial investment of CA$1.27 billion. The feed rate for the concentrator will be 52,500 tonnes per day, and will increase to 105,000 tonnes per day during a second phase. A mine life of more than 30 years is envisioned, producing 33,000 tonnes of nickel per year as a concentrate that will also contain cobalt, platinum and palladium.

As such, Québec is in a good position to significantly increase its nickel, copper, cobalt and platinum group element production in the years to come.

# EXPLORATION AND POTENTIAL

Québec's potential for nickel and platinum group elements is as important today as ever. Exploration work continues in the Ungava Orogen (formerly the Cape Smith Belt) to find ore deposits along the extensions of the two producing mines, Raglan and Nunavik Nickel, as well as in the northern part of the Labrador Trough. Royal Nickel Corporation conducted work in 2015 on their West Raglan property.

Exploration has also resumed near the past-producing Marbridge mine, in the Abitibi-Témiscamingue region, as well as on known showings in the geological Grenville Province.

In the Nord-du-Québec region, near Lac Grasset to the west of Matagami, Balmoral Resources is investigating a promising nickel-copper-PGE discovery under several dozen metres of overburden.

**Choosing Québec's mining sector – Nickel projects[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Nunavik Nickel<br>Canadian Royalties<br>www.canadianroyalties.com | Active mine | Nickel<br>Copper<br>Cobalt<br>Palladium<br>Platinum<br>Gold | n/a | n/a | OP | Nunavik Nickel is a private company. The company is not required to disclose information on reserves, resources and production.<br>The mine is expected to operate until about 2030. |
| Raglan<br>Glencore Canada Corporation<br>www.glencore.com | Active mine | Nickel<br>Copper<br>Cobalt<br>Palladium<br>Platinum | 10.43 Mt<br>Ni: 3.036%<br>Cu: 0.756%<br>Co: 0.064%<br>Pd: 1.957 g/t<br>Pt: 0.843 g/t | 18.46 Mt<br>Ni: 3.459%<br>Cu: 0.961%<br>Co: 0.073%<br>Pd: 2.372 g/t<br>Pt: 0.966 g/t | OP/ UG | The resources include reserves.<br>Production is on the order of 170 kt/yr of nickel concentrate.<br>Copper and the other metals are disseminated in the nickel concentrate.<br>The mine will operate until at least 2020. However, a project that would extend the mine life past 2035 is currently under study. |
| Dumont Nickel<br>Royal Nickel Corporation<br>www.royalnickel.com | Appraisal | Nickel<br>Cobalt<br>Palladium<br>Platinum | 1,178.60 Mt<br>Ni: 0.269%<br>Co: 107.219 g/t<br>Pd: 0.019 g/t<br>Pt: 0.009 g/t | 1,665.60 Mt<br>Ni: 0.264%<br>Co: 107.34 g/t<br>Pd: 0.019 g/t<br>Pt: 0.009 g/t | OP | The resources do not include reserves.<br>The start-up date for this mine has not yet been determined. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); %: percentage; g/t: gram per tonne.

(4) OP: open pit; UG: underground.

## Nickel – Mining activities in Québec


* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# COPPER – PRODUCTION AND MINING PROJECTS

## CURRENT SITUATION

Québec has proven expertise in mining and processing copper. Not long ago, several copper mines were active in the province, giving rise to a major copper-processing industry. Today, Québec has one smelter (the Horne smelter) and one copper refinery (the CCR refinery), both belonging to Glencore Canada Corporation. These major cutting-edge industrial facilities process concentrate from the province and elsewhere in Canada, and from abroad.

The copper currently produced in Québec is a by-product of gold, nickel and zinc mines. There are currently five copper-producing mines: LaRonde (Agnico Eagle Mines), Raglan (Glencore Canada Corporation), Nunavik Nickel (Canadian Royalties), Bracemac-McLeod (Glencore Canada Corporation) and Langlois (Nyrstar Canada Resources).

In the Matagami mining camp,[21] the Bracemac-McLeod zinc mine (Glencore Canada Corporation), which replaced the depleted Perseverance mine, produces copper as a by-product during zinc ore processing. It is the same situation at the Langlois zinc mine (Nyrstar Canada Resources), near Lebel-sur-Quévillon, where copper is produced as a secondary concentrate.

**Copper production in Québec, 2015**

| Shipments | | | Number of workers |
|---|---|---|---|
| Quantity (t) | Value (CA $M) | Canadian shipments (%) | |
| 45,801 | 301 | 7% | n/a |

Source: Preliminary data from the Institut de la statistique du Québec and Natural Resources Canada.

Photo:
Francis Fontaine
for MERN

21 www.glencore.com

## NOTABLE MINING PROJECTS

There are no mining projects with copper as the primary commodity at the deposit appraisal stage. However, the Akasaba West project of Agnico Eagle Mines expects to produce copper as a by-product. This project is at the deposit appraisal stage. The expected mine life is six years at a production rate of 10,000 tonnes of ore per day. Agnico Eagle Mines submitted project notices to the MDDELCC and the Canadian Environmental Assessment Agency in 2014. The environmental impact assessment was filed in August 2015 at both levels of government, and is currently under study.

## EXPLORATION AND POTENTIAL

Exploring for copper in Québec is often carried out alongside the search for nickel, zinc and gold. Geoscientific data relevant to copper exploration were compiled as part of the 2004–2009 action plan on copper exploration in Québec, and this information is available in the SIGÉOM database.

**Choosing Québec's mining sector – Copper projects[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Bracemac-McLeod<br>Glencore Canada Corporation<br>www.glencore.com | Active mine | Zinc<br>Copper<br>Silver<br>Gold | 5.41 Mt<br>Zn: 6.675%<br>Cu: 1.142%<br>Ag: 24.741 g/t<br>Au: 0.549 g/t | 6.48 Mt<br>Zn: 6.657%<br>Cu: 1.229%<br>Ag: 25.372 g/t<br>Au: 0.635 g/t | UG | The resources include reserves.<br>The mine produces 170 kt/yr of zinc concentrate and 50 kt/yr of copper concentrate. Gold and silver are disseminated in the two concentrates.<br>The mine is expected to operate until at least 2021. |
| Langlois (Grevet)<br>Nyrstar Canada Resources<br>www.nyrstar.com | Active mine | Zinc<br>Copper<br>Lead<br>Silver<br>Gold | 2.54 Mt<br>Zn: 9.189%<br>Cu: 0.808%<br>Pb: 0.317%<br>Ag: 51.032 g/t<br>Au: 0.053 g/t | 4.43 Mt<br>Zn: 10.373%<br>Cu: 0.68%<br>Pb: 0.261%<br>Ag: 52.68 g/t<br>Au: 0.058 g/t | UG | The resources include reserves.<br>Production is on the order of 85 kt/yr of zinc concentrate and 10 kt/yr of copper concentrate.<br>Gold, silver and lead are disseminated in the two concentrates<br>The mine is expected to operate until at least 2023. |

## Choosing Québec's mining sector – Copper projects[1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| LaRonde<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Active mine | Gold<br>Zinc<br>Copper<br>Lead<br>Silver | 18.22 Mt<br>Au: 5.306 g/t<br>Zn: 0.813%<br>Cu: 0.238%<br>Pb: 0.042%<br>Ag: 19.731 g/t | 6.84 Mt<br>Au: 3.49 g/t<br>Zn: 0.82%<br>Cu: 0.24%<br>Pb: 0.07%<br>Ag: 18.25 g/t | UG | The resources do not include reserves.<br>Expected production in 2016: 8,555 kg of gold, 32,000 kg of silver, 4,135 tonnes of zinc in a concentrate, 5,100 tonnes of copper in another concentrate. |
| Nunavik Nickel<br>Canadian Royalties<br>www.canadianroyalties.com | Active mine | Nickel<br>Copper<br>Cobalt<br>Palladium<br>Platinum<br>Gold | n/a | n/a | OP | Nunavik Nickel is a private company. The company is not required to disclose information on reserves, resources and production.<br>The mine is expected to operate until about 2030. |
| Raglan<br>Glencore Canada Corporation<br>www.glencore.com | Active mine | Nickel<br>Copper<br>Cobalt<br>Palladium<br>Platinum | 10.43 Mt<br>Ni: 3.036%<br>Cu: 0.756%<br>Co: 0.064%<br>Pd: 1.957 g/t<br>Pt: 0.843 g/t | 18.46 Mt<br>Ni: 3.459%<br>Cu: 0.961%<br>Co: 0.073%<br>Pd: 2.372 g/t<br>Pt: 0.966 g/t | OP/ UG | The resources include reserves.<br>Production is on the order of 170 kt/yr of nickel concentrate.<br>Copper and other metals are disseminated in the nickel concentrate.<br>The mine will operate until at least 2020. A project to extend the mine life beyond 2030 is under study. |
| Akasaba West<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Appraisal | Gold<br>Copper | 4.76 Mt<br>Au: 0.92 g/t<br>Cu: 0.52% | 2.83 Mt<br>Au: 0.6 g/t<br>Cu: 0.33% | OP | This is a satellite project of the Goldex mine.<br>The resources do not include reserves.<br>Expected average annual production is: 595 kg of gold and 3,500 kg of copper.<br>The expected mine life is about 6 years. |
| Horne 5<br>Falco Resources<br>www.falcores.com | Appraisal | Gold<br>Zinc<br>Copper<br>Silver | n/a | 58.30 Mt<br>Au: 1.82 g/t<br>Zn: 1%<br>Cu: 0.2%<br>Ag: 15.6 g/t | UG | A preliminary economic assessment has been completed (June 23, 2016).<br>Expected production is: 7,340 kg of gold per year, 61,500 kg of silver per year, 7,300 tonnes of copper per year and 30,500 tonnes of zinc per year.<br>The expected mine life is about 12 years. |

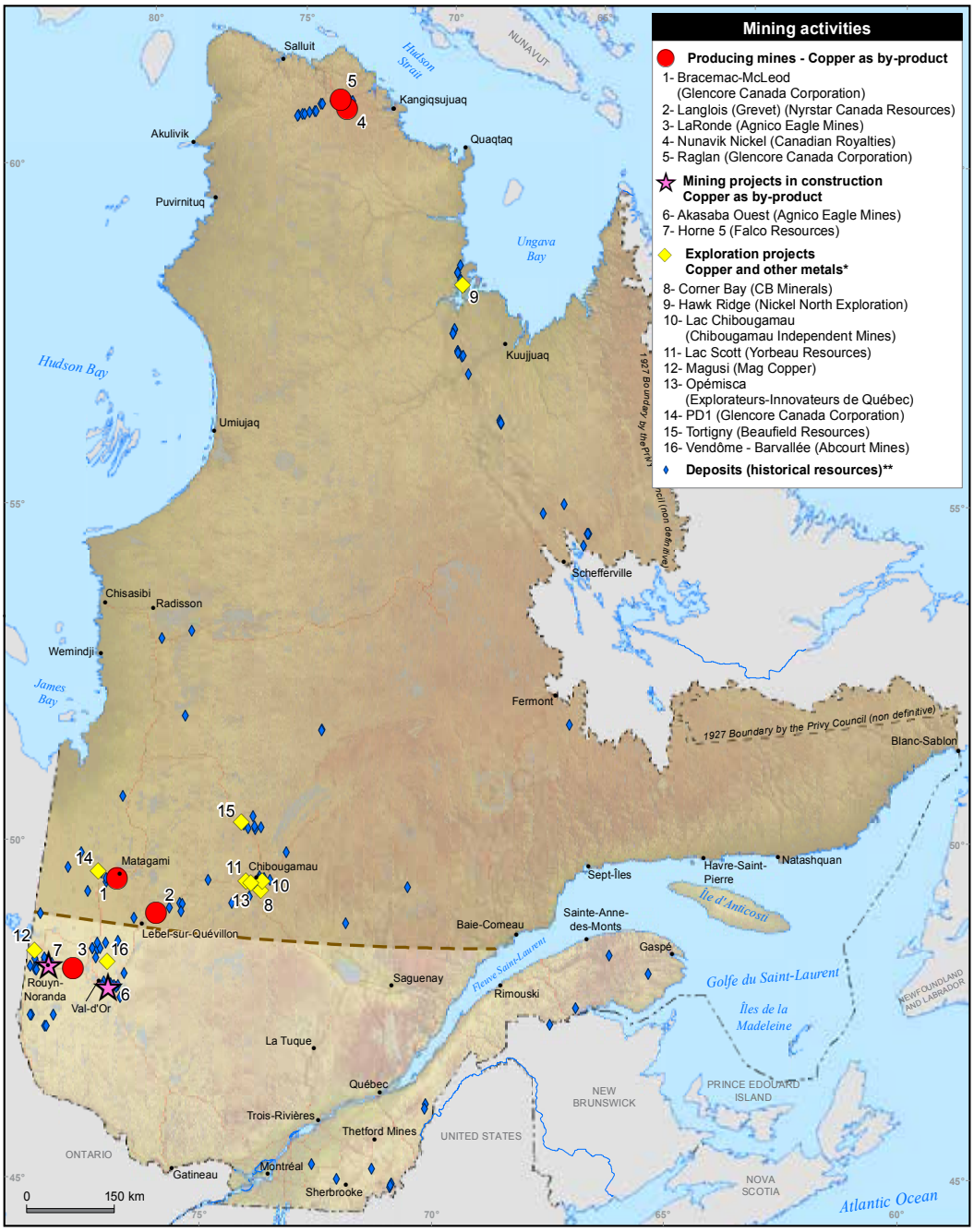
(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); %: percentage; g/t: gram per tonne.

(4) OP: open pit; UG: underground.

## Copper – Mining activities in Québec




* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# ZINC – PRODUCTION AND MINING PROJECTS

## CURRENT SITUATION

Québec is the largest zinc producer in Canada. The value of its shipments reached CA$219 million in 2015, accounting for one-quarter of all Canadian shipments.

The province's current zinc production comes from three mines: Bracemac-MacLeod (Glencore Canada Corporation), Langlois (Nyrstar Canada Resources) and LaRonde (Agnico Eagle Mines). Québec also has one zinc refinery, the CEZ refinery[22], at which production has grown steadily since it opened in 1963. Located in Salaberry-de-Valleyfield in the Montérégie region, this refinery processes concentrate from Québec, elsewhere in Canada and abroad.

**Zinc production in Québec, 2015**

| Shipments | | | Number of workers |
|---|---|---|---|
| Quantity (t) | Value (CA $M) | Canadian shipments (%) | |
| 93,640 | 219 | 36% | >500 |

Source: Preliminary data from the Institut de la statistique du Québec and Natural Resources Canada.

## NOTABLE MINING PROJECTS

Glencore Canada Corporation is studying the possibility of developing a deposit that lies below the Bracemac-McLeod mine. The project is called McLeod Deep.

## EXPLORATION AND POTENTIAL

Several zinc exploration projects are underway in the province. At least six exploration projects with mineral resources are active, mainly in the Abitibi-Témiscamingue region and in the James Bay area of the Nord-du-Québec region.

In the Chibougamau area, Yorbeau Resources has resumed drilling on the Lac Scott property, with good results. Québec should be able to consolidate its position as Canada's leading zinc producer.

Photo:
Francis Fontaine
for MERN



22 www.fondsderevenunoranda.com

## Choosing Québec's mining sector – Zinc projects[1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Bracemac-McLeod<br>Glencore Canada Corporation<br>www.glencore.com | Active mine | Zinc<br>Copper<br>Silver<br>Gold | 5.41 Mt<br>Zn: 6.675%<br>Cu: 1.142%<br>Ag: 24.741 g/t<br>Au: 0.549 g/t | 6.48 Mt<br>Zn: 6.657%<br>Cu: 1.229%<br>Ag: 25.372 g/t<br>Au: 0.635 g/t | UG | The resources include reserves.<br>The mine produces 170 kt/yr of zinc concentrate and 50 kt/yr of copper concentrate. Gold and silver are disseminated in the two concentrates.<br>The mine is expected to operate until 2021. |
| Langlois (Grevet)<br>Nyrstar Canada Resources<br>www.nyrstar.com | Active mine | Zinc<br>Copper<br>Lead<br>Silver<br>Gold | 2.54 Mt<br>Zn: 9.189%<br>Cu: 0.808%<br>Pb: 0.317%<br>Ag: 51.032 g/t<br>Au: 0.053 g/t | 4.43 Mt<br>Zn: 10.373%<br>Cu: 0.68%<br>Pb: 0.261%<br>Ag: 52.68 g/t<br>Au: 0.058 g/t | UG | The resources include reserves.<br>Production is on the order of 85 kt/yr of zinc concentrate and 10 kt/yr of copper concentrate.<br>Gold, silver and lead are disseminated in the two concentrates.<br>The mine is expected to operate until 2023. |
| LaRonde<br>Agnico Eagle Mines<br>www.agnicoeagle.com | Active mine | Gold<br>Zinc<br>Copper<br>Lead<br>Silver | 18.22 Mt<br>Au: 5.306 g/t<br>Zn: 0.813%<br>Cu: 0.238%<br>Pb: 0.042%<br>Ag: 19.731 g/t | 6.84 Mt<br>Au: 3.49 g/t<br>Zn: 0.82%<br>Cu: 0.24%<br>Pb: 0.07%<br>Ag: 18.25 g/t | UG | The resources do not include reserves.<br>Expected production in 2016: 8,555 kg of gold, 32,000 kg of silver, 4,135 tonnes of zinc in a concentrate; 5,100 tonnes of copper in another concentrate. |
| Horne 5<br>Falco Resources<br>www.falcores.com | Appraisal | Gold<br>Zinc<br>Copper<br>Silver | n/a | 58.30 Mt<br>Au: 1.82 g/t<br>Zn: 1%<br>Cu: 0.2%<br>Ag: 15.6 g/t | UG | A preliminary economic assessment has been completed (announced in May 2016).<br>Expected annual production is 7,340 kg of gold, 61,500 kg of silver, 7,300 tonnes of copper and 30,500 tonnes of zinc.<br>Mine life is about 12 years. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); %: percentage; g/t: gram per tonne; c/t: carat per tonne.

(4) UG: underground.

## Zinc – Mining activities in Québec


* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# NIOBIUM AND TANTALUM – PRODUCTION AND MINING PROJECTS

Photo:
Francis Fontaine
for MERN

## CURRENT SITUATION

Niobium and tantalum are metals that often occur together in a wide range of deposit types, although they have very different uses and are destined for separate markets. Both metals are generally used in high-tech applications or in the manufacture of certain types of alloys.

Québec is the only niobium producer in North America and one of only three producers in the world. Production comes from the Niobec mine belonging to Niobec, which is owned by Magris Resources. The pyrochlore concentrate undergoes primary processing to produce ferroniobium, which is exported to customers (steelmakers) all around the world.

Niobium mining in Québec is evidence of the province's diversified mineral base. There is also good potential for other niobium-producing operations, particularly in association with rare earths. Add to this the province's strong potential to extract tantalum from niobium or lithium mineral deposits. Tantalum is not currently mined in Québec.

**Niobium production in Québec, 2015**

| Shipments | | | Number of workers |
|---|---|---|---|
| Quantity (t) | Value (CA $M) | Canadian shipments (%) | |
| 5,753 | c | 100% | >400 |

c: confidential information.

Source: Preliminary data from the *Institut de la statistique du Québec* and Natural Resources Canada.

## NOTABLE MINING PROJECTS

Niobec's block caving expansion project ($1.2 billion) has been abandoned. The company's deep mining project ($420 million) is being re-examined, and other options are being considered. The company is concentrating on a scenario in which deeper mining can be conducted from existing levels. Niobec also discovered rare earth mineralization near the niobium mine; however, the company's current focus is its mining operations and ferroniobium production.

As is the case for rare earth elements, niobium and tantalum often occur in association with carbonatites and various types of pegmatites. For this reason, projects focused primarily on lithium or rare earths may include a niobium or tantalum recovery component. The Rose Lithium-Tantalum project of Critical Elements Corporation, currently at the deposit appraisal stage, is one such example.

## EXPLORATION AND POTENTIAL

North of Lac Saint-Jean, Crevier Minerals[23] is continuing to work its Crevier niobium and tantalum project.

In the Lebel-sur-Quévillon area, Geomega Resources[24] continues its assessment of the Montviel carbonatite on the Montviel project. The work is in support of an ongoing preliminary economic assessment that focuses not only on rare earths but also niobium. A new resource estimate was published in June 2015.

Québec has several favourable geological settings for niobium and tantalum, particularly carbonatite environments.

**Choosing Québec's mining sector – Nionium ans tantalum projects(1)**

| Mine or project | Status | Commodities | Proven and probable reserves(2,3) | Measured and indicated resources(2,3) | Type(4) | Comments |
|---|---|---|---|---|---|---|
| Niobec<br>Niobec<br>www.niobec.com | Active mine | Niobium | 416.42 Mt<br>$Nb_2O_5$: 0.41% | 288.68 Mt<br>$Nb_2O_5$: 0.43% | UG | The resources do not include reserves.<br>Expected production in 2016 is 7,000 tonnes of ferroniobium. |
| Rose Lithium-Tantalum<br>Critical Elements Corporation<br>www.cecorp.ca | Appraisal | Lithium<br>Tantalum | n/a | 26,50 Mt<br>$Li_2O$: 0.98%<br>$Ta_2O_5$: 163 g/t | OP | No available data. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); Mkg: million kilograms; %: percentage; g/t: gram per metric ton.

(4) OP: open pit; UG: underground.



23 www.mdn-mines.com
24 www.ressourcesgeomega.ca

## Niobium and Tantalum – Mining activities in Québec


* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source : SIGÉOM.

# RARE EARTH ELEMENTS – MINING PROJECTS

## CURRENT SITUATION

Rare earth elements constitute a global-scale strategic resource. Forecasts call for rising demand due to their applications in the high-tech and clean technology sectors, particularly in the hybrid and electric vehicle industry. New sources for producing these elements are being developed at several locations around the world. China is the main producer and consumer.

Québec has never been a rare earth producer, but may become one in the near future thanks to its promising potential, particularly for heavy rare earths. Three projects have reached the deposit appraisal stage and may someday supply rare earth oxide concentrates. In addition, geoscientific studies and exploration work currently underway will likely reveal new rare earth mineralization.

In addition to its rare earth mineral resources, Québec offers several other strategic advantages for industrial activities related to rare earths, from the mining and production of rare earth concentrates to the separation and processing of rare earths into value-added products. As an added advantage, Québec is also located near major markets.

## NOTABLE MINING PROJECTS

In the Abitibi-Témiscamingue region, Matamec Explorations published a feasibility study for the Kipawa rare earth deposit. The project focuses on heavy and light rare earths. It includes the production of rare earth oxide concentrate that may, in part, be sold as is or separated on site. Matamec Explorations also discovered new rare earth showings in close proximity.

In Nunavik, Quest Rare Minerals intends on mining its B-Zone/Strange Lake project and transforming the ore into concentrate that will be shipped to facilities in southern Québec. The company also announced it intends to build a hydrometallurgical plant at Bécancour to obtain mixed heavy and light rare earth oxide concentrates. Construction for this CA$1.5-billion project should begin in 2017, with production scheduled for 2019.

In Nunavik, 130 kilometres south of Kuujjuaq, the aim of the Ashram (Eldor) project of Commerce Resources Corp. is to extract rare earths from a carbonatite. The project involves the mining and on-site concentration of the rare earth ore followed by off-site processing at a hydrometallurgical plant in southern Québec to produce a mixed rare earth carbonate concentrate. Work in support of a prefeasibility study is already underway, and the study is expected in 2016.

Photo:
Francis Fontaine
for MERN

## EXPLORATION AND POTENTIAL

At Saguenay, Niobec (Magris Resources) has not shown interest in pursuing exploration and deposit appraisal work on its rare earth project (indicated resources of 531 Mt at 1.64% TREO, inferred resources of 527 Mt at 1.83% TREO) near its niobium mine. The company remains focused on niobium.

In the Lebel-sur-Quévillon area, Geomega Resources is conducting assessment work on the Montviel carbonatite (Montviel project) in support of an ongoing preliminary economic assessment that focuses not only on rare earths but also niobium. A new resource estimate was published in June 2015. Geomega Resources envisions the production of rare earth oxide concentrates as well as the separation of rare earth elements by electrophoresis (a process at the R&D stage).

Several exploration projects at less-advanced stages focus on rare earths as principal commodities or as by-products.

**Choosing Québec's mining sector – Rare earth projects[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3,4] | Measured and indicated resources[2,3,4] | Type[5] | Comments |
|---|---|---|---|---|---|---|
| Eldor (Ashram)<br>Commerce Resources Corp.<br>www.commerceresources.com/s/Home.asp | Appraisal | Rare earths<br>Light rare earths<br>Heavy rare earths<br>Yttrium | n/a | 29.26 Mt<br>TREO: 1.893%<br>LREO: 1.811%<br>HREO: 0.051%<br>$Y_2O_3$: 0.039% | OP | Expected production is 36 kt/yr of mixed rare earth carbonates. |
| Kipawa (Zeus)<br>Matamec Explorations<br>www.matamec.com | Appraisal | Rare earths<br>Light rare earths<br>Yttrium<br>Heavy rare earths | 19.77 Mt<br>TREO: 0.411%<br>LREO: 0.26%<br>$Y_2O_3$: 0.094%<br>HREO: 0.056% | 23.86 Mt<br>TREO: 0.407%<br>LREO: 0.259%<br>$Y_2O_3$: 0.093%<br>HREO: 0.055% | OP | The resources include reserves.<br>Expected production is 1.5 kt/yr of heavy rare earth chlorides and 2.1 kt/yr of light rare earth carbonates. |
| Strange Lake / B-Zone<br>Quest Rare Minerals<br>www.questrareminerals.com | Appraisal | Rare earths<br>Light rare earths<br>Heavy rare earths<br>Yttrium | n/a | 278.13 Mt<br>TREO: 0.93%<br>LREO: 0.57%<br>HREO: 0.36%<br>$Y_2O_3$: 0.24% | OP | Expected production is 10,400 t/yr of rare earth oxides. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons), %: percentage.

(4) TREO: sum of all rare earth oxides plus yttrium oxide; LREO: sum of light rare earth oxides (La-Sm); HREO: sum of heavy rare earth oxides (Eu-Lu).

(5) OP: open pit.

## Rare earth elements – Mining activities in Québec


* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# LITHIUM – MINING PROJECTS

Photo:
Francis Fontaine
for MERN

## CURRENT SITUATION

Lithium is a strategic commodity in the production of electrical storage cells (accumulators). In the Abitibi-Témiscamingue region, despite major investments, RB Energy could not reach the final stages in producing and marketing battery-quality lithium carbonate. The company declared bankruptcy and its facilities are in receivership. The Québec Lithium site, held by RB Energy, is in the process of being sold. The transaction is almost complete, but must be approved by the Superior Court. There are clear signs of a gradual increase in the demand for lithium products, mainly related to electric vehicles and accumulators.

Québec is well positioned for the production and processing of lithium. The province aims to become a major player on the world stage, on both fronts. Québec already stands out for its production of lithium components and batteries, as well as for its initiatives in the development of electric vehicles. It also has research centres dedicated to batteries and vehicles. As such, the province has started to put into place the essential elements to support a lithium battery and electric vehicle industry.

## NOTABLE MINING PROJECTS

Two regions in Québec are known for lithium projects: Abitibi-Témiscamingue and James Bay. Three projects are at the deposit appraisal stage.

At the Authier project near the Québec Lithium mine, Glen Eagle Resources envisions the production of spodumene concentrate and perhaps even lithium metal. In May 2016, Glen Eagle announced that it had signed a letter of intent for the sale of its Authier site so the company can concentrate on its gold-producing projects. The potential buyer is Sayona Mining Limited, an Australian company specializing in lithium and graphite.

In the James Bay region, two projects are at the advanced assessment phase: Whabouchi and Rose Lithium-Tantalum.

A feasibility study was published for the Whabouchi project of Nemaska Lithium, and subsequently updated in April 2016. The company is presently seeking financing. The extraction and concentration of spodumene would take place in the James Bay region, and a hydrometallurgical plant in Shawinigan would transform the concentrate into lithium hydroxide and lithium carbonate. In late summer 2015, Nemaska Lithium obtained positive environmental assessment decisions from the federal and provincial governments for the mine site and concentrator. Financing for building the Phase 1 Plant was completed in the first quarter of 2016. The proponent will receive $12.87 million from the Government of Canada (Sustainable Development Technology Canada) and $3 million from the Technoclimat program of the Government of Québec for Phase 1. The Government of Québec approved a decree for a $10-million investment by way of subscription. Recently, Nemaska Lithium signed a memorandum of understanding with Johnson Matthey Battery Materials for a $12 million up-front payment in exchange for products and services to complete its financing for the Phase 1 Plant.

Critical Elements Corporation aims to mine its Rose Lithium-Tantalum deposit in the James Bay area, from which it would extract spodumene to produce lithium carbonate and a tantalum concentrate.

## EXPLORATION AND POTENTIAL

Two projects stand out in the James Bay region. Stria Lithium intends to extract a bulk sample at its Pontax-Lithium project and run tests to demonstrate that the company's innovative metallurgical process is capable of producing lithium chloride (at a grade of 99.99%) using spodumene from this project. A mineral resource estimate will follow. In addition, the James Bay Lithium project of Galaxy Resources[25] is still one of the company's best projects despite major corporate restructuring. New developments are expected regarding the project's future.

**Choosing Québec's mining sector – Lithium projects[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Authier<br>Glen Eagle Resources<br>www.gleneagleresources.com | Appraisal | Lithium | n/a | 7,48 Mt<br>$Li_2O$: 0.914% | OP | According to the feasibility study, production could be around 2,200 tpd. |
| Rose Lithium-Tantalum<br>Critical Elements Corporation<br>www.cecorp.ca | Appraisal | Lithium<br>Tantalum | n/a | 26.50 Mt<br>$Li_2O$: 0.98%<br>$Ta_2O_5$: 163 g/t | OP | No information is available. |
| Whabouchi<br>Nemaska Lithium<br>www.nemaskalithium.com | Appraisal | Lithium | 27.30 Mt<br>$Li_2O$: 1.463% | 27.99 Mt<br>$Li_2O$: 1.568% | OP/ UG | The resources include reserves.<br>According to the feasibility study, approximately 213,000 tonnes of spodumene concentrate can be produced per year (5.5 Mt of spodumene concentrate over the 26-year mine life). |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); %: percentage, g/t: gram per tonne.

(4) OP: open pit; UG: underground.



25 www.galaxyresources.com.au/projects/james-bay

## Lithium – Mining activities in Québec


* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source : SIGÉOM.

# GRAPHITE – PRODUCTION AND MINING PROJECTS

## CURRENT SITUATION

The global market for graphite is stable. A new market is developing for high-tech applications, such as lithium-ion batteries destined for hybrid and electric cars, next-generation nuclear reactors and electrical conductors. These new applications require high-quality flake graphite. Québec could be a supplier to this emerging market. In the traditional market, graphite is used for batteries, automobile components, lubricants, metallic powders and refractory products.

Only two graphite mines are active in North America. One is located in British Columbia (the Black Crystal mine of Eagle Graphite) and the other in Québec (the Lac-des-Îles mine of Imerys Graphite & Carbon Canada, near Mont-Laurier in the Laurentians). The company supplies natural graphite for the manufacture of traditional batteries and metallic powders.

Over the past few years, there has been a significant increase in the number of graphite exploration projects in Québec. Two of these projects are at the deposit appraisal stage. Historically, many graphite deposits have been discovered and even mined in Québec, particularly in the geological Grenville Province.

## NOTABLE MINING PROJECTS

In the Côte-Nord region, two projects have reached the feasibility stage. The first is the Lac Knife project of Focus Graphite, situated south of Fermont. The flake graphite in this deposit is of much better quality than what is generally available on the market. The deposit is capable of producing 44,300 tonnes per year of graphite concentrate with a grade of 98% graphitic carbon, over a period of 25 years. The second project of importance is the Lac Guéret property of Mason Graphite Corp., situated 60 kilometres northwest of the Daniel-Johnson dam (Manic 5). The project provides for an annual production of 50,000 tonnes of graphite concentrate over 25 years. The deposit contains 4.7 million tonnes of graphite at a grade of 27.7% graphitic carbon. On March 4, 2016, Carbon Canada published a preliminary economic assessment for the Miller project near Grenville in the Outaouais region.

## EXPLORATION AND POTENTIAL

Several of the active graphite exploration projects in the province are taking place on properties that have already been explored or even mined in the past.

Many are in the Outaouais region, such as the Mousseau West project of Graniz Mondal[26], Matawinie of Nouveau Monde, and La Loutre of Lomiko Metals and Canada Strategic Metals, all of which have published mineral resource estimates.

Photo:
Francis Fontaine
for MERN

26 www.granizmondal.com

## Choosing Québec's mining sector – Graphite projects[1]

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Lac-des-Îles<br>Imerys Graphite & Carbon Canada<br>www.imerys-graphite-and-carbon.com | Active mine | Graphite | c[5] | c | OP | Annual production is 20,000 tonnes per year of graphite concentrate. |
| Lac Guéret<br>Mason Graphite<br>www.masongraphite.com | Appraisal | Graphite | 4.74 Mt<br>GP: 27.776% | 65.69 Mt<br>GP: 17.185% | OP | The resources include reserves.<br>A feasibility study was published in September 2015.<br>Expected production is 52 kt per year of graphite concentrate at a grade of 93.7% Cg. |
| Lac Knife<br>Focus Graphite<br>www.focusgraphite.com | Appraisal | Graphite | 7.86 Mt<br>GP: 15.13% | 9.58 Mt<br>GP: 14.77% | OP | The resources do not include reserves.<br>A feasibility study was published in August 2014.<br>Expected production is 44.3 kt per year of graphite concentrate at a grade of 98.2% Cg. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

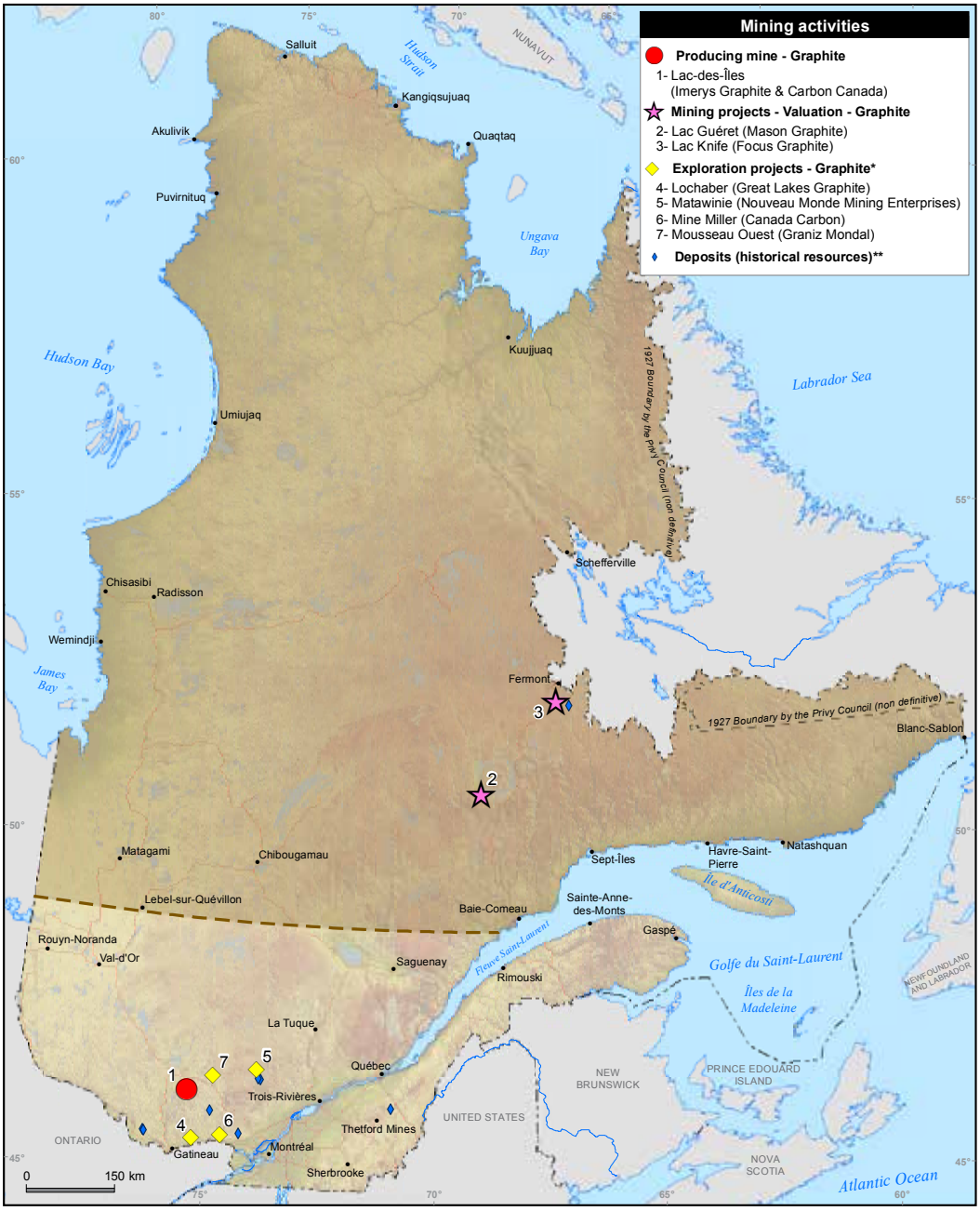
(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) GP: graphite; Mt: million tonnes; %: percentage; g/t: gram per tonne.

(4) OP: open pit.

(5) c: confidential information.

## Graphite – Mining activities in Québec




* Exploration projects with NI 43-101 resources published between 2011 and 2015.

** Source: SIGÉOM.

# PHOSPHATE – MINING PROJECTS

Photo:
Francis Fontaine
for MERN

## CURRENT SITUATION

Phosphate is primarily used in the manufacture of fertilizer, the production of food (animal and human), metallurgy, water treatment processes and the manufacture of toothpaste, cosmetics and ceramics.

More than 40 phosphate mines were in operation in Québec from the late 1800s to almost 1950. Nearly all these phosphate mines were in the Outaouais region. There are currently no active phosphate mines in Québec.

Nevertheless, increasing prices and rising demand have led to renewed interest in exploration, which has solidified with the emergence of new mining projects in Québec.

## NOTABLE MINING PROJECTS

Two mining projects are at the deposit appraisal stage: the Arnaud project and the Lac à Paul project. They should enter into production during the next few years. Both projects are for apatite (calcium phosphate). The Arnaud project is geologically associated with the Sept-Îles Igneous Complex, whereas the Lac à Paul project is associated with the Lac-Saint-Jean Anorthosite Suite.

The Arnaud project of Mine Arnaud is expected to have a roughly 30-year mine life, with an average annual production of 1.2 million tonnes of phosphate concentrate. The project is located about 15 kilometres west of the city centre of Sept-Îles, which hosts several key infrastructure components: provincial highway 138, the Arnaud rail line, the port of Sept-Îles and power lines. A feasibility study was completed in August 2014. On March 16, 2015, the Government of Québec announced it had issued a decree for the certificate of authorization, and the federal government approved the project in early 2016. Mine Arnaud is a joint venture between Investissement Québec and the Norwegian company Yara International ASA. Mine Arnaud is seeking one or more strategic and financial partners.

The Lac à Paul project of Arianne Phosphate is expected to have a 26-year mine life, with an average annual production of 3 million tonnes of phosphate concentrate. The project is located about 200 kilometres north of the city of Saguenay. It is accessible via a network of forestry roads, part of which is being upgraded to accommodate oversize vehicles. The project includes the construction of a new marine terminal at Sainte-Rose-du-Nord, on the north shore of Rivière Saguenay. A new power line will also be built. A feasibility study was completed in October 2013. On December 22, 2015, the Government of Québec issued a decree for the certificate of authorization for the mine site and road upgrades. An environmental impact assessment was filed on June 1, 2016, for the marine terminal component of the project. This aspect will be studied by the federal government in collaboration with the MDDELCC. Arianne Phosphate is seeking one or more strategic and financial partners.

# EXPLORATION AND POTENTIAL

Québec has many large-scale anorthositic and mafic complexes that host apatite mineralization. Exploration targets are plentiful and often associated with iron and titanium mineralization.

At the present time, about 15 active projects are at various stages of exploration in the Saguenay–Lac-Saint-Jean and Côte-Nord regions. The most advanced are in the Saguenay–Lac-Saint-Jean region, namely the Lac Lisette, Moose Lake and Dissimieux Lake projects.

**Choosing Québec's mining sector – Phosphate project[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Arnaud<br>Mine Arnaud<br>www.minearnaud.com | Appraisal | Apatite | 342.60 Mt<br>$P_2O_5$: 4.298% | 545.49 Mt<br>$P_2O_5$: 3.995% | OP | A feasibility study was completed in August 2014.<br>The resources include reserves.<br>Expected annual production is 1.2 Mt apatite concentrate at a grade of 39% to 40% $P_2O_5$. |
| Lac à Paul<br>Arianne Phosphate<br>www.arianne-inc.com | Appraisal | Apatite | 472.09 Mt<br>$P_2O_5$: 6.88% | 702.70 Mt<br>$P_2O_5$: 7.158% | OP | A feasibility study was completed in October 2013.<br>The resources include reserves.<br>Expected annual production is: 3 Mt of apatite concentrate at a grade of 39% to 40% $P_2O_5$. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) Mt: million tonnes (metric tons); %: percentage.

(4) OP: open pit.

## Phosphate – Mining activities in Québec


* Source: SIGÉOM.

# DIAMONDS – MINING PROJECTS

## CURRENT SITUATION

The global market for diamonds is growing rapidly. Prices have risen significantly over the last few years and the outlook is positive. Canada's position in the market, as both producer and processor, is becoming increasingly important. Although Québec is not yet a diamond producer, the government is working on strategies to develop this sector.

## NOTABLE MINING PROJECTS

The Renard diamond project of Stornoway Diamond Corporation is promising. The feasibility study, published in 2011, reported enough mining reserves for 11 years of production. The initial preproduction investment is estimated at about CA$1.034 billion. Construction of the mine started on July 10, 2014, and is still underway. Start-up is expected in September 2016, and commercial production should be achieved on December 31, 2016. The mine will create about 450 jobs.

## EXPLORATION AND POTENTIAL

Diamonds remain an underexplored commodity in Québec. Diamonds are generally found in kimberlites that were emplaced in thick ancient cratons, such as those found in the Superior Province.

The opening of a diamond mine in the near future could revive exploration in many areas that were identified as favourable for diamonds by work conducted in the early 2000s.

**Choosing Québec's mining sector – Diamond projects[1]**

| Mine or project | Status | Commodities | Proven and probable reserves[2,3] | Measured and indicated resources[2,3] | Type[4] | Comments |
|---|---|---|---|---|---|---|
| Renard<br>Stornoway Diamond Corporation<br>www.stornowaydiamonds.com | Development | Diamonds | 33.40 Mt<br>DD: 0.67 c/t | 42.60 Mt<br>DD: 0.71 c/t | OP/ UG | The resources do not include reserves.<br>Expected production is 1.8 million carats per year, on average, for the first 10 years. |

(1) Non-exhaustive list. For a complete list, refer to the MERN's Report on Mining Activities (www.mern.gouv.qc.ca/english/mines/publications/publications-report.jsp).

(2) Mineral reserves and mineral resources are reported according to NI 43-101 standards. Cautionary note: mineral resources do not have demonstrated economic viability and there is no certainty that resources will be converted into reserves, either in whole or in part.

(3) DD: diamond; Mt: million tonnes (metric tons); c/t: carat per tonne.

(4) OP: open pit; UG: underground.

Photo:
Société de Diamant Stornoway

## Diamonds – Mining activities in Québec


** Source: SIGÉOM.

# OTHER METALS

## CURRENT SITUATION

In Québec, small quantities of other metals are produced during zinc and copper refining, or are extracted as by-products during gold or base metal mining operations. These metals include antimony, bismuth, cadmium, selenium and tellurium. Although the production of these commodities is generally on a small scale, it again underscores the diversity of Québec's mineral potential and its capacity to mine its mineral resources.

Certain metals are considered strategic by many states around the world (for example, USA, Japan, South Korea and the European Union) because their supply is critical to industries in the aeronautics, electronics, clean energy and high-tech sectors, among others. These metals include the rare earths, lithium, niobium, tantalum and graphite. Mining and exploration projects in Québec could benefit from the interest of these states for such metals.

Québec is in a position to offer a stable supply of several of these metals. It has one of only three niobium-producing companies in the world, the other two being in Brazil. It is also the third largest producer of titanium dioxide and a graphite producer. In the near future, lithium may also be added to this list.

There is also potential in the province for minerals containing antimony, bismuth, cadmium, lead, selenium and tellurium. In the near future, advances in geoscientific knowledge and increased exploration efforts, particularly north of the 49$^{th}$ parallel, could lead to the discovery of new mineralization containing these metals.

Photo:
Richmont Mines

# TRANSFORMATION: EXISTING ACTIVITIES, PROJECTS AND INCENTIVE MEASURES

## A FAVOURABLE CONTEXT FOR TRANSFORMATION

Québec would like to increase its transformation activities, and it can count on some clear advantages to do so, namely its location bordering the northeast United States, its mineral potential, its infrastructure, its workforce, and its capacity to generate clean electric power.

The Government of Québec offers an investment tax credit for manufacturing and processing equipment. And depending on the type of investment project, it may also offer competitive rates for electric power.

The processing allowance provided for in the Mining Tax Act is intended to encourage mining companies to perform processing activities within Québec, such as concentration, smelting, refining, hydrometallurgy, pelletizing, and the production of steel powder and billets. The mining tax regime in force since January 2014[27] has enhanced this processing allowance.

Here are a few examples of metal production and transformation activities currently taking place in Québec.

- The Horne smelter produces primary copper anodes, which are refined by the CCR refinery into high-purity copper cathodes. These cathodes represent primary manufacturing products and are sold worldwide, particularly in the United States, although some are also transformed in Québec.
- Copper cathodes produced at the CCR refinery are converted into wire rod, which is in turn transformed into copper winding wire destined for manufacturers of converters, generators and traction motors in Québec, Ontario and the United States.
- In Québec, 144 companies manufacture copper parts or provide copper lining, plating, machining or polishing services.
- Primary zinc produced by the Canadian Zinc Electrolytic Ltd refinery is mainly used to make alloys (brass and bronze), and also for galvanizing. In Québec, 123 manufacturing companies use zinc.
- Rio Tinto Iron & Titanium (RTIT) produces titanium slag from ilmenite. Titanium slag is used to manufacture titanium pigment, the opacity agent in paint that gives it a white colour.
- RTIT also produces pig iron, some of which is sold to manufacture iron castings. A significant proportion is used to make steel, and some of the pig iron and steel is transformed into metal powders mainly destined for the automobile industry.
- Steel billets produced by RTIT are converted into wire rod. In Québec, this wire rod is used to manufacture steel wire, nuts and bolts. The steel billets are also sold to the petroleum industry, which uses them to manufacture needed parts.
- ArcelorMittal Montréal produces steel from iron pellets, and most of its supply comes from the Mont-Wright mine in Fermont and from scrap metal. Steel billets are transformed into steel bars and wire destined for North American markets, primarily for the construction and automobile industries.
- According to a directory published by the Centre de recherche industrielle du Québec (CRIQ), more than 2,000 companies manufacture steel products in Québec.

27 www.finances.gouv.qc.ca/documents/autres/en/AUTEN_NewMiningTaxRegime.pdf

## PRIMARY MANUFACTURING PLANT DEVELOPMENT PROJECTS

Nemaska Lithium is considering the development of a lithium hydroxide and carbonate production plant in Québec. The plant would use the concentrate from the company's Whabouchi mining project as feedstock.

Given the advanced status of many rare earth projects, the construction of a rare earth oxide production and separation plant in Québec is a distinct possibility. Many companies with rare earth projects in Québec have shown interest in this type of plant.

Matamec Explorations has a mining project in the Abitibi-Témiscamingue region, south of Rouyn-Noranda, which aims to produce 3,600 tonnes per year of mixed light rare earth carbonates and heavy rare earth chlorides. The company may add a separation plant.

Quest Rare Minerals has announced it plans on building a processing plant in Bécancour that will produce 10,400 tonnes per year of heavy and light rare earth oxides. Ore from the Strange Lake / B-Zone in northeastern Québec will be used as feedstock.

Commerce Resources has a project to set up a plant that will produce mixed rare earth carbonates in southern Québec. The concentrate (16,850 t/yr) will come from a mining operation 130 km south of Kuujjuaq.

Geomega Resources has a mining project 100 km north of Lebel-sur-Quévillon that aims to produce a mixed rare earth concentrate and a niobium concentrate. The company intends on separating the rare earths using electrophoresis.

## SUBSEQUENT PROCESSING AND MANUFACTURING ACTIVITIES

The province's processing plants and clusters may play a role in fostering the emergence of other manufacturing activities. Québec is in a good position to develop its processing and manufacturing industries, namely in traditional sectors such as copper, nickel and zinc, but also in non-traditional sectors such as rare earths and lithium.

Québec already stands out for its production of lithium components and batteries, not to mention its initiatives in electric vehicle development. Two companies in the province are currently active in this field: Blue Solutions Canada[28] and Johnson Matthey Canada[29]. So far, their lithium is sourced from outside of Québec.

Québec is intent on attracting international manufacturers, based largely on the strength of the province's electric vehicle industry, its green source of electricity and its mineral potential.



28 blue-solutions.ca
29 www.matthey.com

# FREQUENTLY ASKED QUESTIONS ABOUT QUÉBEC'S MINING SECTOR

## How are the powers shared between the Government of Québec and the federal government when it comes to the mining sector?

The way in which jurisdiction is shared between the federal and provincial governments depends on the sector. The management and framework of natural resource exploitation, which includes mining, fall exclusively under Québec's jurisdiction.

Nevertheless, the federal government has the right to oversee certain environmental impacts. Moreover, all companies established in Québec must pay taxes to both the provincial and federal governments.

## What is the regulatory process to approve a mining project, from the exploration stage to mine closure?

The *Mining Act* stipulates that a claim must be obtained before undertaking mineral exploration. A claim grants the holder the exclusive right to search for mineral substances on a well-defined piece of land. If the land is private, the claimholder must obtain written authorization from the landowner before accessing the land and carrying out exploration work. The claimholder must also advise the municipality and the landowner that a claim has been granted within 60 days following its issuance. The claimholder must also inform the municipality and the landowner about any work it will be performing at least 30 days beforehand. At all times, the claimholder must comply with the provisions of the *Environment Quality Act* and obtain all necessary authorizations and permits to do so. Other laws may also apply.

If a new deposit is discovered, the claim holder must obtain a mining lease under the *Mining Act* in order to exploit it.

Before obtaining a mining lease, a mining company must submit a rehabilitation and restoration plan to the MERN and have it approved. The application for the lease must be accompanied by a scoping and market study on processing in Québec. Upon granting a mining lease, the *Mining Act* allows the government, on reasonable grounds, to require the leaseholder to maximize economic spinoffs in Québec, including primary processing. The mining company must also obtain authorizations from the MDDELCC in accordance with the *Environment Quality Act*.

A financial guarantee is also required for site restoration purposes. It represents the anticipated costs of undertaking the work provided for in the rehabilitation and restoration plan. This guarantee must be deposited in three instalments: the first (50%) within 90 days of receipt of approval of the plan and at the time the mining lease is granted, and subsequent instalments (25% each) on the anniversary date of the plan's approval. Some exploration work will also require the deposit of a financial guarantee with the MERN.

The *Environment Quality Act* requires an environmental impact assessment in the case of a project for the construction and operation of a metal ore processing plant or the development and operation of a metal mine with a processing or production capacity of more than 2,000 tonnes per day, and in all cases of rare earth exploitation projects regardless of the processing or production capacity. Mining leases granted for a metal mine with a production capacity of less than 2,000 tonnes per day and leases to mine surface mineral substances in the case of peat extraction, or those required for industrial or commercial export activities, are subject to a public consultation held by the proponent of the project.

Once a mining lease has been issued, the leaseholder must set up a monitoring committee to foster the involvement of local communities in the project.

Upon cessation of mining operations, the operator may be required to obtain one or more certificates of authorization from the MDDELCC to undertake restoration work. The financial guarantee will be returned once the company has carried out all its rehabilitation obligations to the satisfaction of the MERN and the MDDELCC.

## Are the rights of foreign investors the same as those of Canadian investors?

In Québec and elsewhere in Canada, all investors are treated equally, whether they are domestic or foreign.

However, there are certain rules governing the takeover of Canadian companies by foreign interests.[30] For more information, consult the following website: www.ic.gc.ca/eic/site/ica-lic.nsf/eng/home.

## Must a mining company hire workers from a particular region or union? Can it bring in its own workers?

The Government of Québec encourages companies to hire Québecers living in nearby communities. Québec has skilled manpower in the mining industry, and these workers live primarily in mining regions. A company established in Québec may nonetheless hire workers from anywhere in Canada. It is generally not possible to bring in workers from outside Canada to fill positions that could be filled by Canadians, except in cases of recruitment difficulties.[31]

## Does Québec have standards to ensure the safety of workers in the mining sector?

Québec's occupational health and safety commission (Commission des normes, de l'équité, de la santé et de la sécurité du travail: CNESST) is responsible for the administration of the occupational health and safety regime. In particular, it is responsible for enforcing the Regulation respecting occupational health and safety in mines.[32]

Moreover, the mission of the Joint Health and Safety Association, Mining Sector (Association paritaire pour la santé et la sécurité du travail du secteur minier)[33] is to help workers and employers in the mining industry to eliminate at their source any hazards to the health, safety and physical integrity of workers.



30 www.bdp.parl.gc.ca/content/lop/researchpublications/cei-22-f.htm
31 www.emploiquebec.gouv.qc.ca/entreprises/recruter/recruter-de-la-main-doeuvre-hors-quebec
32 legisquebec.gouv.qc.ca/en/ShowDoc/cr/S-2.1,%20r.%2014
33 www.aspmines.qc.ca

## What mining associations are active in Québec?

Three mining associations are active in Québec: the Québec Mineral Exploration Association[34], the Association minière du Québec[35] and the Québec Peat Moss Producers Association[36].

## What are the roles and responsibilities of the ministries and organizations that deal with foreign companies wishing to invest in Québec?

The Ministère de l'Énergie et des Ressources naturelles: for anything relating to mineral exploration and mining (permits, titles, mining rights, etc.).

The Ministère du Development durable, de l'Environnement et de la Lutte contre les changements climatiques[37]: for anything relating to the environment and environmental impacts.

The Ministère des Finances[38] and the Ministère de l'Économie, de la Science et de l'Innovation[39], as well as Investissement Québec and its subsidiary Ressources Québec: for financial assistance, equity participation and general support for businesses.

## What are the laws and regulations that most commonly apply to mineral exploration and mining?

Acts and regulations of Québec

- *Mining Act*[40] (M-13.1) and *Regulation respecting mineral substances other than petroleum, natural gas and brine*[41] (M-13.1, r.2)
- *An Act Respecting Transparency Measures in the Mining, Oil and Gas Industries*[42] (M-11.5)
- *Mining Tax Act*[43] (I-0.4)
- *Sustainable Forest Development Act* (A-18.1) and *Regulation respecting standards of forest management for forests in the domain of the State* (A-18.1, r.7)
- *Act Respecting the Lands in the Domain of the State* (T-8.1)
- *Environment Quality Act* (Q-2), *Regulation respecting pits and quarries* (Q-2, r.7) and *Regulation respecting environmental impact assessment and review* (Q-2, r.23)
- *An Act Respecting Occupational Health and Safety* (S-2.1) *and Regulation respecting occupational health and safety in mines* (S-2.1, r.14)
- *Natural Heritage Conservation Act* (C-61.01)
- *An Act Respecting the Conservation and Development of Wildlife* (C-61.1)
- *Parks Act* (P-9)

Acts and regulations of Canada

- *Canadian Environmental Assessment Act* (L.C.2012, ch.19, art. 52)
- *Fisheries Act* (L.R.C. (1985), ch. F-14) *and Metal Mining Effluent Regulations* (DORS/2002-222)
- *Nuclear Safety and Control Act* and a number of implementing regulations (L.C.1997, ch.9)

N.B. The information in this section is provided for illustrative purposes only and has no legal value.

34 www.aemq.org
35 www.amq-inc.com
36 peatmoss.com/industries-and-partners
37 www.mddelcc.gouv.qc.ca
38 www.finances.gouv.qc.ca
39 www.economie.gouv.qc.ca
40 legisquebec.gouv.qc.ca/en/ShowDoc/cs/M-13.1
41 legisquebec.gouv.qc.ca/en/ShowDoc/cr/M-13.1,%20r.%202
42 legisquebec.gouv.qc.ca/en/ShowDoc/cs/M-11.5
43 legisquebec.gouv.qc.ca/en/ShowDoc/cs/I-0.4

Photo: MERN

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If you wish to get in touch with us or obtain additional information, please contact the international offices of Investissement Québec[44] or the Ministère des Relations internationales et de la Francophonie[45].

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| Other ministries – Offices in Québec | | | |
|---|---|---|---|
| **Name** | **Phone number** | **Email** | **Website** |
| Ministère de l'Énergie et des Ressources naturelles | 1 866 248-6936 | service.clientele@mern.gouv.qc.ca | www.mern.gouv.qc.ca |
| Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques | 1 800 561-1616 | info@mddelcc.gouv.qc.ca | www.mddelcc.gouv.qc.ca |

44 www.investquebec.com/fr/index.aspx?rubrique=40&page=1543
45 www.mrif.gouv.qc.ca/en/ministere/representation-etranger

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