

PERSPECTIVE

Quebec's mining industry is here to stay

The mining industry is sometimes thought of as a phoenix rising from the ashes every time the economic outlook is particularly favourable. However, this isn't the case. Despite significant fluctuations in metal prices in recent years, Quebec's mining industry is still active. Admittedly, the pace is less frenetic than when prices were at their peak, but at the end of 2016, there were still some 25 mines in operation and thousands of miners were working. The mining industry moves at its own pace. Does that mean it's a relic of the past? No, it's a part of today's world and intends to be here tomorrow.

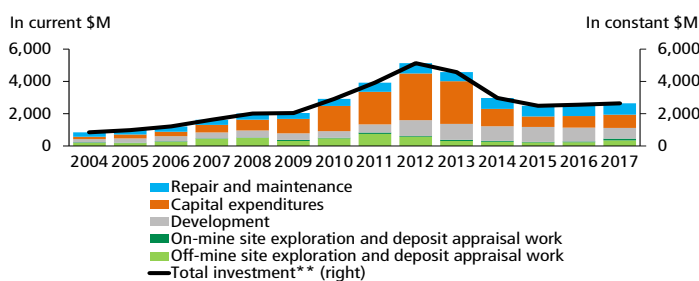
Still active despite setbacks

Quebec's mining industry represented 1.4% of Quebec's GDP in 2015 and accounted for 13,000 to 14,000 jobs in 2014.¹ It's an industry that can weather the storm. In the last few years, it has withstood several upheavals: significant fluctuations in metal prices, mine openings and closures here and abroad, political unrest in competing producing countries, tighter environmental standards and social acceptability, to name just a few. Nevertheless, in spite of these factors, mining is alive and well in Quebec. Some 25 mines were in production in 2015 (including those extracting non-metallic minerals (peat, stone, silica, mica, etc.), despite the fact that prices weren't exactly soaring.

A quick scan of investments in the mining sector in recent years reveals that they peaked in 2012 (\$5.1B), then dipped somewhat through 2015 (to \$2.5B, or slightly less than half). However, investments rose in 2016 (to just less than \$2.6B), thanks to exploration and deposit as well as mine complex development expenditures. We note an increase in both expenditure categories, which supported total investments. Intentions for 2017 indicate that this trend will likely be maintained (just over \$2.6B) (graph 1).

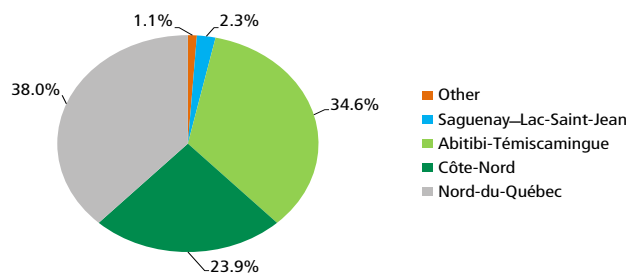
As can be guessed, three regions will see the most investment: Nord-du-Québec, Abitibi-Témiscamingue and Côte-Nord. Graph 2 provides an overview of investments in each region in 2015. Investments in Saguenay-Lac-Saint-Jean were less significant by comparison, but they were on the rise, primarily due to niobium extraction. Graph 3 on page 2 shows the

GRAPH 1
Evolution of mining investment by expenditure category



2004-2005: final data, 2016: preliminary data, 2017: intentions;
* IPIPI estimated at 112.7 for 2017 (2010 = 100).
Sources: Institut de la statistique du Québec and Desjardins, Economic Studies

GRAPH 2
Regional mining investment in 2016 – Three regions dominated the province



Due to rounding, percentages may not always appear to add up to 100%.
Sources: Institut de la statistique du Québec and Desjardins, Economic studies

¹ Three sources were consulted (Comité sectoriel de main-d'œuvre de l'industrie des mines, Ministère de l'Énergie et des Ressources naturelles du Québec and KPMG), and estimates appear to indicate that there were approximately 13,000 to 14,000 mining jobs in 2014.

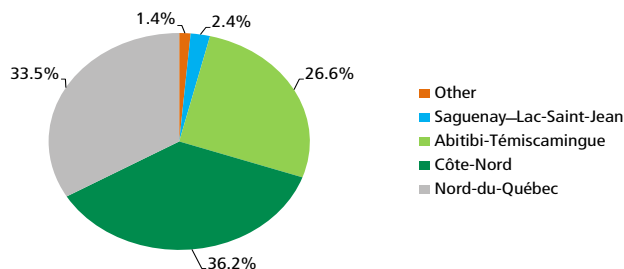
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NOTE TO READERS: The letters k, M and B are used in texts and tables to refer to thousands, millions and billions respectively.

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GRAPH 3
In 2011, Côte-Nord saw more than one-third of investments



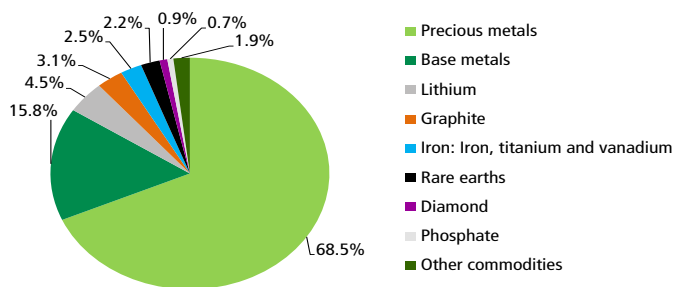
Due to rounding, percentages may not always appear to add up to 100%.
 Sources: Institut de la statistique du Québec and Desjardins, Economic studies

breakdown of investments in 2011, when the sector was buzzing. It reveals that each region's share has changed and while three regions are always dominant in Quebec, first place not necessarily held by the same all the time.

Where is the industry focused?

The media has talked a lot about iron and diamond mining in the last few years. However, precious metals (gold, silver, etc.) still account for the lion's share of exploration and deposit appraisal expenditures in Quebec. In 2016, they made up more than two-thirds (68.5%) of expenditures, followed by base metals (nickel, iron, copper, etc.) and other minerals (graph 4). In addition to these more traditional materials, lithium is increasingly in demand due to its use in electric car batteries. It accounted for 4.5% of the above expenditures last year.

GRAPH 4
Distribution of exploration and deposit appraisal work expenditures in 2016



Due to rounding, percentages may not always appear to add up to 100%.
 Sources: Institut de la statistique du Québec and Desjardins, Economic studies

In reality, some 30 metallic and non-metallic minerals (peat, stone, silica, mica, etc.) are extracted in Quebec. However, the majority of mining is focused on just a few minerals (gold and iron, in particular). Nevertheless, there are still possibilities for development. For example, graphite has many uses (metalworking, the auto industry, computer components, batteries for electric cars, etc.) and rare earths have countless applications, such as in high-tech products.

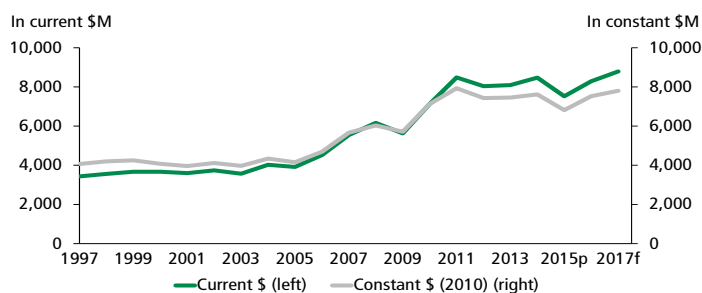
Opening and closing a mine isn't as easy as turning a key in a door. However, contrary to what one may initially think, there is still movement in the industry. Each year brings its share of openings and closures, which hinge on market conditions (other mines in operation, particularly elsewhere in the world), the depletion level of deposits, demand and global prices.

In 2015, no mine openings were reported in Quebec, but two gold mines closed in Abitibi-Témiscamingue. In 2014, the picture was a little different, with one opening (a gold mine in Nord-du-Québec) and three closures (a gold mine and lithium mine in Abitibi-Témiscamingue and an iron mine in Côte-Nord). In 2013, there were more openings (five) than closures (two). No year is identical to another. While prices play a key role in the decision whether to maintain or begin operations, other factors are also taken into consideration.

No charted course

The value of Quebec's mineral shipments has fluctuated over the past 10 years or so (graph 5). Despite a drop of close to 50% in investments between 2012 and 2015, the value of shipments did not follow suit. This bears out in data in both constant and current dollars. However, after steadily rising from 2005 to 2010, the value of shipments stagnated and then ran out of steam in 2015. The takeaway from these observations is that investments should never be confused with shipment values as they do not necessarily fluctuate in tandem.

GRAPH 5
The value of Quebec's mineral shipments rose somewhat in 2016*



* 1998-2015: final data, 2016: preliminary data, 2017: forecast.
 Sources: Institut de la statistique du Québec and Desjardins, Economic Studies

Moreover, there is no charted course for Quebec's shipments. In other words, we cannot automatically rank one substance over another, although we're confident that either gold or iron ore would take first place. In 2016, Quebec's shipment values raised as compared to the previous year (10.2%), but we don't have a detailed breakdown by product.

Challenges there too

The mining industry operates in a global context. Quebec is a small player and can't impose its own terms and conditions. In this regard, it has no influence on prices and must contend with

fluctuations in metal prices. However, although Quebec's mining industry has little impact globally, it's important to keep in mind that mining is a pillar of the economy in some of Quebec's regions.

The trials and tribulations facing the mining industry are global. Recruiting, training and retaining the workforce are sizeable challenges. The aging of the population is also having an impact. According to studies carried out in 2014 by the Comité sectoriel de main-d'œuvre (the sector workforce committee) for the mining industry on workforce needs for 2015 to 2025,² more than 10,000 jobs will need to be filled. This estimate is due to having to replace a portion of the workforce that will retire or change industries. It's also linked to the implementation of potential mining projects, the feasibility of which hinges on higher metal prices.

The committee estimates the greatest need will be for operators of specialized heavy equipment (such as diggers and trucks) and, to a lesser degree, for heavy machinery mechanics (including hydraulic mechanics and heavy equipment mechanics). This does not exclude other job categories that will be in demand (industrial mechanics, machine operators in mineral and metal processing, labourers, etc.).

Moreover, with the application of new technologies in all areas of the mining industry, work methods are changing, jobs are evolving and training is being adapted accordingly. Automation, remote-controlled operations and driverless vehicles are just a few of the changes taking place. Will this lead to a net loss of jobs? Not necessarily, as new jobs are being created, such as operators and equipment maintenance technicians, systems analysis technicians and operations planning technicians.

In addition, Quebec's mining industry must deal with other challenges. Among them, the deposit discovery rate has slowed down in recent years, which could cause the source of future development to dry up.

It's becoming difficult to diversify the industry when investments are primarily focused on precious metals, iron and base metals. Increasing the number and types of minerals extracted could spread out the risk, meaning the fluctuations associated with a strong dependence on one or a few substances would be more dispersed. Less traditional materials have been linked to new technologies and future development; these avenues have already begun to be explored. In Quebec, 9 of the current 30-odd projects involve the deposit appraisal of rare earths, lithium and apatite, among others.

These are just a few of the difficulties affecting the mining sector; the list goes on. For example, environmental concerns extend far beyond ending mining operations and restoring sites once operations cease. Environmental factors must be taken into account at every stage of a project. Infrastructures are also a determining factor, as well as social acceptability, which is becoming increasingly important. The mining sector is a key link in a long chain connecting processing, equipment manufacturers, and research and development, each of which is facing its own challenges.

Tomorrow's nuggets

What will the next few years look like? Initial signs indicate that investment intentions will be slightly higher in 2017. To avoid any confusion the following figures are in constant dollars. Exploration and deposit appraisal expenditures are expected to increase from \$254M in 2016 to \$405.2M in 2017. As is often the case, junior companies have a greater presence than major companies. However, major companies should increase their investments 1.7 times and junior companies 1.5 times as compared to 2016.

Recently, the French-language daily *Les Affaires* reported on possible developments in Quebec's mining industry.³ Industry representatives and experts identified five areas in Quebec as sites with the potential to become major mining centres, provided several conditions are met: ore quality, prices, financing, and logistical issues, such as transportation infrastructures.

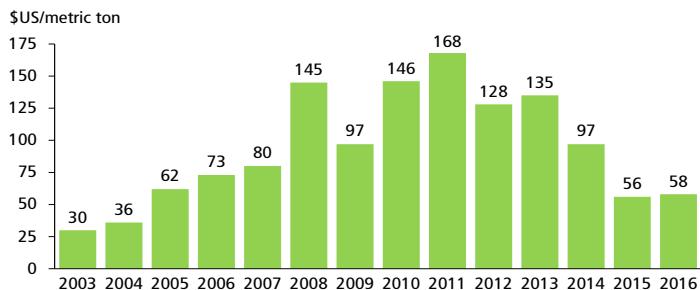
In the short term and over the course of 2017, investment intentions in mineral exploration and deposit appraisal are higher than in 2016 (+18.4 %) on average in Canada. This applies to Quebec, as well as Ontario, British Columbia, the Yukon, Manitoba, Newfoundland and Labrador, Alberta and Nova Scotia. This is just one portion of total investments in the mining sector, but it provides a glimpse of the mood in the industry.

Metal prices are central to decision making. However, an overview of price fluctuations for iron ore and gold since 2003 provides further insight into what can be deemed the mining industry's patience and its approach to risk assessment. Graphs 6 and 7 on page 4 illustrate the price fluctuations for these two metals between 2003 and 2016. Although some projects planned a few years ago were shelved, there were still some 25 mines in operation in Quebec as at December 31, 2016. Despite their fluctuations, 2016 prices remained higher than those at the start of the new millennium. However, 2017 prices remain to be seen and the economic climate is somewhat uncertain, which is par for the course for the industry.

² *Comité sectoriel de main-d'œuvre de l'industrie des mines, Estimation des besoins de main-d'œuvre du secteur minier au Québec 2015-2025*. 2015, 56 p.

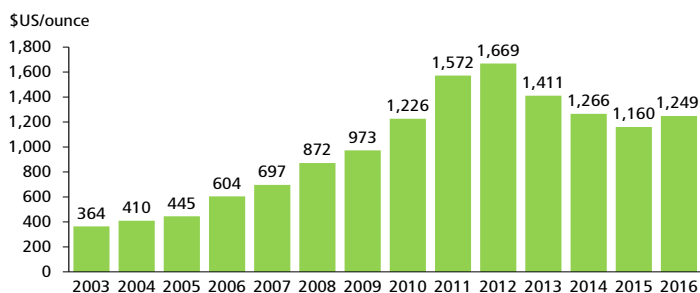
³ François NORMAND, *Où sont les futurs espoirs miniers au Québec?*, *Les Affaires*, n° 8, April 22, 2017, p. 8 and 9.

GRAPH 6
Iron ore prices have seen numerous fluctuations, but are still above 2003-2004 prices



Sources: IndexMundi and Desjardins, Economic studies

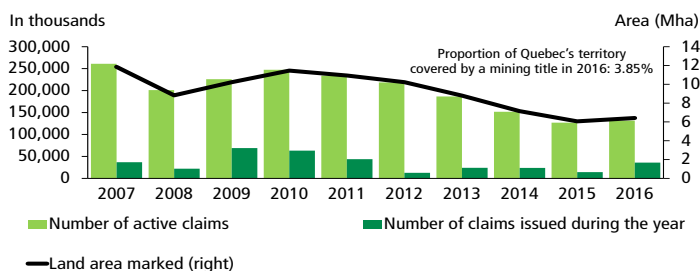
GRAPH 7
Gold prices have fallen, but are still above 2003-2004 levels



Sources: Datastream and Desjardins, Economic studies

Another indicator appears to suggest that we have already seen this cycle's low point. An increase in claims (mining titles) in 2016 (graph 8) could be a sign that confidence is gradually rebuilding. Though slight, there was a rise in the number of active claims as at December 31, 2016, as well as in claims issued during the year and the land area marked. At the same time, there has been an overall increase in raw material prices. It remains to be seen whether this trend will continue.

GRAPH 8
Evolution of mining claims, Quebec 2007-2016*



Mha: Million hectares.

* Number of active claims as at December 31 of each year.

Source: Ministère de l'Énergie et des Ressources naturelles

As for the economic outlook, the stronger growth of the U.S. economy in 2017 is a good sign. However, the president's clear intention to "buy American" does not bode well for a dramatic hike in Quebec exports in the next few years. Economic growth in China should resemble the post-recession years: moderate. The needs are there, but they're less urgent. Tension between global supply and demand for metals isn't comparable to what it was in the early 2000s when infrastructure and factory construction was booming in emerging countries. In addition, China is a major producer for minerals such as iron ore, gold and zinc, to name just a few. It is ideally positioned to both mine and purchase raw materials and plans to continue to do both. Australia is also a major competitor and has a number of promising projects. In short, competition is stiff.

Developments in and the application of new technologies are another promising avenue. Increased use of lithium, graphite and rare earths will promote operations here and elsewhere in the world. While there is a growing interest in recycling electronic products in order to reuse silver, gold, copper, lead and a wide range of rarer metals, Quebec's subsoil could meet increased needs in this regard. Furthermore, concerns over global warming have fuelled a search for "energetic" materials, which opens up new possibilities for the mining industry (lithium, in particular).

Here to stay

The mining industry moves at its own pace. While everything else is speeding up (communications, trade, consumption, etc.), each step involved in starting up a mine requires patience, a thorough analysis of the conditions that are conducive to setting up a site, and reflection. In short, it takes time. Is the industry a relic of the past? No, it's part of today's world and intends to be here tomorrow. The industry has updated its exploration, construction and extraction methods. Furthermore, it plays a central role in satisfying the current demand for new technologies (telecommunications, energy production, etc.) while continuing to meet traditional needs.

We need to recognize that in a world dictated by the need for instant action, the pace is different in the mining industry. At a time when everything feels like a race against the clock, its stride more resembles that of a marathon runner than a sprinter.

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