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LABOUR MARKET PROSPECTS FOR THE MÉTIS IN THE CANADIAN MINING INDUSTRY

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Labour Market Prospects for the Métis in the Canadian Mining Industry

Abstract

The objective of this report is to review the prospects for Métis employment in the mining industry brought upon by a looming wave of retirements; to determine potential barriers to Métis employment in the mining industry; and to identify actions and strategies that the Métis National Council (MNC) and Métis Aboriginal Skills and Employment Training Strategy (ASETS) agreement holders should adopt to take advantage of and overcome obstacles to employment opportunities in the mining industry. The Canadian mining industry accounted for somewhere between two and five per cent of nominal GDP in Canada – depending on which definition of the mining industry is used – in 2008. This industry, concentrated in rural and remote locations, represents an important potential source of employment for the comparatively large youthful and rural Métis population entering the labour market in the coming decades. The mining industry has unique locational dynamics and hiring practices, a highly productive and experienced but aging work force, and growth prospects that are heavily reliant on global demand. Skilled workers are needed to replace the mining industry’s soon-to-be-retired baby boomers and to replace other workers leaving the industry. The Métis have unique demographic characteristics, which could create competitive advantages for employment in the mining industry; however, they are at risk of being unable to take advantage of the upcoming job openings if they cannot meet the educational requirements for employment in that industry.

Labour Market Prospects for the Métis in the Canadian Mining Industry

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Labour Market Prospects for the Métis in the Canadian Mining Industry

Executive Summary

The objective of this report is to review the prospects for Métis employment in the mining industry brought upon by a looming wave of retirements; to determine potential barriers to Métis employment in the mining industry; and to identify actions and strategies that the Métis National Council (MNC) and Métis Aboriginal Skills and Employment Training Strategy (ASETS) agreement holders should adopt to take advantage of and overcome obstacles to employment opportunities in the mining industry.

Profile of the Métis Population

Before discussing the prospects for Métis in the mining industry, it is important to set out who are the Métis and discuss certain characteristics of the Métis population that are relevant to this report. In Canada, the Métis population is concentrated in the four Western provinces and Ontario (representing more than 85 per cent of all Métis in 2006). The following facts stood out from a review of Métis demographic and labour market characteristics:

- **Youthfulness:** The Métis population is much younger than the non-Aboriginal population, with more than one third of its population under the age of 20 in 2006. Among the non-Aboriginal population, less than a quarter of the population was under 20 years old. In addition, the Métis population in Manitoba, Saskatchewan, Alberta and British Columbia was younger than the Métis national average.
- **Overrepresentation in non-urban areas:** The Métis population is more concentrated in rural and remote locations than the general population. In 2006, 30.6 per cent of all Métis lived in non-urban areas, compared to only 19.0 per cent of the non-Aboriginal population. Even within urban areas, Métis tend to live in smaller centres.
- **Poor high school and university completion rates relative to non-Aboriginals:** The proportion of the Métis labour force with a university degree was 12.0 per cent in 2011, 14.3 percentage points below the proportion for the non-Aboriginal population. Additionally, the proportion of the Métis labour force with less than a high school education was almost double the proportion for the non-Aboriginal population in 2011 (18.4 per cent versus 10.4 per cent).

- **High participation in apprenticeships and other trades programs relative to non-Aboriginals:** In 2011, 14.6 per cent of the Métis labour force indicated that an apprenticeship or trades certificate or diploma was their highest level of education, 3.3 percentage points above the share for the non-Aboriginal labour force. For college diplomas, the respective shares were 20.0 per cent and 21.7 per cent.

The State of the Canadian Mining Industry

High metal and mineral commodity prices make it profitable for corporations to explore mineral deposits, open new mining establishments and increase output, all of which entail an increase in mining employment. Low prices have the opposite effect. Metal and mineral commodity prices are volatile and hard to predict. Such volatility is demonstrated by the 2009 recession, in which metal and mineral commodity prices fell 11.1 per cent according to the Bank of Canada's Metals and Minerals Commodity Price Index (MMPI). In 2010 and 2011, however, these prices rose by 18.5 per cent and 16.2 per cent respectively, before falling in 2012 by 3.8 per cent. The volatility of metal and mineral commodity prices makes the exploration and development of mineral resources an intrinsically risky activity.

Currently, the Canadian mining industry is experiencing a slump, which is expected to hit junior mining firms the hardest. According to Paul Wright, CEO of Eldorado Gold Corp., "the global mining industry seems to be slipping back into a period of adversity" as the growth of industrial production in China slows, reducing the demand for commodities and thereby causing commodity prices to soften. Firms with established mines can survive this dip in commodity prices that we are currently experiencing without many problems, but junior mining firms have been substantially injured as financial markets have almost completely cut off their access to capital.

Contrastingly, Pierre Gratton, President and CEO of the Mining Association of Canada (MAC), asserts that prices for many metals and minerals – including uranium, potash, copper, iron and coal – are still high enough to cover costs and therefore profit margins are comfortable for many mining firms. The prices of many metals and minerals are historically high (in real terms) even though they have been sliding recently.

As a direct consequence of this uncertain short-term outlook for the Canadian mining industry, the proportion of Canadian employers who plan to hire is only 8.0 per cent for mining according to a survey by Manpower, below the average of 12.0 per cent across all industries. Nonetheless, the MAC maintains that the long-term outlook for the mining industry is strong, due the rapid industrialization of developing countries which will keep mining prices at historically high levels. Nevertheless, mineral prices may soften somewhat as the growth of industrial production in developing countries like China slows. According to commodity price projections by Consensus Economics, of the nine metals that are relevant to the Canadians

mining industry for which they have long-term projections – coal, uranium, copper, nickel, zinc, iron ore, gold, and silver –, only uranium and zinc are expected to have higher prices, on average, during the 2017-2021 period.

The Make-up of the Canadian Mining Industry

By all measures the mining industry is a vital component of the Canadian economy. The mining industry accounted somewhere from 1.7 per cent to 3.9 per cent to total economy nominal GDP in 2008, depending on how the industry is defined. On top of that, Natural Resources Canada (NRCan) estimated that the industry was responsible for one fifth of total Canadian exports. Canada is also the largest exploration destination in the world with more than 2,200 exploration projects and expenditures on mineral exploration worth \$4.1 billion in 2012.

As the second largest country in the world, Canada has a diverse geology and a wide range of mineral resources. Currently, Canada produces around 60 metals and minerals. Compared to the rest of the world, Canada is the biggest producer of potash and ranks in the top five for aluminum, cadmium, cobalt, diamonds, molybdenum, nickel, platinum group metals, salt, titanium concentrate, tungsten, and zinc. The most important metals and minerals produced by Canada's mining industry in 2011 (as measured by their share in the value of overall Canadian mineral production) were potash (15.8 per cent), coal (14.0 per cent), iron ore (10.6 per cent), nickel (10.1 per cent), copper (10.0 per cent), and gold (9.4 per cent).

According to NRCan estimates of the value of metal and mineral production, Ontario was the leading producer in 2011 at \$10.7 billion or 21.2 per cent of national production, followed by Saskatchewan at \$9.2 billion (or 18.3 per cent), British Columbia at \$8.6 billion (or 17.1 per cent), Quebec at \$7.7 billion (or 15.4 per cent), and Newfoundland and Labrador at \$5.2 billion (or 10.3 per cent). Overall, these five provinces accounted for 82.2 per cent of the total value of Canadian metal and mineral production. Alberta and Manitoba, on the other hand, were not particularly important mineral producers, with respective output values of \$2.6 billion and \$2.1 billion.

Gold, nickel and copper production accounted for the largest shares of the total value of mineral production in both Ontario and Manitoba. In Saskatchewan, potash and uranium were by far the most important minerals. In Alberta, the metal and mineral mining industry was dwarfed by the province's oil and gas extraction industry – even though 70 per cent of Canada's coal reserves are located there and is the province is the country's largest producer and second-largest coal exporter (after British Columbia). Coal and copper are the most produced minerals in British Columbia, with coal representing over half of total mineral production revenues in the province.

Detailed maps produced by NRCan show that mining establishments and exploration activities, and therefore the mining workforce, are located primarily in remote areas.

Labour Market Trends in the Mining Industry

According to data from the Survey of Employment, Payrolls and Hours (SEPH), employment in mining and quarrying (except oil and gas extraction) (NAICS code 212) has been increasing over the last decade, in large part due to the robust growth in the prices of metals and minerals. After falling from 69.4 thousand in 1991 to 46.0 thousand in 2004, employment in mining and quarrying (except oil and gas extraction) grew dramatically over the 2004-2012 period (37.9 per cent or 17.4 thousand workers). This growth is a result of the strong global demand for minerals – especially from China and other developing countries – which has put strong upward pressure on prices. In 2012, 63.4 thousand Canadians were employed in the mining and quarrying (except oil and gas extraction) industry, up from 56.7 thousand in 2011.

Ontario's mining and quarrying (except oil and gas extraction) workforce has been and remains the largest in Canada. In 2012, 15.3 thousand individuals were employed in Ontario's mining industry, followed by British Columbia (11.6 thousand), Saskatchewan (8.9 thousand), and Alberta (4.5 thousand). Manitoba, for which the latest mining industry employment data estimates were for 2007, had the smallest workforce (1.4 thousand).

Since mines and exploration activities are concentrated in remote areas, mining employment is overrepresented in non-urban areas compared to other industries, with 28.6 per cent of the mining labour force located in non-urban areas in 2005 (vs. 19.7 per cent of the total experienced labour force). The proportion of the mining, quarrying, and oil and gas extraction labour force in non-urban areas ranked second among the two-digit NAICS industries in 2005, behind agriculture, forestry, fishing, and hunting.

Structure of Employment in the Mining Industry

There are over 120 unique careers in mining. These careers not only have vastly different educational requirements, but are also needed at different points of the mining process. The stages of the mining process (and related jobs) include: exploration (which employs geologists, prospectors, drill operators, camp staff, etc.); development (which employs construction workers, trades workers, engineers, etc.); operations (which needs drillers, blasters, underground miners, heavy equipment operators, financial officers, etc.); and closure/rehabilitation (which employs environmental monitors and technicians, tree planters, landscapers, etc.).

Over the life of a mine, mining firms are extremely interested in engaging with local communities, hiring local workforces, and using local businesses to provide essential goods and services. Working on a remote mine often involves working on-site for a certain time period and

then being transported off-site for a break. Hiring locally cuts down on transportation costs, as flying workers in from distant regions for a few weeks of work and then flying them back home is expensive. Nonetheless, mining firms are primarily concerned with getting the right talent; if they cannot satisfy this need locally, of course they will broaden their search for workers. As a result, it is imperative that local communities have the necessary skills to satisfy the demands of mining firms.

Job requirements in the mining industry are diverse, because there are many different mining careers. Some mining careers require university education (e.g., geologists or engineers), while others require a high school diploma, on-the-job training, or trades certificates (e.g., underground miners). Indeed, there are many paths one may follow to enter the mining industry.

According to the 2006 Census, the highest level of education for 20.7 per cent of the mining industry labour force was an apprenticeship or trades certificate or diploma, 8.9 percentage points above the average across all industries. In addition, merely 10.8 per cent of the mining industry labour force reported that their highest level of education was a university certificate, degree or diploma at the bachelor's level or above, 11.1 percentage points below the average across all industries. The relatively small share of the mining industry's labour force with a certificate, degree or diploma at the bachelor's level or above and the relatively large share with an apprenticeship or trades certificate or diploma are explained by the occupational makeup of the mining industry (i.e., most jobs require very specific skills and training that are not taught at universities).

Métis Participation in the Mining Industry

The mining industry is a laggard in terms of employing women and immigrants, with only 11.5 per cent of the workers being women and 8.1 per cent being immigrants in 2005 (compared to 47.3 per cent and 21.0 per cent in all industries, respectively). This is not the case for representation of the Métis in mining. In Canada, 1.2 per cent of the total labour force was Métis in 2005, compared to 3.1 per cent of the mining and quarrying (except oil and gas extraction) labour force. As such, the Métis are overrepresented in the Canadian mining industry. There were 1,900 Métis in the Canadian mining and quarrying (except oil and gas extraction) labour force in 2005. Of this total, Saskatchewan had the largest share (23.2 per cent), followed by Ontario (20.3 per cent), British Columbia (14.7 per cent), Manitoba (13.4 per cent), and Alberta (11.6 per cent). This overrepresentation is caused in large part by the proximity of Métis communities and population centres to mining establishments, which represents a major advantage for employment in the mining industry.

The poor educational performance of the Métis relative to the total Canadian population is a significant impediment to Métis employment in general; however, the relatively strong educational performance of the Métis in terms of receiving apprenticeships or trades certificates

or diplomas may assist their employment in mining. A small share of the mining industry's total labour force has a university education and a large share has an apprenticeship or trades certificate, since most mining industry jobs require very specific skills and training that can be obtained only through specialized college programs or on the job training. Consequently, the Métis are a good fit for employment in the mining industry. Nonetheless, many professional occupations in the mining industry require university education (e.g., geoscientists and metallurgical and materials engineers), but the share of the mining industry labour force with a university degree is still small relative to other industries.

The major impediment to Métis participation in mining is the gap in work readiness and essential skills between Aboriginal and non-Aboriginal Canadians. This gap, which is illustrated by the Métis population's large high school non-completion rate relative to non-Aboriginals, must be bridged in order to increase Aboriginal and Métis participation in mining. After Métis have the essential skills to enter the mining workforce, then they will be able to develop the necessary skills to work their way up in mining companies, as firms often provide financial support to workers interested in increasing their level of education.

Hiring Projections for the Mining Industry

Between 2013 and 2023, 145,870 workers are expected to be hired by the mining industry according to the Mining Industry Human Resources Council's (MiHR) baseline scenario. Of this total, 24,600 workers (or 16.7 per cent) will be accounted for by net employment growth, 67,180 workers (or 46.1 per cent) by retirements, and 54,100 workers (or 37.1 per cent) by non-retirement separation. The importance of this human resources challenge is reflected by a recent BDO survey of 132 mining executives across the U.S., Australia, Canada, South Africa and the UK, in which 79.0 per cent of respondents felt that "the lack of a skilled workforce will have a negative impact on their business this year." In order to meet its human resources challenges, the mining industry will need to engage with many different groups. According to MiHR, mining firms are primarily interested in engaging and enhancing the participation of two groups: women and Aboriginals.

A CSLS investigation of the employment requirements for the 30 most-in-demand mining industry occupations determined that 53 per cent of job openings from 2011 to 2021 require more than a high school education. Apprenticeships and trades certificates will be an important qualification for individuals seeking a career in the mining industry, as 31 per cent of the top 30 occupation's total job openings by 2021 require this level of education. The proportion of the top 30 occupation's total job openings requiring a college diploma below bachelor level is 12.0 per cent. The proportion of the top 30 occupation's total job openings requiring at least a bachelor's level university degree is only 10 per cent. Even though 45.1 per cent of job openings from 2011 to 2021 will require only the completion of secondary education, 58.6 per cent of these jobs involve intensive on-the-job training lasting months.

Opportunities for and Barriers to Métis Employment in the Mining Industry

Compared to non-Aboriginal Canadians, Métis population are more likely to have an apprenticeship or trades certificate and to be overrepresented in rural and remote areas near mining developments. These characteristics are competitive advantages for Métis employment in the mining industry. Nonetheless, the Métis are at risk of being unable to take advantage of the upcoming job opening due to many factors:

- **Lacklustre levels of educational attainment:** The share of the Métis labour force with less than a high school education was almost double the proportion for non-Aboriginal Canadians in 2011. Mining firms are willing to train new workers in entry-level positions, but they usually require a high school diploma or an equivalent at a minimum. In addition, the proportion of Métis with a university degree at the undergraduate level or above is small relative to the proportion for non-Aboriginals Canadians.
- **Immobility:** A major issue for Métis living in remote areas – those nearest to mining sites – is poor access to post-secondary institutions. Some Métis may not own cars, and therefore are unable to commute to nearby schools. Other Métis may live too far from schools to commute and cannot afford the costs associated with going away to school. In addition, some Métis cannot afford to commute to or relocate near a mine in order to enter the mining industry through an entry-level position. This “proximity barrier” to education and employment can prevent some Métis from participating in the mining industry.
- **Other financial barriers to schooling:** Like many non-Aboriginals Canadians, some Métis cannot afford to go to school. Métis are much more likely to suffer from financial barriers to education than the average Canadian because their average household income is lower. In addition, Métis do not receive federal funding for post-secondary education to the same extent as Canada’s First Nations and Inuit.
- **A lack of awareness of the job opportunities in mining:** Another major barrier to Métis mining employment can be a general lack of awareness of the career opportunities in that industry. If Métis are not aware of the different careers that mining has to offer or what mines are located nearby, they are unlikely to try to enter the mining workforce through an entry-level position or receive the education necessary to pursue more skilled mining careers.

Existing Programs and Policies Relevant to Métis Participation in the Mining Industry

There are numerous avenues through which Aboriginal participation in the mining industry is promoted in Canada. Métis governments have been active in labour market

development since 1996 when Ottawa first devolved responsibilities for Aboriginal labour market programs to representatives of the Aboriginal peoples in Canada. HRSDC provides funding so that the Métis Nation may develop labour market services through two main programs:

- **Aboriginal Skills and Employment Training Strategy (ASETS):** ASETS is now the federal government's key Aboriginal labour market strategy. It integrates Aboriginal labour market programming under a single umbrella. In general, the purpose of ASETS is to assist Aboriginal people to prepare for, find, and keep jobs. The strategy delegates control and responsibility for the design and delivery of labour market programs to the local ASETS agreement holders given that they meet broad HRSDC-defined objectives. Since ASETS programming differs by provider, it is impossible to give a detailed summary of the services provided by ASETS agreement holders. While most funding is directed to unemployed clients, skills upgrading can be provided to underemployed individuals, self-employed individuals, or fully employed individuals for the purpose of meeting local labour demands and improving the client's ability to retain employment.
- **Skills and Partnership Fund (SPF):** The SPF, which was launched in the 2010-11 fiscal year, is detached from but complementary to ASETS. The SPF is available to all Aboriginal organizations, not just Aboriginal agreement holders. In general, Aboriginal organizations can receive funds through the SPF to create labour market programs in partnership with other organizations (e.g., schools or firms). According to the HRSDC, the SPF has three functions: "driving innovation in service delivery and systems through partnership; responding to economic partnership opportunities with targeted labour force development initiatives; and addressing program delivery weaknesses and/or gaps in Canada's network of Aboriginal organizations that provide labour market services."

The Métis National Council (MNC) is an umbrella organization that has represented the Métis Nation nationally and internationally since 1983. The MNC's mandate and authority comes from the elected leaders of the Métis Nation's governments from Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. More specifically, the MNC represents the Métis Nation of Ontario (MNO), the Manitoba Métis Federation (MMF), Métis Nation – Saskatchewan (MN–S), the Métis Nation of Alberta (MNA), and Métis Nation British Columbia (MNBC). Each of these Métis governments provides ASETS programming. In addition, many provide programs in partnerships with other organizations through the SPF. Together, these ASETS providers manage approximately \$55 million annually. These Métis organizations have annual budgets ranging from \$6 million to \$13 million, and operate province-wide with many regional offices as well as a central office. Métis ASETS providers each offer a unique set of programs, but certain labour market programs are common including:

- **Single Seat Purchase:** providing financial support to eligible clients interested in pursuing a course of study at a recognized educational institution;
- **Targeted Wage Subsidy:** providing a wage subsidy to employers who provide on-the-job training and/or job experience to an eligible client for a specific period of time;
- **Bursaries:** the establishment of endowments at post-secondary institutions for the purpose of providing bursaries to Métis students; and
- **Project-Based Funding:** funding specific and sometimes customized training for a group of eligible clients in collaboration with a third party service provider.

The *Métis Mining Strategy* is the clearest example of an ASETS holder working to enhance Métis participation in the mining industry. The MNO started the Strategy in 2012 with SPF funding; it offers support for education, training and CO-OP placements to Aboriginal students who want to pursue a career in the mining industry. Under this program, support is provided for tuition, books and supplies, safety equipment, travel, living allowance, and relocation costs. MNO employees at all local offices provide information about the Métis Mining Strategy to potential clients. The Métis Mining Strategy is based on partnerships with educational institutions and the mining industry (including companies, subsidiaries and contractors).

In addition to the *Métis Mining Strategy*, the MNO provides more general labour market services to Aboriginals as part of the ASETS framework. All Métis ASETS providers offer labour market development services to the Métis – including labour market guidance and access to skills training (which involves the funding of and development of partnerships with schools, firms and other organizations to provide co-operative education opportunities, occupational and/or skills trainings, and apprenticeship training) – with the intention of helping Métis achieve self-sufficiency through lifelong careers.

Key Strategies for Enhancing Métis Participation in Mining

The Métis have unique demographic characteristics, which create competitive advantages for employment in the mining industry and allow them to benefit from the high level of forthcoming job openings; however, the Métis may be unable to gain from the upcoming wave of job openings due to the impediments mentioned earlier. Actions and strategies that the MNC and Métis ASETS agreement holders should adopt in order to take advantage of and overcome obstacles to employment opportunities in the mining industry include:

- **Assisting Métis without a high school diploma (or equivalent) to receive one:** This is vital, because 45 per cent of job openings in the mining industry in the next decade will require the completion of secondary education at a minimum and the remaining jobs will require higher levels of education. One would be hard pressed to find a mining job opening that does not require at least a high school diploma. The ASETS framework already includes providing basic skills training to Aboriginals clients. The mining industry is more likely than others to hire individuals with only a high school education, as they provide rigorous on-the-job training for a significant number of entry-level jobs. After ensuring that Métis can qualify for an entry-level position at a mining firm, then they will be able to develop the necessary skills to work their way up through the company.
- **Increasing Métis post-secondary completion rates for programs relevant to mining (with an emphasis on apprenticeships) by developing information-sharing partnerships with schools and mining firms:** In order to ensure that the Métis have the post-secondary education required by mining firms, information-sharing partnerships with the mining community and educational institutions must be built. Ideally, partnerships will develop in which mining firms communicate to Métis ASETS providers what jobs they expect to become available and what qualifications are required for these jobs. Communication between the mining industry and Métis ASETS agreement holders is needed to determine where the latter's energy should be directed. This information can help the Métis ASETS agreement holders give their clients first-class advice on what mining careers they should pursue. In addition, information sharing with educational institutions ensures that Métis ASETS providers know what qualifications are necessary for each mining career and how/where their clients can obtain those qualifications. If Métis ASETS providers do not know what mining industry jobs are forthcoming, what the requirements for these jobs are and how/where to fulfill these requirements, they will not be able to provide adequate advice to Métis interested in pursuing a career in mining.
- **Ensuring Métis access to co-operative education, apprenticeships, and other employment opportunities:** Métis ASETS providers must ensure that Métis have access to co-operative education, apprenticeships and other employment opportunities in order to increase Métis participation in mining. For Métis enrolled in mining-related programs at school having previous work experience and contacts in the mining industry is a major asset. Crossing the school-to-employment threshold is a daunting challenge for graduates without previous work experience in the industry or profession they are interested in. Métis who have worked for a mining firm as part of a co-op program will probably have an easier time finding a job. For Métis interested in pursuing a career in mining that involves an apprenticeship, it is often difficult to find an employer willing to take on an apprentice. Métis ASETS providers should devote a great deal of resources to matching

would-be apprentices with employers. It is important to note that there are many different careers included under the umbrella term “apprenticeships and trades certificates”. For Métis who already have a mining-related degree, it can be challenging to find a job. Métis ASETS providers should help these individuals find employment in the mining industry, which requires having information-sharing relationships with mining firms. A job-matching service is also needed for Métis who want to find an entry-level position.

- **Developing project-based partnerships with schools and mining firms to create programs through which Métis receive mining-related training and work experience:** In order to ensure Métis access to co-op jobs and apprenticeships, Métis ASETS agreement holders should develop project-based partnerships with mining firms, schools, and other appropriate organizations. Funds to develop project-based partnerships can be acquired through the Strategic Partnership Fund (SPF). These partnerships are based on the creation of programs through which Métis receive mining-related training and work experience. To assist Métis pursue mining careers, ASETS agreement holders should develop project-based partnerships with the following organizations: mining firms to ensure access to co-op jobs for Métis students and employment opportunities for Métis would-be apprentices; and schools to guarantee Métis access existing educational programs or to create customized training programs. It may make sense for other organizations to be involved in the project, depending on the kind of education and training that the project emphasizes. The MNO’s *Métis Mining Strategy* is a model of how Métis ASETS agreement holders can promote Métis participation in the mining industry through project-based partnerships. Another example of an effective project-based partnership is the Gabriel Dumont Institute’s *Aboriginal Apprenticeship Initiative*, which offers job coaching, follow-up support to participants, wage subsidies and employer access to the Métis labour pool would-be apprentices. Cameco, a major uranium mining firm, has already employed apprentices through this Initiative, and has suggested that it is interested in employing more. The *Aboriginal Apprenticeship Initiative*, however, is not specifically directed at mining careers. Not all types of trades workers are employed by the mining industry, so it is important that ASETS agreement holders create project-based partnerships like the *Aboriginal Apprenticeship Initiative* but with more emphasis on mining-related trades and apprenticeships.
- **Promoting mining careers more actively to ASETS clients and within the Métis community:** A major impediment to mining employment can be a general lack of awareness of the career opportunities in that industry. Métis ASETS agreement holders must make an effort to promote mining careers to their clients, especially those in mining-intensive regions; they should both promote a career in mining to their members and in their local communities through an advertising campaign, actively promote mining careers to Métis who receive ASETS programming (especially youth), and have the

capacity to advise individuals interested in a mining career on what qualifications they should receive and from where. A great deal of information concerned with educational requirements for specific mining industry occupations is already accessible through MiHR's website. In addition, the MiHR has a great wealth of documents and videos that promote and describe a diverse array of careers in the mining industry.

Conclusion

There is a great opportunity for the Métis to increase their participation in the mining industry in the coming decade, but Métis prospects for mining employment are hindered by the following factors: the Métis population's poor overall educational performance, especially in terms of high school completion; the lack of access to educational, training, apprenticeship and co-op programs relevant to mining industry occupations; and underdeveloped partnerships between Métis ASETS agreement holders and the mining industry. In order to overcome these hindrances, the MNC and Métis governments should: redirect existing human resources infrastructure in order to promote mining careers to Métis and advise Métis interested in a mining career; and develop information-sharing and project-based partnerships with mining firms, schools and other organizations to ensure Métis access to mining-related school programs, apprenticeships, on-the-job training and co-op jobs.

Labour Market Prospects for the Métis in the Canadian Mining Industry¹

I. Introduction

As noted in the 2013 Federal Budget released on March 21st, “with growing opportunities for resource development, particularly in more remote areas of the country, businesses seeking to develop these projects are increasingly providing training, including trade programs and pre-employment training for local Aboriginal communities, as well as making other efforts to ensure that these same communities are able to benefit from economic development opportunities.”² This is not a politically-motivated statement. In fact, it is a bipartisan view as Bob Rae, interim leader of the Liberal Party of Canada, stated in a recent interview with *The Globe and Mail* that “the aboriginal population is going to be a critical work force. They live in the north, they understand the north and, increasingly, in forestry and mining, you’re seeing a lot of employers saying we have to engage here, because it’s in our interest to do so, and it’s in the interests of the aboriginal people.”³ This recognition of the important role for Aboriginal peoples in natural resources development is illustrated by the Mining Industry Human Resources Council (MiHR), a national industry council for the Canadian mining industry, which has numerous initiatives promoting Aboriginal participation in mining.

This report investigates Métis participation in the Canadian mining industry and provides specific recommendations to the Métis National Council (MNC) and Métis ASETS agreement holders – those who provide Aboriginal Skills and Employment Training Strategy (ASETS) programming – for increasing that participation. Job openings in the mining industry, brought upon by the impending retirement of workers from the baby boom generation, are a critical opportunity for the Métis for two reasons. First, both the Métis population and mining industry employment are overrepresented in rural and remote locations. Second, the Métis population is quite youthful compared to the non-Aboriginal population, making it a key supplier of the labour required to meet the mining industry’s labour demand in the coming decade. The Métis population’s relative youth and proximity to mining-intensive regions are comparative

¹ This report was commissioned by the Métis National Council (MNC). The conclusions of this report were reached by the authors independently of the MNC. The views contained in this report do not necessarily represent the opinions of the MNC. We would like to thank the following people for their participation in key informant interviews: Pierre Gratton, President and CEO of the Mining Association of Canada; Martha Roberts, Director of Research at Mining Industry Human Resources Council (MiHR); Melanie Sturk, Director of Attraction, Retention and Transition at MiHR; Gerry Pelletier, former Executive Director of Mining Industrial Training and Education Council; Robert Telewiak, former Vice President for Environment and Public Safety at Falconbridge Ltd.; Chris Paci, Manager of Education and Training at the Métis Nation of Ontario (MNO); Jennifer St. Germain, Director of Education and Training at the MNO; Lee-Anne Van Buekenhout, Métis Mining Strategy Project Coordinator at the MNO; Scott Carpenter, Manager of Projects and Partnerships at the MNO; and Tammy Webb, Manager of Labour Market Programs at the MNO.

² Government of Canada, “Jobs, Growth and Long-term Prosperity: Economic Action Plan 2013,” 21 March 2013. <http://www.budget.gc.ca/2013/doc/plan/budget2013-eng.pdf>.

³ Dawn Calleja, “Bob Rae: Let them in, help them work,” *The Globe and Mail*, 7 February 2013

advantages for its employment prospects in the mining industry; however, Métis participation in an industry that increasingly requires technical skills and knowledge may be held back by their relatively poor levels of educational attainment and other barriers.

This report is divided into eleven sections. The first two sections provide the definitions and data sources used in this report. The third section has a brief summary of Métis social and legal history, as well as a discussion of the characteristics of the Métis population relevant to this report. In the fourth section, the nature of the mining industry and its role in the Canadian economy is investigated. The fifth section is dedicated to an analysis of current and historic trends in the mining industry labour force. The next section presents a discussion concerning the structure of employment in the mining industry (in terms of its occupational and educational makeup as well as the role of unions). In the seventh section, current and historic trends of Métis participation in the mining industry are examined. The eighth section provides an overview of hiring projections for the mining industry and overviews the educational requirements for the mining industry occupations that are expected to hire the most workers. In the ninth section, a set of stylized facts vital to an understanding of the opportunities for, barriers to, and unknowns regarding the prospects for Métis employment in the mining industry is developed. A synthesis of these stylized facts is also presented. In section ten, the effect of Impact and Benefit Agreements (IBAs) on Aboriginal mining employment and the role of the MNC and Métis ASETS agreement holders in providing labour market programming are studied. After indentifying the current policy environment, specific policies that the MNC and Métis ASETS agreement holders should adopt to enhance the participation of the Métis in the mining industry are recommended in the final section.

II. Definitions

A. The Mining Industry

According to the North American Industry Classification System (NAICS), mining activities are included under mining, quarrying, and oil and gas extraction (NAICS code 21). This sector is the sum of the following components: oil and gas extraction (NAICS code 211), mining and quarrying (except oil and gas extraction) (NAICS code 212), and support activities for mining, quarrying, and oil and gas extraction (NAICS code 213). Strictly speaking, mining activities are classified under NAICS code 212 - mining and quarrying (except oil and gas extraction). However, NAICS code 21 is often used to study the mining sector simply because official data are much more abundant at the two-digit NAICS level than at the three-digit level. Unfortunately, the inclusion of oil and gas extraction activities in this aggregate makes it more difficult to understand what is happening to mining in particular.

The narrowest definition of the mining industry is mining and quarrying (except oil and gas extraction) (NAICS code 212), which “comprises establishments primarily engaged in

mining, beneficiating or otherwise preparing metallic and non-metallic minerals, including coal.”⁴ This definition can be expanded to include support activities for mining, quarrying, and oil and gas extraction (NAICS code 213); however, this NAICS industry cannot always be disaggregated into its mining and quarrying and oil and gas extraction components. Support activities for mining and quarrying – defined as the sum of contract drilling (except oil and gas) (NAICS code 213117) and other support activities for mining (NAICS code 213119) – includes “establishments primarily engaged in providing support services, on a contract or fee basis, for the mining and quarrying of minerals” such as drilling, exploration, or draining mines.⁵ Support activities for mining and quarrying is not an official NAICS industry, but it is occasionally used in Statistics Canada’s gross domestic product (GDP) estimates under NAICS code 21311B.

The sum of mining and quarrying (except oil and gas extraction) (NAICS code 212) and support activities for mining and quarrying (NAICS code 21311B) can be referred to as “primary mining”, as it represents industries specifically devoted to mineral extraction; this aggregate better represents primary mining industries than mining and quarrying (except oil and gas extraction). Unfortunately, employment estimates for support activities for mining and quarrying are not available. Therefore, analyses of primary mining employment are limited to mining and quarrying (except oil and gas extraction) (NAICS code 212).

In addition, many organizations – like the Mining Association of Canada (MAC) and Mining Industry Human Resource Council (MiHR) – consider the oil sands to be an example of primary mining, as oil is extracted using many of the same processes, techniques, skills, and technology as metal and mineral mining. Nonetheless, oil sands production – which is classified under oil and gas extraction (NAICS code 212) – is not included in this report’s analysis.

A broader definition of the mining industry can be obtained by looking beyond mining and quarrying to include primary metal manufacturing (NAICS code 331), fabricated metal manufacturing (NAICS code 332), and non-metallic mineral product manufacturing (NAICS code 327). Such an aggregation, dubbed “mining and minerals manufacturing”, is used by Natural Resources Canada (NRCan) and the MAC.

In their “Canadian Mining Industry Employment and Hiring Forecasts” for 2011, MiHR breaks the mining industry into the following phases: exploration, development, extraction, processing, and reclamation.⁶ MiHR included the following NAICS industries in the mining

⁴ Statistics Canada (2012), “North American Industry Classification System (NAICS) Canada 2012,” <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVDDetail&db=imdb&dis=2&adm=8&TVD=118464&CVD=118466&CPV=212&CST=01012012&MLV=5&CLV=2&CHVD=118467&D=D>

⁵ Statistics Canada (2013), “North American Industry Classification System (NAICS) Canada 2012,” <http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVDDetail&db=imdb&dis=2&adm=8&TVD=118464&CVD=118468&CPV=21311&CST=01012012&MLV=5&CLV=4&CHVD=118471&D=D>

⁶ Mining Industry Human Resources Council (2011), “Canadian Mining Employment and Hiring Forecasts,” page 1, http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

industry: mining and quarrying (except oil and gas extraction) (NAICS code 212); support activities for mining, quarrying, and oil and gas extraction (NAICS code 213), although only the mining and quarrying component was included; iron and steel mills and ferro-alloy manufacturing (NAICS code 3311), alumina and aluminum production and processing (NAICS code 3313); and non-ferrous metal (except aluminum) production and processing (NAICS code 3314).⁷ The last three NAICS industries mentioned are industry groups classified under primary metal manufacturing.

Using the MiHR definition of the mining industry is problematic, however, because it includes primary metal manufacturing activities, which are less relevant to Métis than mining and quarrying (except oil and gas extraction) (NAICS code 212).

Throughout the sections of this report that provide an overview of the mining industry in terms of employment and output, an effort is made to use mining and quarrying (except oil and gas extraction) (NAICS code 212) and the MiHR definition of the mining industry. Hiring projections are available for both definitions of the mining industry. When the MiHR definition and mining and quarrying (except oil and gas extraction) cannot be used due to data unavailability, the nearest alternative definition for which data are available is used (i.e., mining, quarrying, and oil and gas extraction (NAICS code 21)).

Since employment estimates for the mining and quarrying component and the oil and gas extraction component of support activities for mining, quarrying and oil and gas extraction (NAICS code 213) are not accessible, the MiHR definition used in the sections of this report that analyze the mining industry in terms of employment and output relies on NAICS code 213 instead of just its mining and quarrying component. Consequently, we include the oil and gas extraction component of NAICS code 213 in the MiHR definition. The vast majority of support activities for mining, quarrying and oil and gas extraction (NAICS code 213) is devoted to its oil and gas extraction component, which greatly damages our ability to make substantive claims about the mining industry when using the MiHR definition of the mining industry. Despite this problem, MiHR's hiring projections for the mining industry only include the mining and quarrying component of support activities for mining, quarrying and oil and gas extraction (NAICS code 213) as they were able to disaggregate this industry.

B. The Métis

In the Canadian statistical system, Métis identity is based entirely on self-identification. There is no question on formal Métis membership. The Métis population thus encompasses all individuals who decide to self-identify as Métis. In the last two censuses, the number of

⁷ Support activities for mining, quarrying and oil and gas extraction (NAICS code 213) was included in the MiHR's definition of the mining industry in their "Canadian Mining Industry Employment and Hiring Forecasts" for 2010; however, they were able to exclude the oil and gas component in the subsequent forecasting report.

Canadians identifying as Métis has blossomed, with the Métis population almost doubling between 1996 and 2006. According to Arsenault and Sharpe (2009), the increasing self-identification of Métis points to a growing awareness of the historical importance of Métis across Canada and was also spurred in part by the formal recognition of certain Métis rights. The amplified rate of Métis self-identification poses significant statistical challenges and makes tracking changes in the Métis population difficult.

The Métis population is concentrated in five provinces: Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. In order to take into account the particularities of different Métis communities, the analyses in this report look not only at the Métis population as a whole, but also at the Métis population in each of these five provinces.

III. Data Sources

This report is based on data from three sources: Statistics Canada, NRCan's Minerals and Metals Division, and MiHR. Gross domestic product (GDP) and labour force estimates by NAICS industry were obtained from Statistics Canada through CANSIM. Data on demographic and labour force characteristics of the Métis were obtained from the Census as well as from other Statistics Canada surveys.

The labour force estimates used in this report are provided by Statistics Canada and come from three sources: the Census, the Labour Force Survey (LFS), and the Survey of Employment, Payrolls and Hours (SEPH). The Census is used for a detailed examination of Métis participation in mining. In addition, Census estimates for the size of the labour force by four-digit NAICS industry, National Occupation Classification for Statistics (NOC-S) occupational categories, age group, and educational attainment are publically available; however, these estimates are not broken down by Aboriginal identity. We acquired a custom tabulation based on the 2006 Census from Statistics Canada that provides estimates for the size of the Métis labour force broken down by four-digit NAICS industry, NOC-S occupational categories, area of residence, and educational attainment. Thus, Census data are used to conduct a detailed examination of mining employment for both the general population and the Métis population.

The LFS offers labour force estimates by Aboriginal identity, educational attainment, age group, and NAICS industry; however, NAICS industries were only broken down to the two-digit level, rendering this data source undesirable for detailed examinations of the mining industry. Consequently, the LFS is occasionally used to compare the roles of Métis and non-Aboriginals in the two-digit NAICS industry relevant to the mining industry (i.e., mining, quarrying, and oil and gas extraction). It is important to note that LFS estimates are only for off-reserve Aboriginals, which is a much smaller issue for the Métis than First Nations as few Métis live on reserves.

SEPH provides data at a more disaggregated level (in terms of NAICS industries) than the LFS, but unlike the LFS its estimates are not available by Aboriginal identity. SEPH estimates are used for a detailed examination of overall mining industry employment trends over time, since data for a reasonably long time period (1991-2011) are available.

It is important to note that SEPH and LFS employment estimates used in this report differ for conceptual and methodological reasons. According to Statistics Canada, “SEPH provides information related to occupied jobs based on a census of administrative data from businesses whereas LFS provides information on the employment characteristics of individuals based on a survey of households.”⁸ Other factors explaining the difference between SEPH and LFS estimates include: “degree of coverage of industries and the self-employed, treatment of multiple-job holders, and the survey reference period.”

A measure of mining industry output used in this report in addition to Statistics Canada’s GDP estimates is the mineral production data published by NRCan’s Minerals and Metals Division. These data, which reflect the value of mineral production in current dollars, include the production of metallic minerals, non-metallic minerals, and coal.⁹ Thus, the terms ‘minerals’ and ‘metals and minerals’ are used as synonyms throughout this report to refer to the aggregate of metallic minerals, non-metallic minerals, and coal. The NAICS industry most identifiable with National Resource Canada’s mineral production is mining and quarrying (except oil and gas extraction).

The hiring projections for the mining industry used in this section are taken from MiHR’s “Canadian Industry and Hiring Forecasts” published in the summer of 2011 (for the 2011-2021 period) and their “Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook” published in May 2013 (for the 2013-2023 period). MiHR’s reports provide job openings forecasts according to contractionary, baseline and expansionary scenarios. MiHR’s 2013 forecast differs from its 2011 counterpart in many significant ways; the 2013 forecast is based on an updated methodology, including a new definition of the mining industry in terms of NAICS codes (i.e., architectural, engineering and related services (NAICS code 5413) is now included).¹⁰ In addition, MiHR’s 2013 report includes hiring requirements for the four stages of mining (i.e., exploration and advanced development, extraction, processing, and support services for exploration and mining); however, it only provides forecasts for Canada as a whole, not by region. MiHR’s 2013 forecast offers the most up-to-date projections for hiring, employment growth, retirements and non-retirement separation for the mining industry; these

⁸ Statistics Canada (2009), “Payroll employment, earnings and hours: Comparing SEPH and LFS,” <http://www.statcan.gc.ca/daily-quotidien/090930/dq090930b-eng.htm>

⁹ MiHR’s forecasts are based on assumptions concerning the following variables: labour productivity growth, metal and mineral commodity prices, retirement rates, and non-retirement separation rates. For a discussion on how the mineral production values are computed, see <http://www.nrcan.gc.ca/minerals-metals/business-market/canadian-minerals-yearbook/2009-review/4065>.

¹⁰ For more information on the methodology used by MiHR in their 2013 hiring projections, see http://www.mihr.ca/en/resources/MiHR_10_Year_Outlook_2013.pdf.

forecasts are also broken down by subsector. MiHR's 2011 forecast provides forecasts broken down by region, which was not available in their 2013 forecast. MiHR now provides regional forecasts in separate studies.

Human Resources and Skills Development Canada (HRSDC) provides job openings, employment and real GDP projections for mining and quarrying (except oil and gas extraction) (NAICS code 212) for the 2011-2020 period through the Canadian Occupational Projection System (COPS). According to HRSDC, “COPS is a set of economic models used to assess and project future labour market conditions on an industrial and occupational basis.”¹¹

IV. An Overview of the Métis Population

A. A Brief Summary of Métis History

The Métis hail primarily from the Canadian plains, descendants of the intermarriage of fur trading men and Cree and Ojibway women. In this region, natural terrain and the interests of the fur trade companies discouraged settlers from the east. In contrast to eastern Canada, where in general “large-scale immigration and agricultural settlement had caused the absorption of people of mixed ancestry into the settler or Indian populations”, in the Prairie settlements of the mid-nineteenth century the majority culture of the Métis emerged as a distinct nation of people (Weinstein, 2007: 2, 5).

The Métis are distinct from the First Nations and Canadians of European descent. They are more than the simple sum of their European and Native parts. Rather, they are a culture that was born on the Prairies with European and Native parentage. The Métis recognize the European and Native elements of their culture but still consider themselves to be different.

Since 1982, Métis Aboriginal rights have been constitutionally protected. Recognized Métis rights are currently limited to harvesting rights (which includes hunting and fishing).¹² As it pertains to Métis rights, Canada’s courts have established a definition of Métis which relies on three broad factors: Métis self-identification, ancestral connection to the historic Métis community, and community acceptance. These criteria are also those used by the Métis National Council (MNC) to define a Métis individual.

In 2002, the MNC adopted the following formal definition of Métis: “Métis means a person who self-identifies as Métis, is of historic Métis Nation Ancestry, is distinct from other Aboriginal Peoples and is accepted by the Métis Nation.” This definition is in turn used by the

¹¹ Human Resources and Skills Development Canada (2012), “Canadian Occupational Projection System (COPS),” <http://www23.hrsdc.gc.ca/c.4nt.2nt@-eng.jsp?cid=3>

¹² Teillet (2006) provides a more complete discussion of the definition of Métis and a comprehensive review of the legal history of Métis rights.

provincial Métis organisations when considering individuals for Métis membership. All five provincial Métis organisations regulate and maintain membership registries.

B. Characteristics of the Métis Population

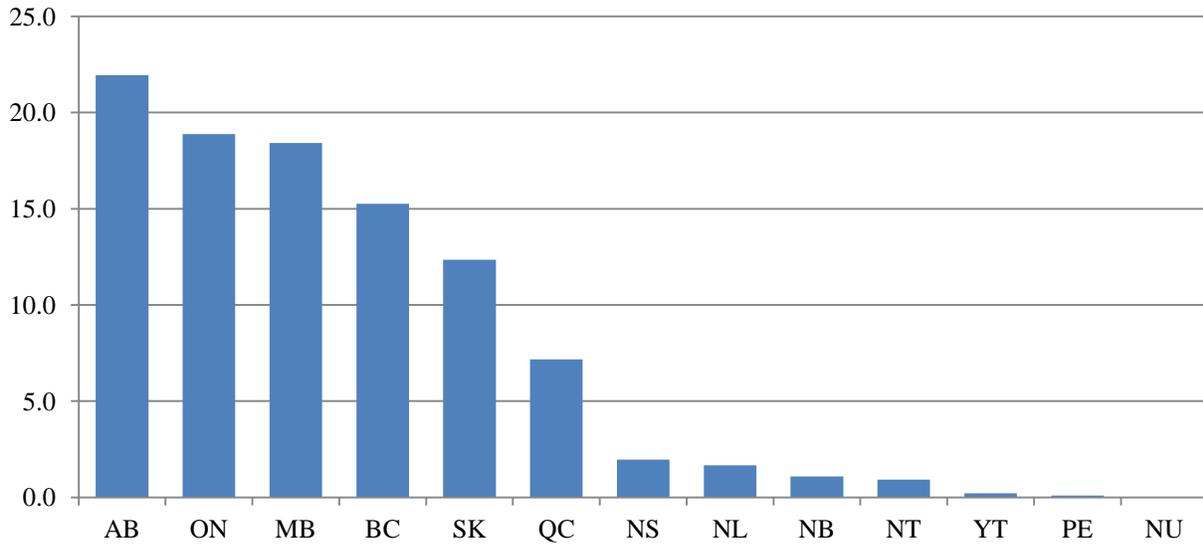
This section provides an overview of certain characteristics of the Métis population that are relevant to this report.¹³ The topics covered include provincial shares of the total Métis population; the difference between the proportion of Métis and non-Aboriginal Canadians living in non-urban areas and non-CMA urban areas; the difference between the proportion of Métis and non-Aboriginal Canadians under the age of 20; differences in population growth across Aboriginal identity groups; the difference between the proportion of Métis and non-Aboriginal Canadians who do not have a high school diploma or equivalent; and the difference between the proportion of Métis and non-Aboriginal Canadians who have a certificate, diploma or degree above the high school level. Certain characteristics of the Métis population – namely, its relative youth, remoteness, and rapid growth – are all comparative advantages for employment in the mining industry; however, their participation in this industry may be held back by their relatively poor record on education.

1. How the Métis Population is Distributed Among the Provinces and Territories

The self-identifying Métis population is concentrated in Ontario and the four western provinces, where 86.8 per cent of all Métis lived in 2006 (Chart 1).¹⁴ Alberta had the largest proportion of Canada’s Métis population in 2006 (21.9 per cent), followed by Ontario (18.9 per cent), Manitoba (18.4 per cent), British Columbia (15.3 per cent), and Saskatchewan (12.3 per cent). Quebec was the only other province or territory with more than 2.0 per cent of the Métis population in 2006 at 7.2 per cent. Due to the concentration of Métis population in the four western provinces and Ontario, this report focuses on these provinces (often referred to here as “the relevant provinces”).

¹³ For a detailed examination of Métis labour market, social and health outcomes see Arsenault and Sharpe (2009) and Centre for the Study of Living Standards (2012).

¹⁴ Population estimates for Canada’s Aboriginal peoples (including the Métis) from the National Household Survey (NHS) will be released on May 8th, 2013.

Chart 1: The Proportion of Total Métis Population in Each Province and Territory, per cent, 2006

Source: Statistics Canada, 2006 Census Topic Based Tabulations

2. The Share of the Total Métis Population by Area of Residence

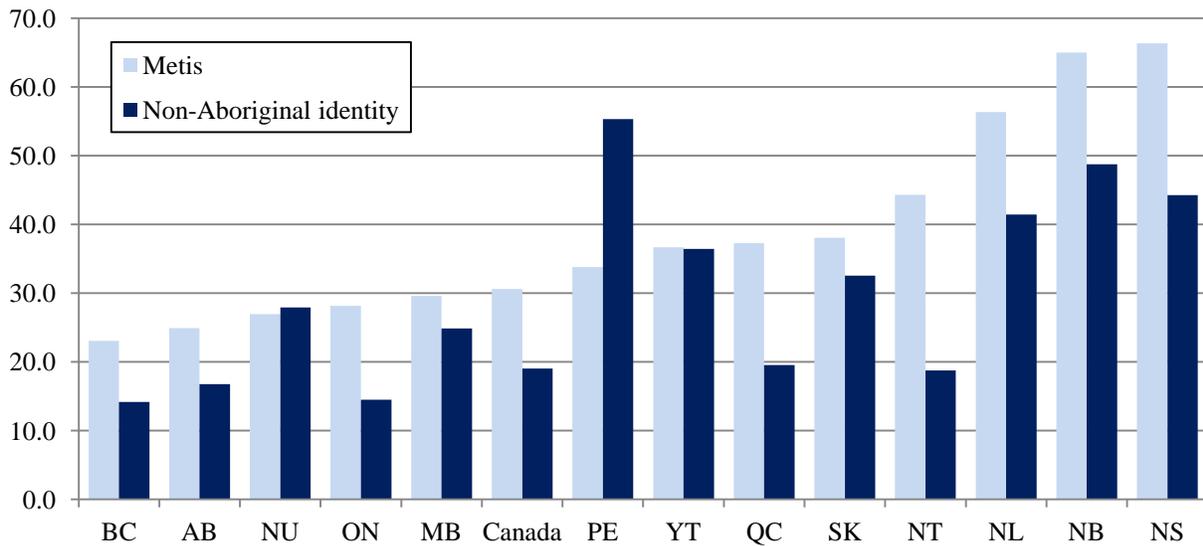
The Métis are highly represented in rural and remote locations relative to the general population. In 2006, 30.6 per cent of all Métis lived in non-urban areas, compared to only 19.0 per cent of the non-Aboriginal population (Chart 2).¹⁵ The national trend is reflected in all the relevant provinces. Ontario had the largest gap between the proportion of Métis and non-Aboriginals who inhabit non-urban areas (13.6 percentage points), followed by British Columbia (8.9 percentage points), and Alberta (8.2 percentage points). In Saskatchewan and Manitoba, the gap between the proportion of Métis and non-Aboriginals living in non-urban areas was much smaller (5.5 and 4.7 percentage points, respectively), but still significant.

The comparatively rural nature of the Métis population is an advantage, as they are better situated to take advantage of opportunities for employment in industries which are primarily located in remote locations such as mining. The rural Métis population is concentrated in the territory extending from “northwestern Ontario across the north-central Prairies and into the Peace River district.”¹⁶ There are many Métis-majority communities (e.g., Ile-a-la-Crosse and Buffalo Narrows in Northwestern Saskatchewan, and the eight Métis Settlements in northern Alberta) in this region as well as other communities where the Métis make up a considerable share in the total population.

¹⁵ An urban area has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square km. All territory outside urban areas is classified as rural, but neither rural nor urban areas include reserves. Non-urban areas, however, include both rural areas and reserves.

¹⁶ Métis National Council, “The Métis Nation,” <http://www.metisnation.ca/index.php/who-are-the-metis>

Chart 2: Proportion of the Métis and non-Aboriginal Populations in Non-Urban Areas, Canada and the Provinces, per cent, 2006



Source: Statistics Canada, 2006 Census Topic Based Tabulations

The Métis are not a rural population, as 69.4 per cent of Canadian Métis lived in urban areas in 2006; however, this share was small compared to that of the non-Aboriginal population (81.0 per cent). The biggest urban Métis populations were located in Winnipeg (40,980), Edmonton (27,740), Vancouver (15,075), Calgary (14,770), and Saskatoon (9,610).¹⁷

Even within urban areas, the Métis were much more likely to live in smaller centres than non-Aboriginal Canadians. In 2006, 40.5 per cent of urban Métis lived in non-CMAs, almost double the share for non-Aboriginal Canadians of 19.6 per cent.¹⁸ The difference between the proportion of the urban Métis population and the urban non-Aboriginal population that lived in non-CMA urban areas was the greatest for British Columbia (28.7 percentage points) and Ontario (27.7 percentage points) amongst the relevant provinces. Alberta, Saskatchewan and Manitoba had smaller gaps between the proportion of the urban Métis population and the urban non-Aboriginal population that lived in non-CMAs than the national average at 12.5 percentage points, 11.8 percentage points and 4.7 percentage points, respectively. Nonetheless, this gap was still positive and significant in all of the provinces relevant to this report.

Urban non-CMAs where the Métis constitute a significant share of the population include: “in Manitoba, Portage la Prairie (10%) and Thompson (10%); in Saskatchewan, Prince Albert (17%), North Battleford (7%) and Lloydminster (7%); in Alberta, Cold Lake 6% and

¹⁷ Métis National Council, “The Métis Nation,” <http://www.metisnation.ca/index.php/who-are-the-metis>

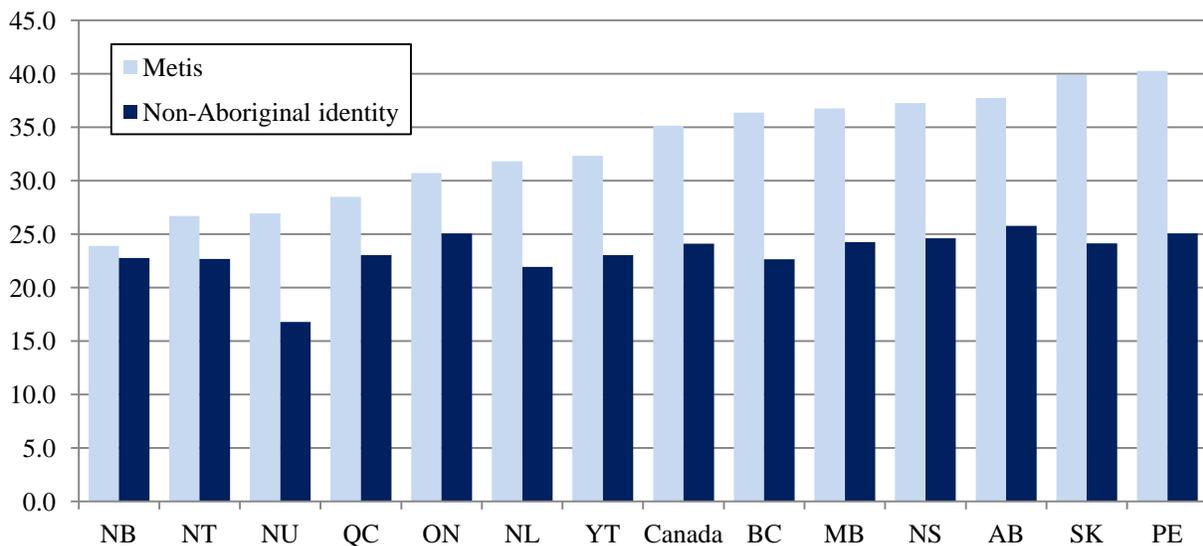
¹⁸ A census metropolitan area (CMA) is an urban area with a population of at least 100,000. Urban non-census metropolitan areas are smaller urban areas with a population of less than 100,000.

Grande Prairie (5%); in British Columbia, Dawson Creek (8%) and Prince George (5%); and in Ontario, Midland (9%) and Kenora (8%).”¹⁹

3. The Proportion of the Total Métis Population that is Under the Age of 20

The Métis population was much younger than the non-aboriginal population, with 35.1 per cent of Métis under the age of 20 in 2006 (vs. 24.1 per cent for the non-aboriginal population) (Chart 3). In addition, the Métis population in four out of the five provinces that this report focuses on was younger than the national average for the Métis population: 39.9 per cent of Saskatchewan’s Métis population was under the age of 20, compared to 37.7 per cent in Alberta, 36.7 per cent in Manitoba, and 36.4 per cent in British Columbia. Ontario was the only province of interest where the proportion of the population under the age of 20 was smaller for the Métis population than for the non-aboriginal population (30.7 per cent). The gap between the proportion of the Métis and non-Aboriginal populations under the age of 20 was significant in all five provinces, ranging from 5.6 percentage points in Ontario to 15.8 percentage points in Saskatchewan.

Chart 3: Proportion of the Métis and non-Aboriginal Populations under the Age of 20, Canada and the provinces, per cent, 2006



Source: Statistics Canada, 2006 Census Topic Based Tabulations

4. The Growth of the Métis Population and its Share in the Total Population

Compared to the total population and the total Aboriginal identity population, the Métis population is growing quickly. As a direct consequence, their share in the total population and in

¹⁹MNC, “The Métis Nation,” <http://www.metisnation.ca/index.php/who-are-the-metis>. A map showing all the major Métis communities in Canada can be found at <http://www.metisportals.ca/healthportal/pages/programs/img.jpg>.

the total Aboriginal identity population is increasing (Table 1).²⁰ Between 2001 and 2006, the Canadian Métis population grew by 33.3 per cent, from 292,305 to 389,780, compared to a 20.1 per cent increase in the total Aboriginal identity population and a 5.4 per cent increase in the total population. Consequently, the Métis' share in the total Aboriginal identity population increased from 29.9 per cent to 33.2 per cent and their share in the total population grew from 1.0 per cent to 1.2 per cent; this was also true for all of the five relevant provinces.

Table 1: Population by Aboriginal Identity, Canada and the Provinces, 2001 and 2006

	<i>Canada</i>	<i>Ontario</i>	<i>Manitoba</i>	<i>Saskatchewan</i>	<i>Alberta</i>	<i>British Columbia</i>
Total Population						
2001	29,639,035	11,285,550	1,103,700	963,155	2,941,150	3,868,875
2006	31,241,030	12,028,900	1,133,515	953,850	3,256,355	4,074,385
2001-2006 (per cent)	5.4	6.6	2.7	-1.0	10.7	5.3
Total Aboriginal Identity Population						
2001	976,305	188,315	150,040	130,190	156,220	170,025
2006	1,172,790	242,495	175,395	141,890	188,365	196,075
2001-2006 (per cent)	20.1	28.8	16.9	9.0	20.6	15.3
Métis Population						
2001	292,305	48,340	56,795	43,695	66,060	44,265
2006	389,780	73,605	71,805	48,115	85,500	59,445
2001-2006 (per cent)	33.3	52.3	26.4	10.1	29.4	34.3
Share of Métis Population in Total Population						
2001	1.0	0.4	5.1	4.5	2.2	1.1
2006	1.2	0.6	6.3	5.0	2.6	1.5
2001-2006 (% points)	0.3	0.2	1.2	0.5	0.4	0.3
Share of Métis Population in Total Aboriginal Identity Population						
2001	29.9	25.7	37.9	33.6	42.3	26.0
2006	33.2	30.4	40.9	33.9	45.4	30.3
2001-2006 (% points)	3.3	4.7	3.1	0.3	3.1	4.3

Source: Statistics Canada, 2006 Census Topic Based Tabulations

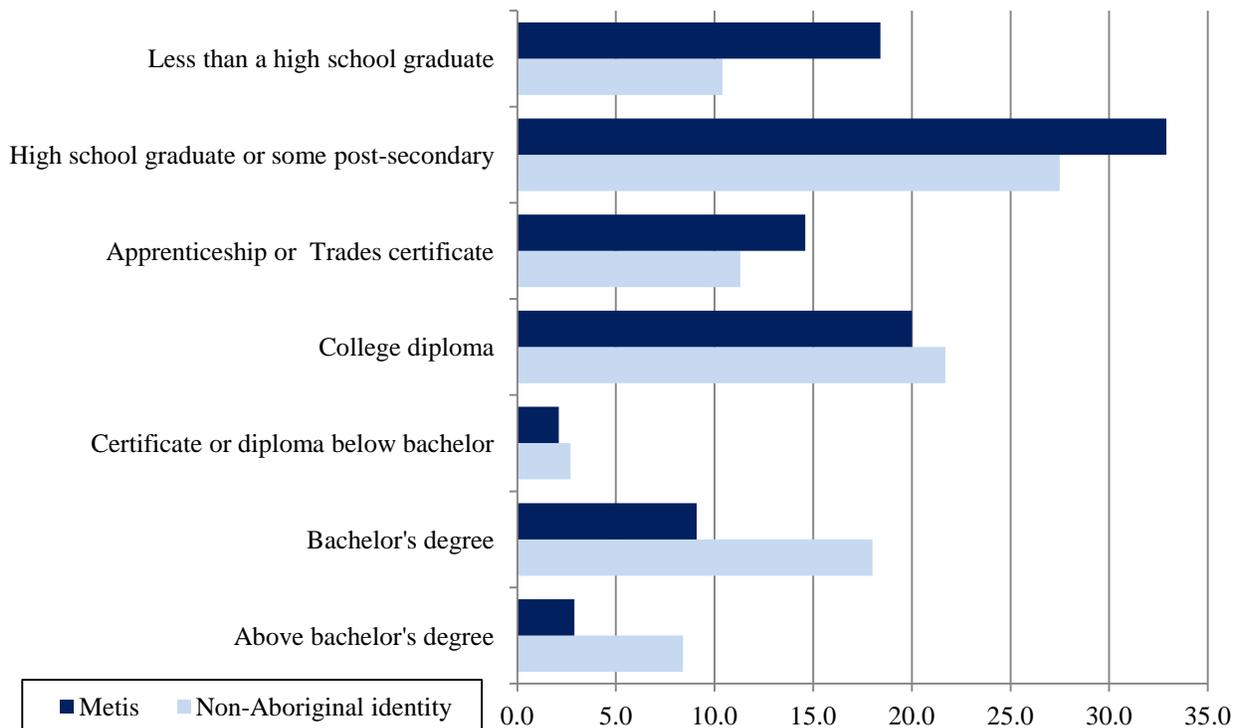
5. Métis Employment by the Highest Level of Educational Attainment

The Métis advantages from their comparative youthfulness and remoteness are offset by their lacklustre educational performance. In 2011, almost one fifth of Métis employees had not completed high school (18.4 per cent) compared to only 10.4 per cent of non-Aboriginal employees (Chart 4). In terms of the proportion of the labour force with only a high school

²⁰ The total Aboriginal identity population is the sum of all Aboriginal groups represented in the Canadian statistical system (i.e., North American Indian, Métis and Inuit).

diploma or some post-secondary education, the Métis also fared worse than non-Aboriginal Canadians (32.9 per cent versus 27.5 per cent, respectively). In addition, only 9.1 percent of Métis indicated that a bachelor's degree was their highest level of education in 2011, almost half the rate for non-Aboriginal Canadians. On the other hand, a larger proportion of the Métis population had an apprenticeship or trades certificates in 2011 (14.6 per cent versus 11.3 per cent for the non-aboriginal population); this can be advantageous as some industries (like mining) are highly dependent on skilled trades workers.

Chart 4: Proportion of Métis and non-Aboriginal Employment by the Highest Level of Educational Attainment, Canada, per cent, 2011



Source: Statistics Canada, unpublished Labour Force Survey estimates

V. An Overview of the Canadian Mining Industry

This section provides an overview of the Canadian mining industry. It is divided into three parts: the first focuses on Canada; the second provides a comparison of the relevant provinces; and the third contains individual analyses of the relevant provinces. The examination of the role of the mining industry in the Canadian economy starts off by providing an outlook on the Canadian mining industry. It then looks at the mining industry's contribution to total economy GDP; changes in the mining industry's contribution to total economy GDP; mineral production and its relationship with mineral prices; real GDP growth in the mining industry; a breakdown of mineral production by type of mineral; a discussion of types of mining establishments and number of exploration projects; and trends in the export of domestically

produced metals and minerals. In the second part of this section, mineral production and exploration and deposit appraisal expenditure are compared across Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. In the final part of this section, the mining industries of these provinces are examined individually by determining their contributions to their respective provincial GDPs; reporting which minerals are most-produced in each province; and providing mining establishment counts by type of mineral produced.

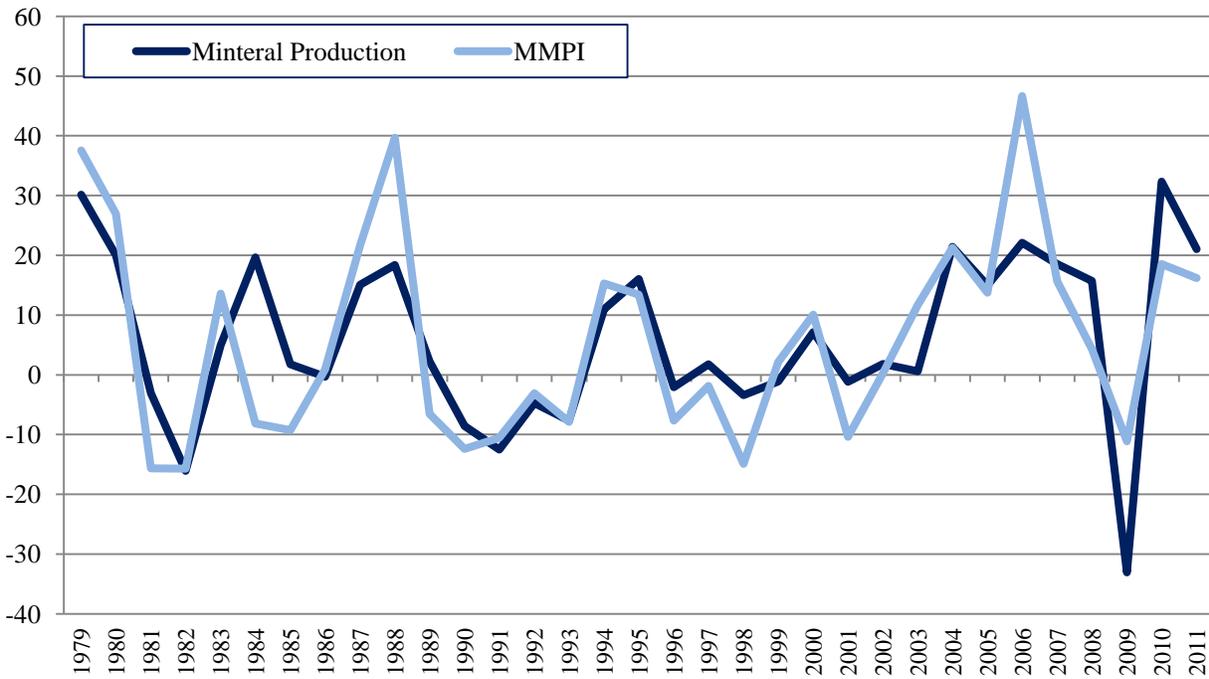
A. Canada

1. An Outlook on the Canadian Mining Industry

As the Canadian economy becomes more globalized, the state of the world economy becomes an increasingly important determinant of the Canadian mining industry's performance. Discrepancies between the growth of global demand for metals and minerals (which has recently been driven by the development of industrial output in emerging countries like China) and the growth of global supply for metals and minerals translates into changes in their prices, which make it more or less profitable for corporations to explore mineral deposits, develop new mining establishments, and increase output at existing establishments. The variety of factors affecting mineral prices makes them quite volatile. This volatility, in turn, causes both mining output and employment to be unstable.

A good example of how swings in demand can affect metal and mineral prices can be seen in the 2009 recession, when prices fell 11.1 per cent and production fell 33.1 per cent (Chart 5). In 2010, however, metal and mineral prices rose 18.5 per cent, and rose again by 16.2 per cent in 2011. Driven by the growth of metal and mineral prices, the value of metal and mineral production rose by 32.3 per cent in 2010 and by 21.0 per cent in 2011. Commodity prices softened in 2012, falling 3.8 per cent.

Chart 5: Growth in the Value of Mineral Production and the MMPI, Per Cent, Canada, 1979-2011

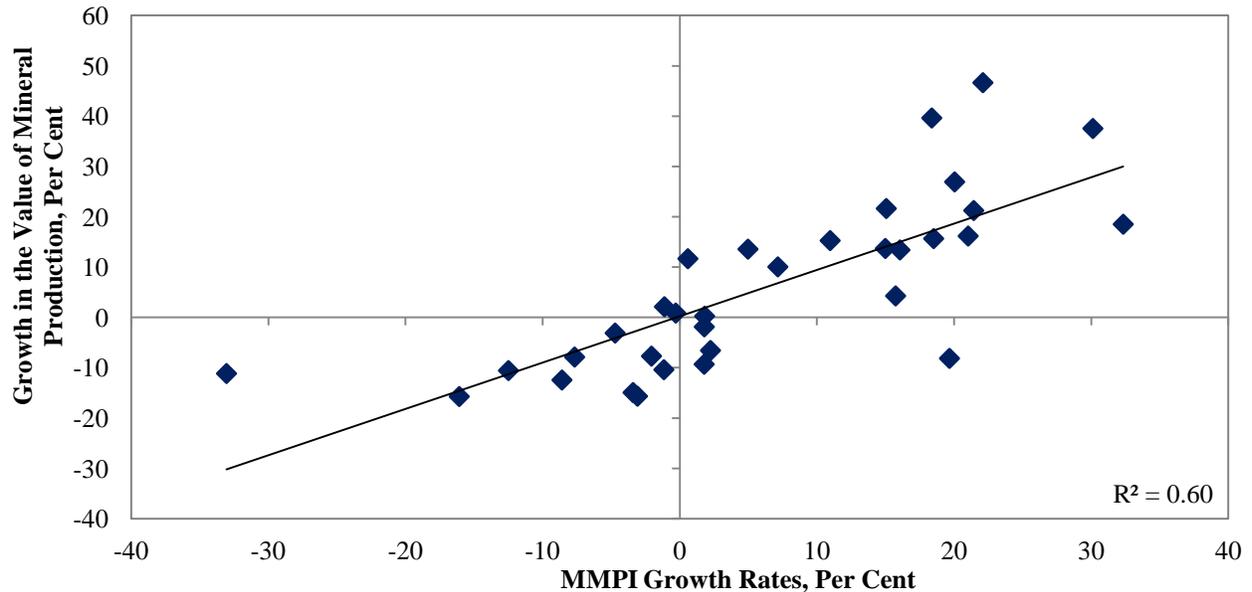


Source: NRCan, Minerals and Metals Division (mineral production); and the Bank of Canada, Commodity Price Index (MMPI)

There is a strong relationship between the Metal and Mineral Commodity Price Index (MMPI) and the value of mineral production (Chart 6).²¹ Between 1978 and 2011, the correlation between MMPI growth rates and the growth in the value of mineral production was 0.8 where 0.0 indicates that there is no linear relationship between the two variables and 1.0 signifies a perfect positive linear relationship.

²¹ The Metal and Mineral Commodity Price Index (MMPI) is composed of potash, aluminum, gold, nickel, iron, copper, silver, zinc and lead prices. The sources for these prices are as follows: gold and silver prices are in US\$/oz. from Handy and Harman, New York; nickel, copper, aluminum and zinc prices are in US\$/lb. from the London Metal Exchange; potash prices are spot prices for standard potassium chloride, f.o.b. Vancouver, in US\$/tonne; and lead and iron prices are from the US Bureau of Labour Statistics' Producer Price Statistics. To create the MMPI, each mineral's prices are weighted to reflect their respective shares of production using data from Statistics Canada's input-output tables. NRCan's mineral production data are in current dollars. Mineral production includes the production of metallic minerals, non-metallic minerals, and coal. Thus, the terms 'minerals' and 'metals and minerals' are used as synonyms throughout this report to refer to the aggregate of metallic minerals, non-metallic minerals, and coal.

Chart 6: The Relationship between Growth in the Value of Mineral Production and MMPI Growth Rates, per cent, Canada, 1978-2011



Source: NRCan, Minerals and Metals Division (mineral production); and the Bank of Canada, Commodity Price Index (MMPI)

Currently, the Canadian mining industry is experiencing a slump, which is expected to hit junior mining firms the hardest.²² According to Paul Wright, CEO of Eldorado Gold Corp., “the global mining industry seems to be slipping back into a period of adversity” as the growth of industrial production in China slows, causing most metal prices to soften.²³ According to Pierre Gratton, President and CEO of the Mining Association of Canada (MAC), asserts that prices for many metals and minerals – including uranium, potash, copper, iron and coal – are still high enough to cover costs and therefore profit margins are comfortable for many mining firms; these prices are historically high (in real terms) even though they have been sliding recently. Mining firms with established mines will survive the dip in commodity prices that we are currently experiencing, but the future of junior mining firms is not as clear.

Junior mining firms, which explore new mineral deposits and often rely on venture capital, are generally seen as risky investments. The performance of these firms is frequently considered a barometer of expectations for the mining industry as a whole, because it shows how interested investors are in the exploration of new minerals deposits and therefore how confident investors are in the mining industry. Junior mining firms in Canada and across the world are currently being cut off from capital, because investors are worried about the future trajectory of metals prices.²⁴

²² CBC News, “Junior mining companies hit hard by economic downturn,” 4 March 2013, <http://www.cbc.ca/news/canada/north/story/2013/03/04/north-junior-prospecting-funding-down.html>

²³ KPMG (2012), “Outlook: A new perspective in the global mining industry”

²⁴ Pav Jordan, “Miners’ Survival of the fittest for miners as global outlook dims,” The Globe and Mail, 3 March 2013, <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/survival-of-the-fittest-for-miners-as-global-outlook-dims/article9251008/>

As a direct consequence of this uncertain outlook, only 8.0 per cent of employers in the Canadian mining sector plan to hire in the near future, according to a survey by Manpower, below the average of 12.0 per cent across all industries. “The outlook in the mining sector in the same quarter was over 20% a year ago.”²⁵ Nonetheless, the MAC maintains that the long-term outlook for the mining industry is strong, due to the rapid industrialization of the global south which will keep mining prices at historically high levels. Long-term demand for minerals is expected to grow, as the Chinese, Indian and Brazilian economies are expected to continue their rapid expansion.²⁶ Nevertheless, mineral prices may fall in the long-term as the growth in mineral production increases – especially in some African countries where commodity booms are being driven by Chinese demand and investment²⁷ – and the growth of industrial production in developing countries like China slows.²⁸ According to commodity price projections by Consensus Economics, of the nine metals that are relevant to the Canadian mining industry for which they have long-term projections – coal, uranium, copper, nickel, zinc, iron ore, gold, and silver – , only uranium and zinc prices are expected to have higher prices during the 2017-2021 period.

2. The Mining Industry’s Current Contribution to Total Economy GDP

The mining industry is a vital component of the Canadian economy. According to NRCan, Canada was host to 989 primary mining establishments in 2010, which produced more than 60 different metals and minerals. The mining industry accounted somewhere from 1.7 per cent to 3.9 per cent of total economy nominal GDP in 2008, depending on how the mining industry is defined.²⁹ On top of that, NRCan estimated that the industry was responsible for one fifth of total Canadian exports.

The clearest measure of an industry’s economic importance is its contribution to total economy nominal GDP. The mining industry’s contribution to total economy GDP, however, depends on what definition of the mining industry is used. In Table 2, the mining industry’s nominal GDP as a proportion of total economy nominal GDP is presented according to the MiHR and NRCan definitions industry. Table 2 also presents the nominal GDP shares of the two NAICS industries typically used in analyses of the mining industry: mining, quarrying, and oil and gas extraction and mining and quarrying (except oil and gas extraction).

²⁵ Michael Allan McCrae, “Hiring by miners drops below Canada’s national average,” Mining News, 12 March 2013, <http://www.mining.com/chart-of-the-day-miners-in-canada-planning-to-hire-drops-83364/>

²⁶ Mining Association of Canada (2011), “Facts and Figures of the Canadian Mining Industry, 2011,” page 4, http://www.mining.ca/www/media_lib/MAC_Documents/F&F2011-English.pdf

²⁷ The Economist, “Africa rising: A hopeful continent,” 2 March 2013, <http://www.economist.com/news/special-report/21572377-african-lives-have-already-greatly-improved-over-past-decade-says-oliver-august>

²⁸ Deloitte (2012), “Tracking the trends 2013: The top 10 issues mining companies will face in the coming year”

²⁹ The most recent nominal GDP estimates for NAICS industries below the two-digit level are for 2009; however, GDP data were greatly depressed in 2009 due to a recession. Therefore, 2008 is the most appropriate year for which to calculate nominal GDP shares for NAICS industries below the two-digit level.

According to the MiHR definition, the mining industry accounted for 3.1 per cent of total nominal GDP in 2008; 53.2 per cent of this share was accounted for by mining and quarrying (except oil and gas extraction), 21.9 per cent by support activities for mining, quarrying, and oil and gas extraction, and the remaining 24.9 per cent by the three subsectors of primary metal manufacturing included in the MiHR definition of the mining industry.

According to the NRCan definition, the mining industry had a share of 3.9 per cent in total nominal GDP in 2008. Of this total share, mining and quarrying (except oil and gas extraction) represented the largest part (42.8 per cent), followed by primary metal manufacturing (24.2 per cent), fabricated metal product manufacturing (22.7 per cent), and non-metallic mineral product manufacturing (10.3 per cent). NRCan's definition of the mining industry will not be used in the remainder of this section.

Finally, the mining industry's share in total nominal GDP according to the two NAICS industries often used to analyze this industry – mining, quarrying, and oil and gas extraction and mining and quarrying (except oil and gas extraction) – was 10.1 per cent and 1.7 per cent in 2008, respectively. The massive difference was due to the inclusion of oil and gas extraction in mining, quarrying, and oil and gas extraction, which was worth 7.7 per cent of total nominal GDP on its own in 2008 (support activities for mining and oil and gas extraction accounts for the remaining 0.7 per cent of the difference).

Aggregating support activities for mining and quarrying with mining and quarrying (except oil and gas extraction) provides a good representation of the output of industries directly associated with primary mining. This aggregate's share of total nominal GDP was 1.8 per cent in 2008, the vast majority of which was accounted for by mining and quarrying (except oil and gas extraction) (91.6 per cent).

Table 2: Shares of Mining-Related NAICS Industries in Nominal Total Economy GDP, Canada, 2008

<i>NAICS Code or Equivalent</i>	<i>Levels in Current Dollars (millions)</i>	<i>Shares in Total Economy GDP (per cent)</i>
Total Economy	1,551,579	100.00
MiHR Definition [212, 213, 3311, 3313, 3314]	48,426	3.12
NRCan Definition [212, 327, 331, 332]	60,209	3.88
Mining, quarrying, and oil and gas extraction [21]	156,423	10.08
Oil and gas extraction [211]	120,073	7.74
Mining and quarrying (except oil and gas extraction) [212]	25,746	1.66
Coal mining [2121]	3,779	0.24
Metal ore mining [2122]	13,417	0.86
Iron ore mining [21221]	2,743	0.18
Gold and silver ore mining [21222]	1,858	0.12
Copper, nickel, lead and zinc ore mining [21223]	7,546	0.49

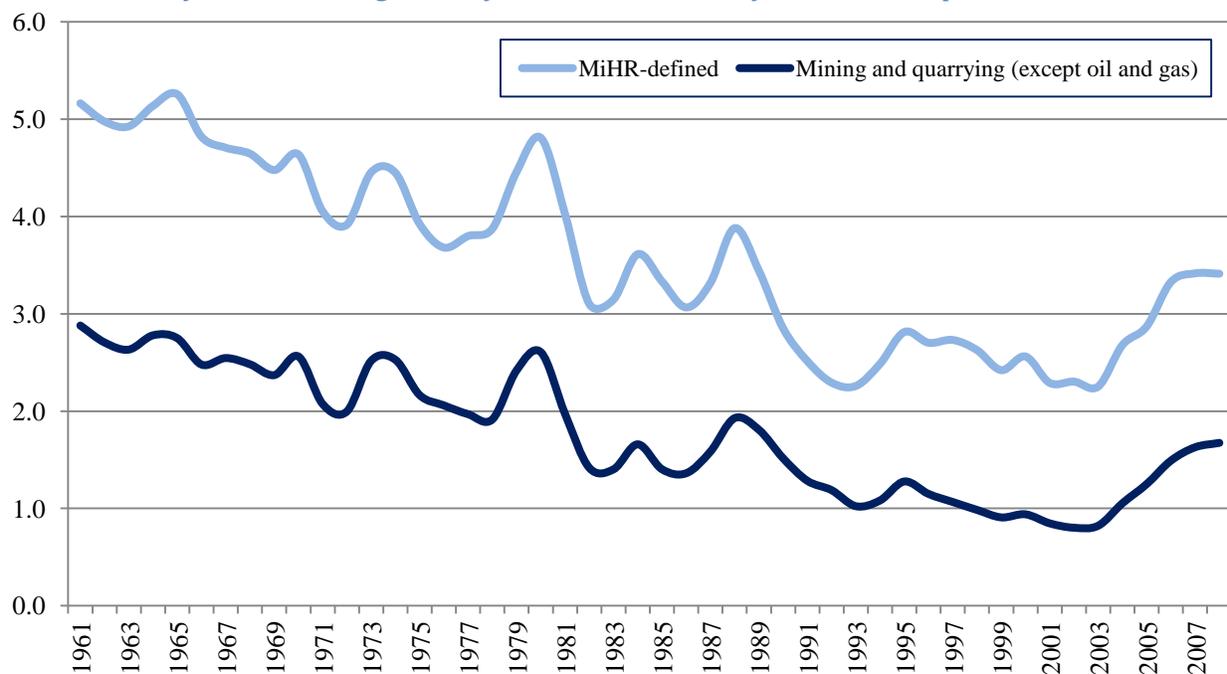
Other metal ore mining [21229]	1,271	0.08
Non-metallic mineral mining and quarrying [2123]	8,550	0.55
Stone mining and quarrying [21231]	824	0.05
Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying [21232]	1,018	0.07
Diamond mining [212392]	1,531	0.10
Potash mining [212396]	4,489	0.29
Other non-metallic mineral mining and quarrying [21239A]	688	0.04
Support activities for Mining, quarrying, and oil and gas extraction [213]	10,603	0.68
Support activities for oil and gas extraction [21311A]	8,237	0.53
Support activities for mining and quarrying [21311B]	2,366	0.15
Non-metallic mineral product manufacturing [327]	6,212	0.40
Primary metal manufacturing [331]	14,562	0.94
Iron and steel mills and ferro-alloy manufacturing [3311]	3,427	0.22
Steel product manufacturing from purchased steel [3312]	1,551	0.10
Alumina and aluminum production and processing [3313]	4,692	0.30
Non-ferrous metal (except aluminum) production and processing [3314]	3,958	0.26
Foundries [3315]	933	0.06
Fabricated metal product manufacturing [332]	13,689	0.88

Source: Statistics Canada, CANSIM Table 379-0029

3. Investigating Changes in the Mining Industry's Share of Total Economy GDP

The mining industry's share in total economy nominal GDP was not constant during the 1961-2008 period (Chart 5). According to the MiHR definition, the industry's contribution to total nominal GDP fell steadily from 5.2 per cent in 1961 to 2.3 per cent in 2003, after which it rose to 3.4 per cent in 2008 as metal and mineral prices grew by a staggering 144.0 per cent.

Mining and quarrying (except oil and gas extraction) followed the exact same trends as the MiHR-defined mining industry, which is not surprising as this NAICS subsector constitutes more than half of the MiHR-defined mining industry and therefore drives trends in that aggregate. Mining and quarrying (except oil and gas extraction) accounted for 2.9 per cent of total economy nominal GDP in 1961, falling to 1.7 per cent in 2008.

Chart 7: Share of Nominal Mining Industry GDP in Total Economy Nominal GDP, per cent, 1961-2008

Source: Statistics Canada, CANSIM Table 379-0023

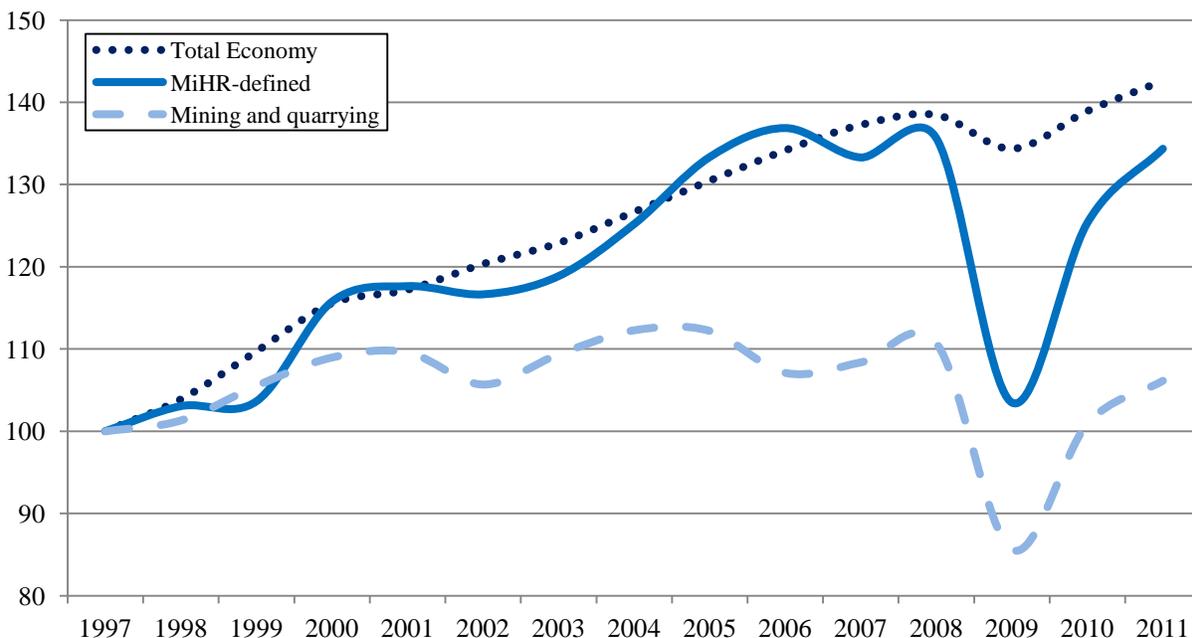
Note: The MiHR-defined mining industry does not include steel product manufacturing from purchased steel (NAICS code 3312) and foundries (NAICS code 3315); however, the estimates for the MiHR-defined mining industry found in this chart include these subsectors as estimates were only available for three-digit NAICS industries.

4. Real GDP Growth in the Mining Industry

The cyclical nature of the mining industry is demonstrated in Chart 8. Real GDP growth in the mining industry (according to the MiHR definition and the relevant three-digit NAICS subsector) had a much higher variance than total economy real GDP growth. The 2009 recession exemplified such volatility, as the MiHR-defined mining industry's real GDP contracted much more than total economy real GDP (23.7 per cent versus 3.0 per cent). It is also important to note that, by 2011, real GDP in the mining industry was still below its pre-recession high, unlike the total economy real GDP which was 3.0 per cent above its 2008 high.

The MiHR-defined mining industry contracted more than the total economy in 2009 because mining and quarrying (except oil and gas extraction) experienced a 22.7 per cent decrease in real GDP, while iron and steel mills and ferro-alloy manufacturing saw its outputs halved.

Chart 8: Real GDP in the Mining Industry and in the Total Economy, 2002 Chained Dollars, 100=1997, Canada, 1997-2011



Source: Statistics Canada, CANSIM Table 379-0027

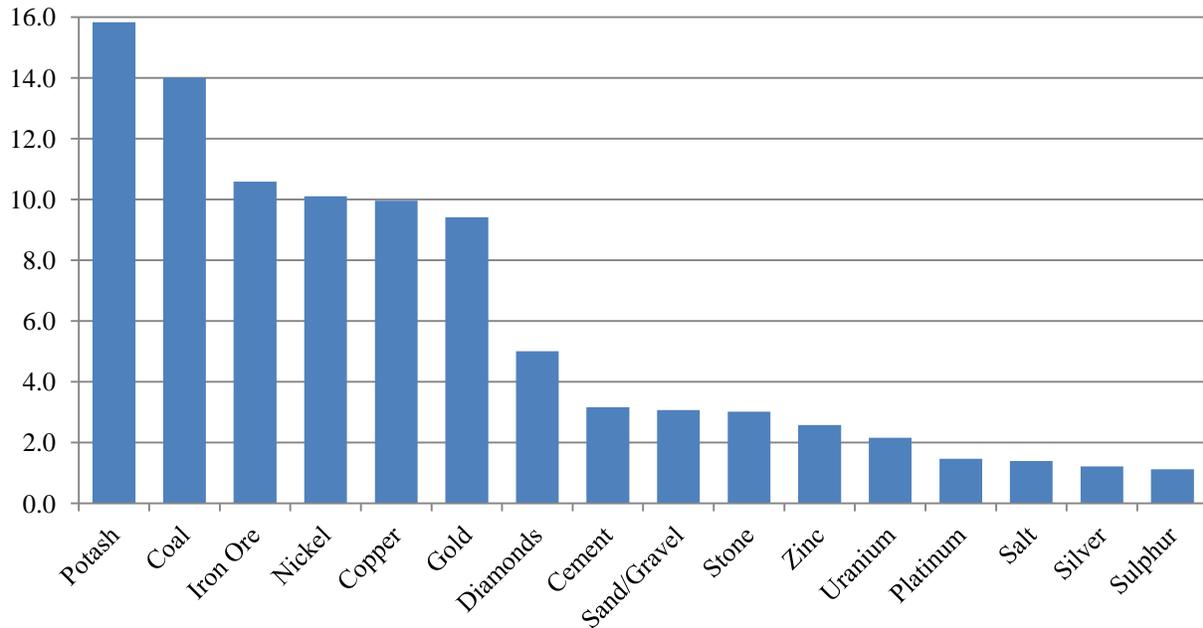
Note: The estimates for real mining industry GDP according to the MiHR definition are rough, because an aggregate is not simply the sum of its components – how the MiHR aggregate was calculated for this chart – when working with chained GDP deflators.

5. Shares of Total Mineral Production for the Most Produced Metals and Minerals

As the second largest country in the world, Canada has a diverse geology and a wide range of mineral resources. Currently, Canada produces around 60 metals and minerals. Compared to the rest of the world, Canada is the biggest producer of potash and ranks in the top five for aluminum, cadmium, cobalt, diamonds, molybdenum, nickel, platinum group metals, salt, titanium concentrate, tungsten, and zinc.³⁰

The most important metals and minerals produced by Canada's mining industry in 2011 (as measured by their share of the value of Canadian mineral production) were potash (15.8 per cent), coal (14.0 per cent), iron ore (10.6 per cent), nickel (10.1 per cent), copper (10.0 per cent), and gold (9.4 per cent) (Chart 9). Most of the production for each of these metals and minerals come from either a particular province or a small number of provinces. For example, almost all potash production occurs in Saskatchewan, while coal production is centred in British Columbia and Alberta.

³⁰ Natural Resources Canada, "Canada's Positive Investment Climate for Mineral Capital Information Bulletin, October 2011," <http://www.nrcan.gc.ca/minerals-metals/publications-reports/4339>

Chart 9: Shares of the Total Value of Mineral Production by the Type of Mineral, per cent, 2011

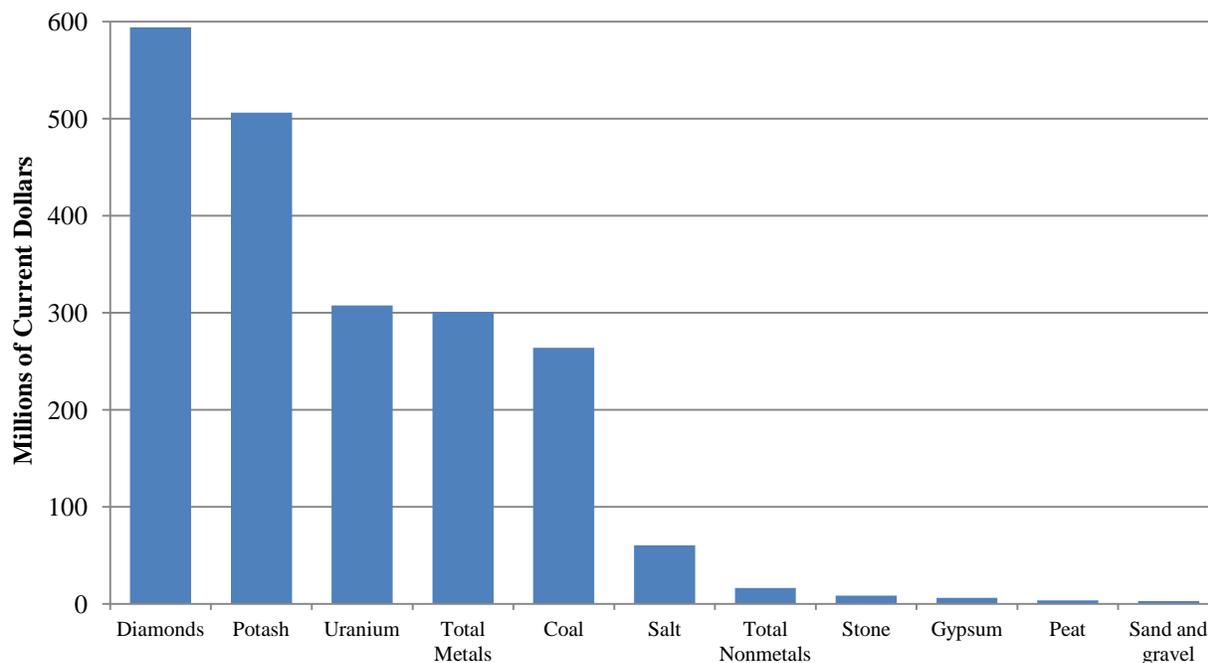
Source: NRCan, Minerals and Metals Division

6. Mining Establishments

According to NRCan, Canada was host to 989 mining establishments in 2010, which produced more than 60 different metals and minerals. Most establishments produced sand and gravel (573); however, stone establishments also made a large proportion of total establishments (193). Sand, gravel and stone are relatively abundant commodities, which explains why there are so many establishments yet their overall share in total metals and mineral output is small. By dividing the value of output by the number of establishments, it was calculated that sand and gravel establishments each produced, on average, \$2.7 million in 2010, compared to \$8.5 million for stone establishments (Chart 10). These value-establishment ratios are miniscule compared to those for highly valued minerals and metals like diamonds (\$594.3 million), potash (\$506.2 million), uranium (\$307.5 million), metallic minerals in general (\$300.8 million), and coal (\$263.9 million).³¹

³¹ A detailed map of mining establishments in Canada can be found here: http://apps1.gdr.nrcan.gc.ca/mirage/show_image_e.php?client=jp2&id=292216&image=gscmap-a_900A_e_2013_mn01.sid.

Chart 10: Average Value of Production per Establishment by the Type of Mineral, millions of current dollars, 2010



Source: NRCan, Minerals and Metals Division

Note: The average value of production per establishment could only be calculated for certain minerals, because mining establishments were not always categorized according to a single mineral. For example, mining establishment counts are available for gold and silver ore as an aggregate while the values of gold and silver outputs were available individually.

7. Exploration Activities

There are more than 2,200 exploration projects in Canada according to PDAC. In 2012, expenditures on mineral exploration and deposit appraisal were worth \$4.1 billion, up from \$2.8 billion in 2007. These expenditures have fallen, however, from their peak of \$4.2 billion in 2011. Appraisal expenditures include on-mine-site and off-mine-site activities, field work, overhead costs, engineering, economic and production feasibility studies, environment, and land access costs.³²

8. Domestic Exports of Metal and Mineral Products

The value of domestic exports of metals and minerals grew 56.4 per cent between 2005 and 2011; however, this growth was not constant over time (Chart 11).³³ Between 2005 and 2008, domestic metal and mineral exports increased 47.9 per cent, before falling a staggering 30.6 per cent in 2009 due to the global financial crisis. However, domestic metal and mineral exports grew 52.2 per cent from 2009 to 2011, reaching a level 5.7 per cent higher than that in

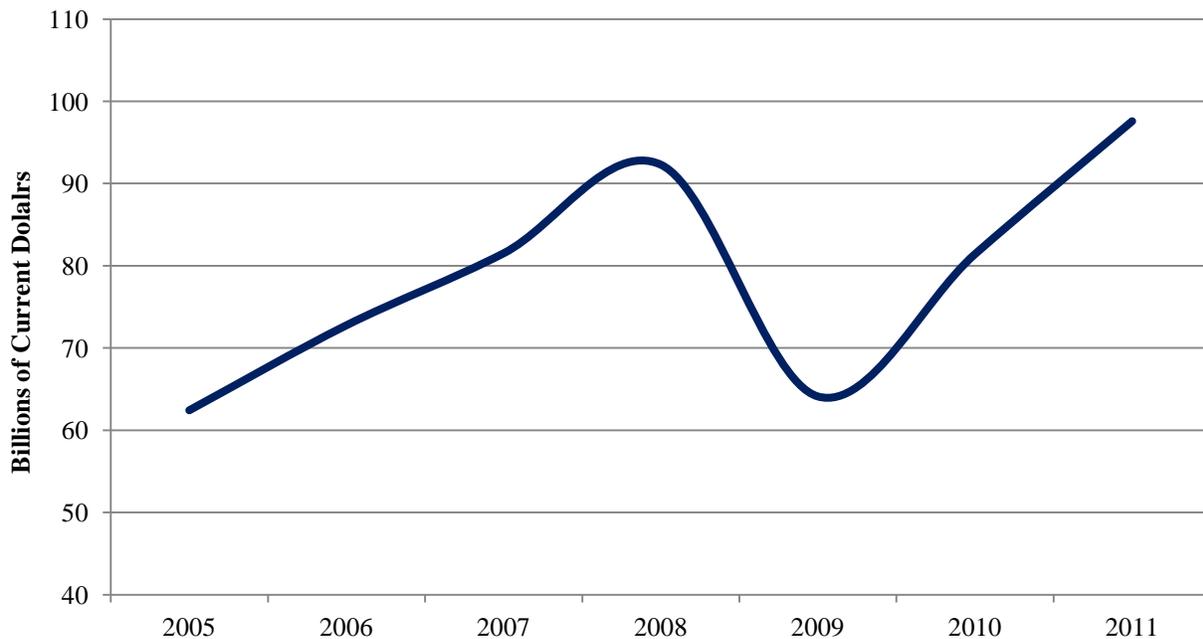
³² A map of the top 100 exploration and deposit appraisal projects in Canada (based on expenditures) in 2012 can be found at <http://www.nrcan.gc.ca/minerals-metals/4437#en4>

³³ Domestic exports include goods grown, produced, extracted or manufactured in Canada leaving the country for a foreign destination. They are distinct from total exports, which include domestic exports and re-exports.

2008. The impact of the 2009 recession on domestic exports illustrates the volatility of the mining industry.

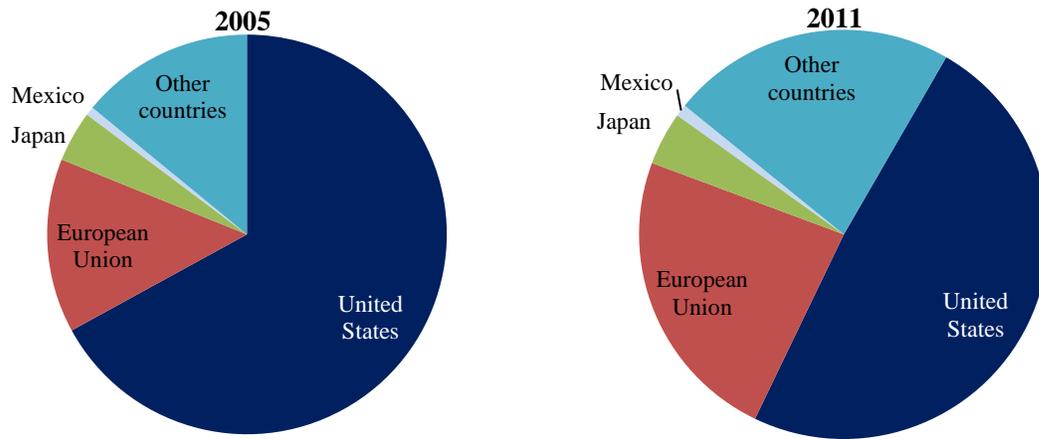
The destination of Canada's mineral exports has changed drastically between 2005 and 2011 (Chart 12). Historically, the United States has been the primary buyer of our exports, but their pre-eminence has been challenged in recent years. In 2005, 67.0 per cent of Canadian metal and mineral exports went to the United States, but this share dropped 18.2 percentage points to 48.8 per cent by 2011. Even though the U.S. share of total domestic mining product exports fell from 2005 to 2011, domestic exports to the U.S. increased by 13.9 per cent over this period. This increase was small, however, compared to the growth of overall metal and mineral exports (56.4 per cent). Mining product exports to the European Union and 'other countries' (i.e., countries other than the United States, Mexico, Japan, and the EU) grew the most between 2005 and 2011 (by 161.0 per cent and 150.2 per cent, respectively). Consequently, the EU and 'other countries' saw their shares in total Canadian metal and mineral exports increase from 14.1 per cent to 23.5 per cent and 14.1 per cent to 22.5 per cent respectively. The increased diversification of our export markets bodes well for the future of the mining industry in Canada, as it decreases our risk of falling victim to weaknesses in the U.S. economy.

Chart 11: Domestic Exports of Metals and Minerals Products, billions of current dollars, 2005-2011



Source: NRCan, Minerals and Metals Division

Chart 12: Share of Domestic Exports of Metals and Minerals Products by Destination



NRCan, Minerals and Metals Division

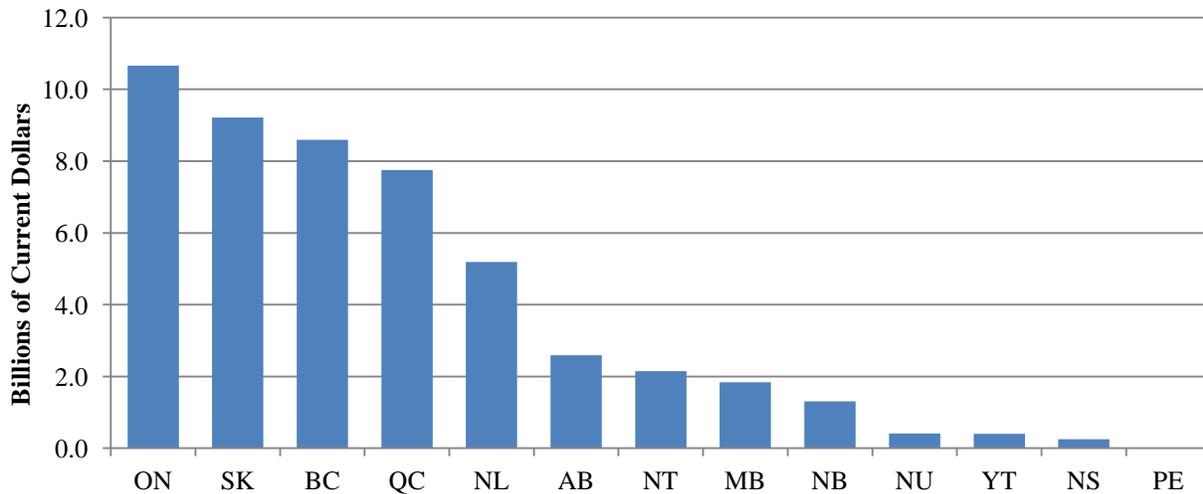
Source:

B. Provincial Comparisons

1. Mineral Production by Province and Territory

According to NRCan estimates of the value of metal and mineral production (Chart 13), Ontario was the leading producer in 2011 at \$10.7 billion or 21.2 per cent of national production, followed by Saskatchewan at \$9.2 billion (or 18.3 per cent), British Columbia at \$8.6 billion (or 17.1 per cent), Quebec at \$7.7 billion (or 15.4 per cent), and Newfoundland and Labrador at \$5.2 billion (or 10.3 per cent); these five provinces had the biggest shares of the value of mineral production by far, accounting for 82.2 per cent of Canadian total. Alberta and Manitoba, on the other hand, were not particularly important mineral producers, with output values of \$2.6 billion and \$2.1 billion, respectively.

Chart 13: The Value of Total Mineral Production by Province and Territory, billions of current dollars, 2011



Source: NRCan, Minerals and Metals Division

2. Mineral Exploration and Deposit Appraisal Expenditures

In 2012, expenditures on mineral exploration and deposit appraisal were concentrated in Ontario (at 23.9 per cent of the total), British Columbia (at 18.3 per cent of the total), Quebec (which at 19.3 per cent of the total explained most of the share of ‘other provinces’), and the territories (at 20.8 per cent of the total) (Table 3). Expenditures on mineral exploration and deposit appraisal were relatively small in the Prairie Provinces, as Saskatchewan’s share of these expenditures – currently at 7.9 per cent – has not bounced back to its high of 16.0 per cent in 2009.

Table 3: Mineral Exploration and Deposit Appraisal Expenditures³⁴ by province and territory, 2007-2012

	<i>Canada</i>	<i>Ontario</i>	<i>Manitoba</i>	<i>Saskatchewan</i>	<i>Alberta</i>	<i>British Columbia</i>	<i>Other Provinces</i>	<i>Territories</i>
	Millions							
2007	2,830.8	571.7	102.6	314.0	11.8	470.6	683.7	676.4
2008	3,279.5	799.3	152.1	430.7	20.8	435.4	726.9	714.3
2009	1,944.4	536.2	97.8	311.0	8.3	217.1	451.3	322.6
2010	2,771.9	853.4	83.5	299.4	15.2	374.4	650.6	495.3
2011	4,227.4	1,067.7	140.0	334.6	47.3	645.1	1,031.5	961.2
2012	4,111.8	982.2	121.6	323.8	44.5	753.9	1,032.1	853.7
	Per Cent							
2007	100.0	20.2	3.6	11.1	0.4	16.6	24.1	23.8
2008	100.0	24.4	4.6	13.1	0.6	13.3	22.2	21.8
2009	100.0	27.6	5.0	16.0	0.4	11.2	23.2	16.6
2010	100.0	30.9	3.0	10.8	0.5	13.5	23.5	17.9
2011	100.0	25.3	3.3	7.9	1.1	15.3	24.3	22.7
2012	100.0	23.9	3.0	7.9	1.1	18.3	25.0	20.8

Source: NRCan, Minerals and Metals Division

3. Mining Establishments by Mineral Type for the Provinces

Table 4 provides an overview of the importance of different minerals for each province according to the number of establishments devoted to their production in 2010. This table focuses on the provinces relevant to this paper (i.e., Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia).

³⁴ ‘Appraisal expenditures’ includes on-mine-site and off-mine-site activities; field work, overhead costs, engineering, economic and production feasibility studies, environment, and land access costs.

Table 4: Mining Establishments in Canada by Mineral by province and territory, 2010

	<i>Canada</i>	<i>Ontario</i>	<i>Manitoba</i>	<i>Saskatchewan</i>	<i>Alberta</i>	<i>British Columbia</i>	<i>Other Provinces</i>	<i>Territories</i>
Total Metals	71	18	5	5	0	12	29	2
Iron ore	6	0	0	0	0	1	5	0
Gold & Silver ore	30	10	1	1	0	2	16	0
Lead-zinc ore	1	0	0	0	0	0	1	0
Nickel-copper ore	10	6	2	0	0	0	2	0
Copper, copper-zinc ore	10	1	1	0	0	5	2	1
Molybdenum	2	0	0	0	0	2	0	0
Uranium	4	0	0	4	0	0	0	0
Other Metals	8	1	1	0	0	2	3	1
Total Nonmetals	897	304	27	55	164	76	266	5
Chrysotile	2	0	0	0	0	0	2	0
Diamonds	4	1	0	0	0	0	0	3
Gypsum	8	0	1	0	0	2	5	0
Peat	77	1	5	1	6	1	63	0
Potash	10	0	0	9	0	0	1	0
Salt	10	4	0	2	1	0	3	0
Sand and gravel	573	220	16	39	151	55	90	2
Stone	193	74	5	0	4	15	95	0
Shale, Clay and other refractory minerals	10	2	0	2	2	0	4	0
Other nonmetals	10	2	0	2	0	3	3	0
Coal	21	0	0	3	8	10	0	0

Source: NRCan, Minerals and Metals Division

4. The Mining Industry's Share of GDP by Province

Table 5 details the contribution of each province to total nominal GDP in the Canadian mining industry according to the MiHR definition and a detailed NAICS code breakdown. Note that this table also focuses on the provinces relevant to this paper.

Table 5: Shares of Mining-Related NAICS Industries in Nominal Total Economy GDP, Canada and the Provinces, millions of current dollars, 2008

<i>NAICS Code or Equivalent</i>	<i>Canada</i>	<i>Ontario</i>	<i>Manitoba</i>	<i>Saskatchewan</i>	<i>Alberta</i>	<i>British Columbia</i>
Total Economy	1,551,579	566,252	48,410	64,429	286,637	189,287
MiHR Definition [212, 213, 3311, 3313, 3314]	48,426	11,480	n.a.	n.a.	n.a.	n.a.
Mining, quarrying, and oil and gas extraction [21]	156,423	6,857	1,851	19,096	91,888	13,236
Oil and gas extraction [211]	120,073	139	775	13,189	83,676	7,952
Mining and quarrying (except oil and gas extraction) [212]	25,746	5,976	997	5,010	1,323	4,497
Coal mining [2121]	3,779	0	0	x	855	2,834
Metal ore mining [2122]	13,417	4,682	923	x	2	1,464
Iron ore mining [21221]	2,743	0	0	0	0	x
Gold and silver ore mining [21222]	1,858	920	x	x	2	187
Copper, nickel, lead and zinc ore mining [21223]	7,546	x	x	0	0	897
Other metal ore mining [21229]	1,271	x	x	660	0	x
Non-metallic mineral mining and quarrying [2123]	8,550	1,294	74	4,233	467	200
Stone mining and quarrying [21231]	824	454	23	0	17	58
Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying [21232]	1,018	359	19	x	x	133
Diamond mining [212392]	1,531	226	0	0	0	0
Potash mining [212396]	4,489	0	0	x	0	0
Other non-metallic mineral mining and quarrying [21239A]	688	257	32	x	x	9
Support activities for Mining, quarrying, and oil and gas extraction [213]	10,603	742	79	898	6,889	787
Support activities for oil and gas extraction [21311A]	8,237	39	43	759	6,349	634
Support activities for mining and quarrying [21311B]	2,366	703	36	139	540	153
Primary metal manufacturing [331]	14,562	5,997	426	x	x	1,112
Iron and steel mills and ferro-alloy manufacturing [3311]	3,427	2,680	x	x	x	12
Steel product manufacturing from purchased steel [3312]	1,551	710	x	x	551	x
Alumina and aluminum production and processing [3313]	4,692	302	x	0	x	x
Non-ferrous metal (except aluminum) production and processing [3314]	3,958	1,780	x	0	x	x
Foundries [3315]	933	526	x	x	x	x

Source: Statistics Canada, CANSIM Tables 379-0030 (provinces) and 379-0029 (Canada)

Note: "x" signifies that the data point was suppressed to meet the confidentiality requirements of the Statistics Act.

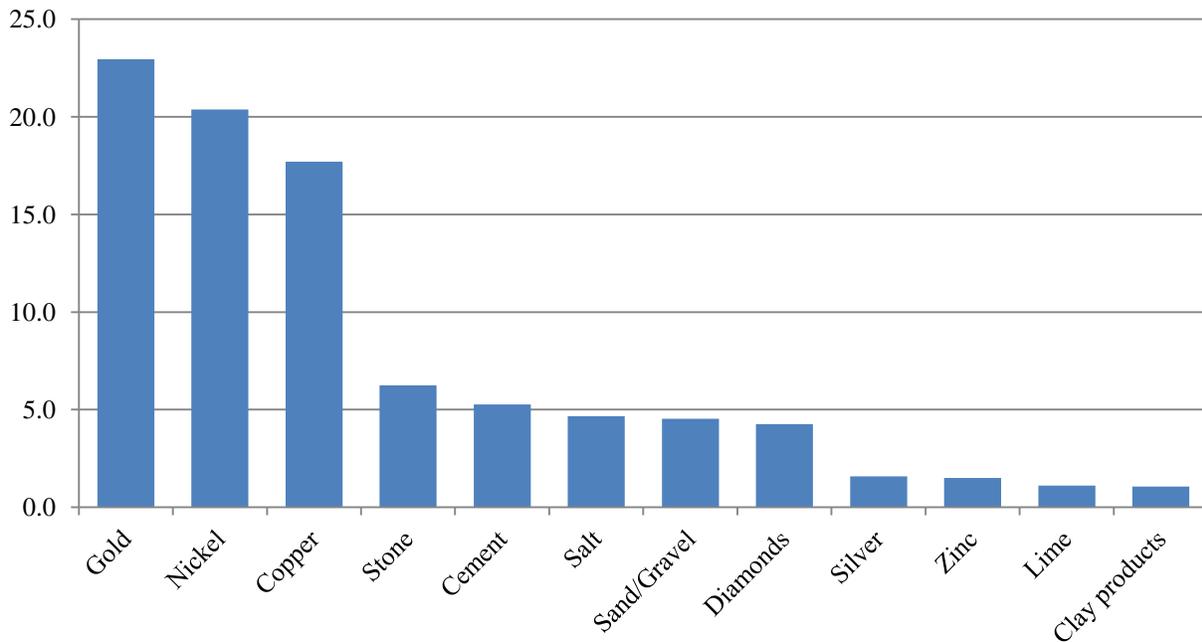
C. A Closer Look at the Relevant Provinces

i. Ontario

In 2011, gold, nickel and copper accounted, by far, for the largest shares of the total value of mineral production in Ontario at 22.9 per cent, 20.4 per cent and 17.7 per cent, respectively (Chart 14). Production value shares are provided for all minerals for which data were not suppressed to meet the confidentiality requirements of the Statistics Act. For Ontario, suppressed data represented only 7.2 per cent of the total value of mineral production.

There were 322 mining establishments in Ontario in 2010. Of this total, 220 were involved in sand and gravel extraction, followed closely by those involved in stone quarrying (Table 4). Even though there were many establishments involved in sand, gravel and stone production in Ontario, their share of the total value of mineral production was small, since these are not high-value minerals like gold. Excluding these low-value establishments, most of the remaining mining establishments in Ontario were involved in metallic mineral extraction (18). Most notably, Ontario was host to ten gold/silver ore mining establishments and six nickel-copper ore mining establishments in 2010.

In 2008, the nominal value added of the mining industry (according to the MiHR definition) in Ontario was \$11.5 billion (or 2.0 per cent of total nominal GDP) (Table 5). Ontario's mining industry consisted of mining and quarrying (except oil and gas extraction) (at 52.1 per cent of the total), support activities for mining, quarrying, and oil and gas extraction (at 6.5 per cent of the total), iron and steel mills and ferro-alloy manufacturing (at 23.3 per cent of the total), alumina and aluminum production and processing (2.6 per cent), and non-ferrous metal (except aluminum) production and processing (at 15.5 per cent of the total). The mining industry in Ontario accounted for 23.7 per cent of national mining industry in 2008, which was worth \$48.4 billion.

Chart 14: Shares of Total Value of Mineral Production by Type of Mineral, Ontario, per cent, 2011

Source: NRCan, Minerals and Metals Division

ii. Manitoba

Much like Ontario, nickel, copper and gold had the largest shares of the total value of mineral production in Manitoba in 2011 at 33.0 per cent, 27.7 per cent and 14.0 per cent, respectively (Chart 15). Suppressed mineral production data accounted for merely 4.9 per cent of total mineral production. The province also produces 100.0 per cent of Canada's cesium.³⁵

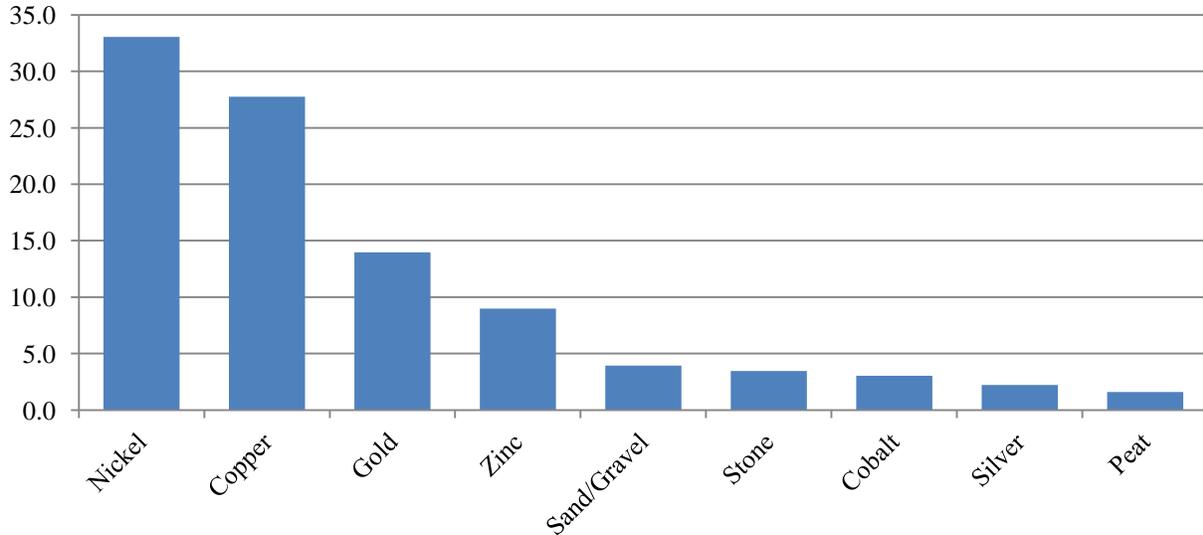
Manitoba had one gold/silver ore mining establishment in 2010, which alone was responsible for 14.0 per cent of the total value of Manitoba's mineral production (Table 4). Other notable establishments included two nickel-copper ore mines and one copper-zinc ore mine, which collectively accounted for 69.8 per cent of total mineral production in that province.

Nominal GDP estimates were not available for the NAICS industries classified under primary metal manufacturing for Manitoba (Table 5). Consequently, mining industry output according to the MiHR definition could only be approximated by the sum of mining and quarrying (except oil and gas extraction), support activities for mining, quarrying, and oil and gas extraction, and primary metal manufacturing. Using this method, the mining industry accounted for 3.1 per cent of Manitoba's total economy nominal GDP in 2008. The difference between the mining industry as defined by the MiHR and this estimate is our inclusion of steel product manufacturing from purchased steel and foundries, which results in an overestimation of the actual importance of the MiHR-defined mining industry. In addition, 66.4 per cent of the mining industry's share in

³⁵ Province of Manitoba, "Manitoba Mining Facts," <http://www.manitoba.ca/iem/mrd/min-ed/minfacts/index.html>

total nominal GDP in Manitoba was accounted for by mining and quarrying (except oil and gas extraction) in 2008.

Chart 15: Shares of Total Value of Mineral Production by Type of Mineral, Manitoba, per cent, 2011



Source: NRCan, Minerals and Metals Division

iii. Saskatchewan

Suppressed mineral production data accounted for 85.6 per cent of the total value of mineral production for Saskatchewan. However, we know that nine out of the ten potash establishments in Canada are in Saskatchewan and that Canadian potash production in 2011 was \$7.8 billion. Therefore, we can approximate Saskatchewan's potash output at \$7.2 billion or 77.9 per cent of the total value of Saskatchewan's mineral output. Uranium production in the province was also important, accounting for 11.8 per cent of total mineral output in Saskatchewan in 2011 (Chart 16).

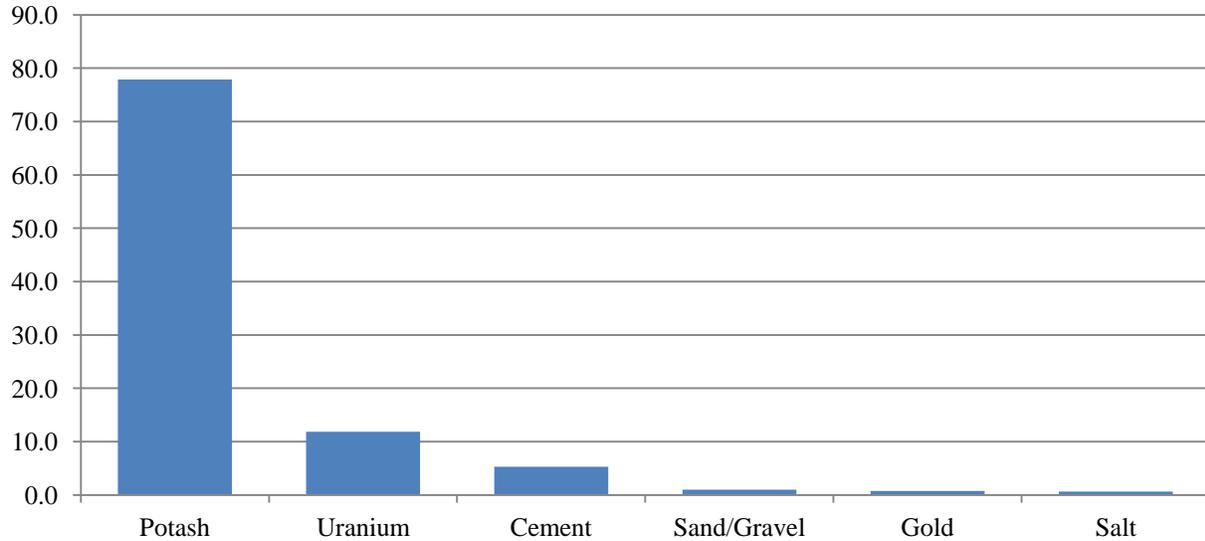
In addition to the nine potash establishments in Saskatchewan, all four uranium mines in Canada were located in Saskatchewan (Table 4). Uranium mining in Saskatchewan may soon be heightened as the 1993 disarmament treaty requiring Russia to unload the radioactive material from discarded nuclear weapons ends.³⁶ Previously, Russia was responsible for 24 million lbs. of uranium exports a year, which kept prices low. In addition, around 500 nuclear reactors are either planned or under construction around the world. There were few other mining establishments in Saskatchewan (excluding the low-value ones discussed earlier).

Nominal GDP estimates for primary metal manufacturing and the NAICS industries classified under it were unavailable for Saskatchewan (Table 5). As a result, mining industry GDP estimates according to the MiHR definition were not available for Saskatchewan; however, GDP

³⁶ Cecilia Jamasmie, "Russia set to drive long-term demand for uranium: report," *Mining.com*, 13 March 2013, <http://www.mining.com/russia-set-to-drive-long-term-demand-for-uranium-report-82318/>

estimates were available for mining and quarrying (except oil and gas extraction), which accounted for 7.8 per cent of Saskatchewan's nominal total economy GDP in 2008.

Chart 16: Shares of Total Value of Mineral Production by Type of Mineral, Saskatchewan, per cent, 2011



Source: NRCan, Minerals and Metals Division

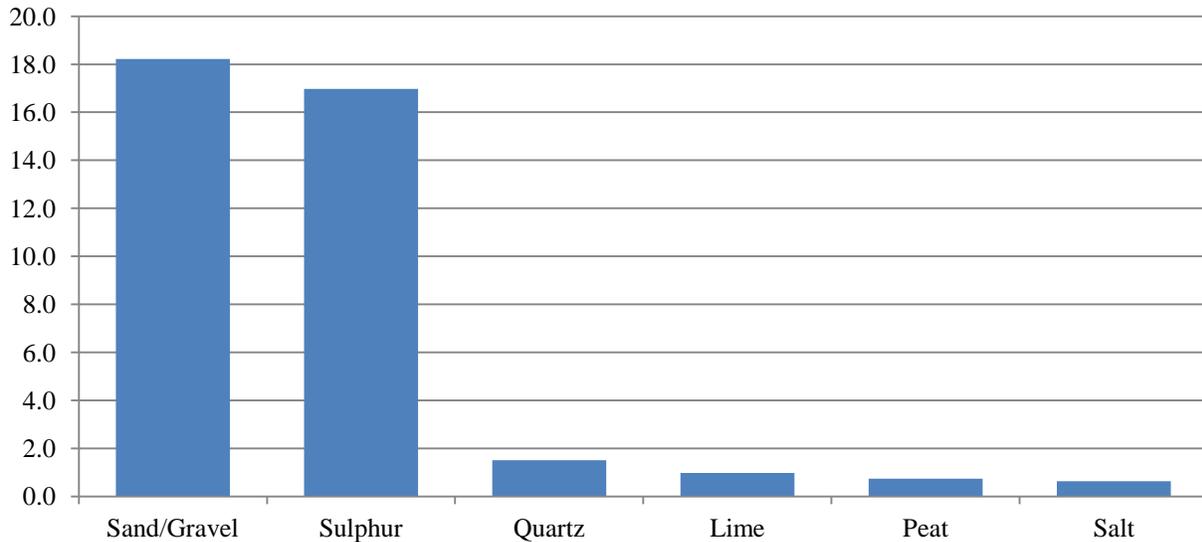
iv. Alberta

Similar to Saskatchewan, suppressed mineral production data accounted for 61.2 per cent of the total value of mineral production for Alberta. The value of production for Alberta's coal and other non-metallic minerals (which made up virtually all of mining production in Alberta, as metallic mineral production was nonexistent) were suppressed. We do know, however, that sand/gravel and sulphur production accounted for 18.2 per cent and 17.0 per cent (respectively) of the total value of mineral output in Alberta in 2011 (Chart 17). It is likely that coal accounted for almost all of the 61.2 per cent of the total value of mineral production that was unaccounted for.

Like Saskatchewan, mining industry GDP estimates according to the MiHR definition were unavailable for Alberta; however, they were available for mining and quarrying (except oil and gas extraction) (Table 5). This industry accounted for only 0.5 per cent of Alberta's nominal total economy GDP in 2008, dwarfed by oil and gas extraction's share (29.2 per cent).

Coal mining accounted for the lion's share of mineral production in Alberta in 2008, representing 64.6 per cent of the province's nominal GDP in mining and quarrying (except oil and gas extraction) (see Table 5). According to the Government of Alberta, 70 per cent of Canada's coal reserves are located Alberta, which is the country's largest producer and its second-largest coal exporter (after British Columbia).

Chart 17: Shares of Total Value of Mineral Production by Type of Mineral, Alberta, per cent, 2011



Source: NRCan, Minerals and Metals Division

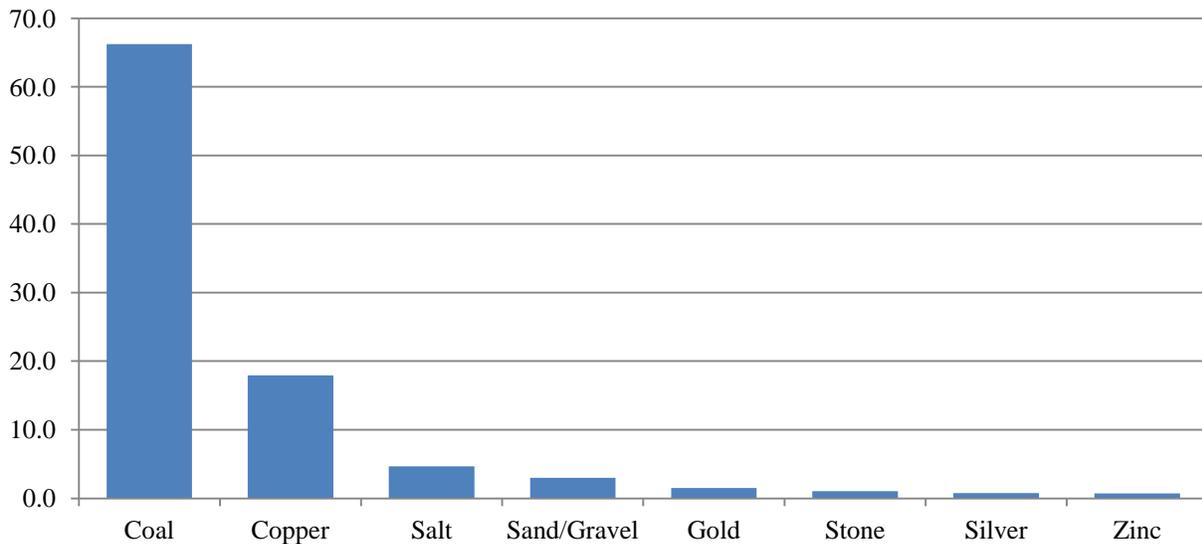
v. British Columbia

Coal and copper production accounted for the largest shares in the total value of mineral production in British Columbia in 2011 at 66.2 per cent and 18.0 per cent, respectively (Chart 18). For British Columbia, suppressed data only accounted for 8.8 per cent of total mineral production. Coal was by far the most important component of British Columbia's mineral production in 2011, dwarfing the value shares of all other minerals.

Nominal GDP estimates for the NAICS industries classified under primary metal manufacturing were not available for British Columbia (Table 5). Consequently, mining industry GDP estimates according to the MiHR definition were unavailable for this province; however, they were approximated with the same technique used for Manitoba. With this approach, it was estimated that the MiHR-defined mining industry amounted to 3.4 per cent of British Columbia's total economy nominal GDP in 2008; 70.3 per cent of this share was accounted for by mining and quarrying (except oil and gas extraction).

The significance of coal production in British Columbia can also be demonstrated using the GDP estimates in Table 5. Coal mining accounted for 63.0 per cent of nominal GDP in mining and quarrying (except oil and gas extraction) and 1.5 per cent of the province's total economy nominal GDP in 2008. According to the BC government, coal production represents over half of the total mineral production revenues and the largest single export commodity for the province.

Chart 18: Shares of Total Value of Mineral Production by Type of Mineral, British Columbia, per cent, 2011



Source: NRCan, Minerals and Metals Division

VI. Labour Market Trends in the Mining Industry

This section is dedicated to an analysis of current and historical trends in the mining industry labour market. In the first part of this section, Canada's mining industry labour market is examined according to the following variables: total employment; changes in industry contributions to total employment; the relationship between mining employment and mineral prices; and employment by age group. The second part of this section provides estimates of employment in the mining industry and industry contributions to mining employment.

A. Canada

1. Employment Estimates for the Mining Industry

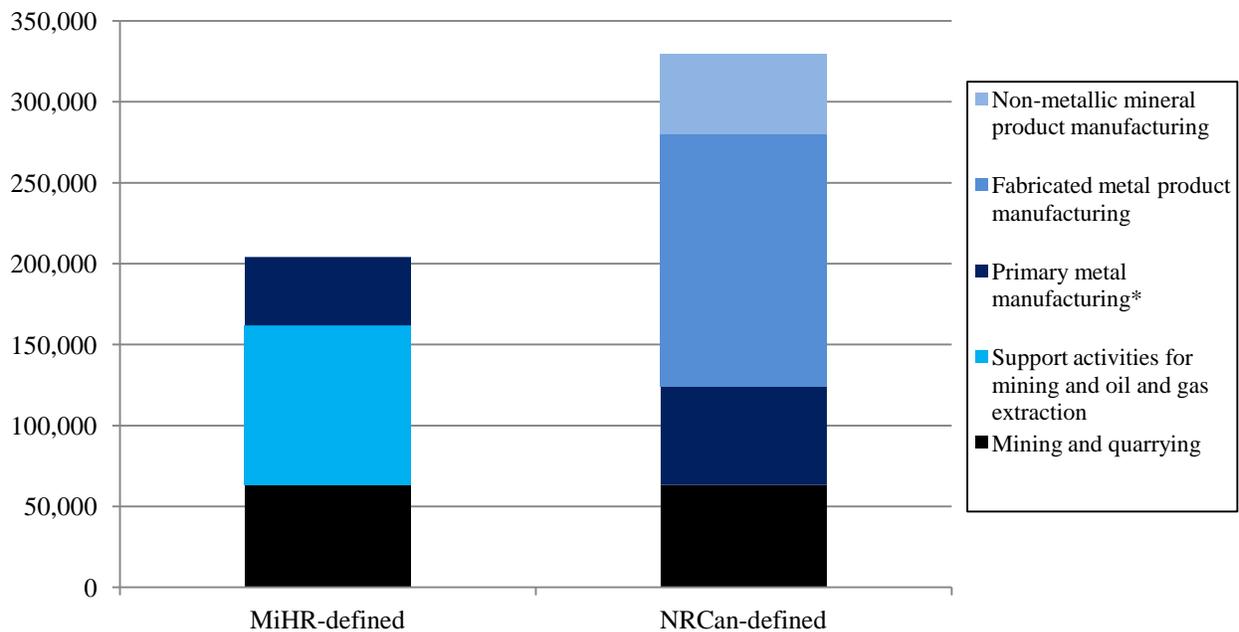
In Chart 19, SEPH employment estimates for the mining industry are presented according to the MiHR and NRCan definitions of the mining industry. According to the MiHR definition, the mining industry had 204.0 thousand employees in 2012; 31.1 per cent of which were involved in mining and quarrying (except oil and gas extraction), 48.2 per cent in support activities for mining, quarrying and oil and gas extraction, and the remaining 20.7 per cent in the three four-digit NAICS industries under primary metal manufacturing included in the MiHR definition. Employment in the MiHR-defined mining industry accounted for 1.3 per cent of total employment in all industries in 2012. Since much of the employment in support activities for mining, quarrying and oil and gas extraction is devoted to its oil and gas component (it is impossible to know what proportion with certainty, but it probably ranges from one-half to three-quarters), the MiHR definition of the mining industry used here is deeply flawed.³⁷ Thus, the most important statistics discussed here are employment estimates for mining and quarrying (except oil and gas extraction),

³⁷ Refer to the second section of this report for more information on this issue.

because these actually pertain to primary mining activities. Mining and quarrying (except oil and gas extraction) employment was 63.4 thousand in 2012, or 0.4 of total Canadian employment.

According to NRCan's definition, the mining industry employed 329.9 thousand workers in 2012, accounting for 2.2 per cent of total employment in all industries. Of this total, fabricated metal product manufacturing had the largest share (47.3 per cent), followed by primary metal manufacturing (18.4 per cent), mining and quarrying (except oil and gas extraction) (19.2 per cent), and non-metallic mineral product manufacturing (15.1 per cent). NRCan's definition of the mining industry will not be utilized to analyze employment trends in this section, however, as no hiring projections are available for the mining industry under this definition

Chart 19: Employment Estimates for the Mining Industry by Definition, Canada, 2012



Source: Statistics Canada, CANSIM Table 281-0024 (SEPH)

* The primary metal manufacturing estimate used to calculate mining employment according to the MiHR definition only includes the three four-digit NAICS industries used in their definition. This explains why primary metal manufacturing employment is larger for the MiHR aggregate compared to the MAC aggregate.

2. Changes in Overall Mining Industry Employment and its Constitution

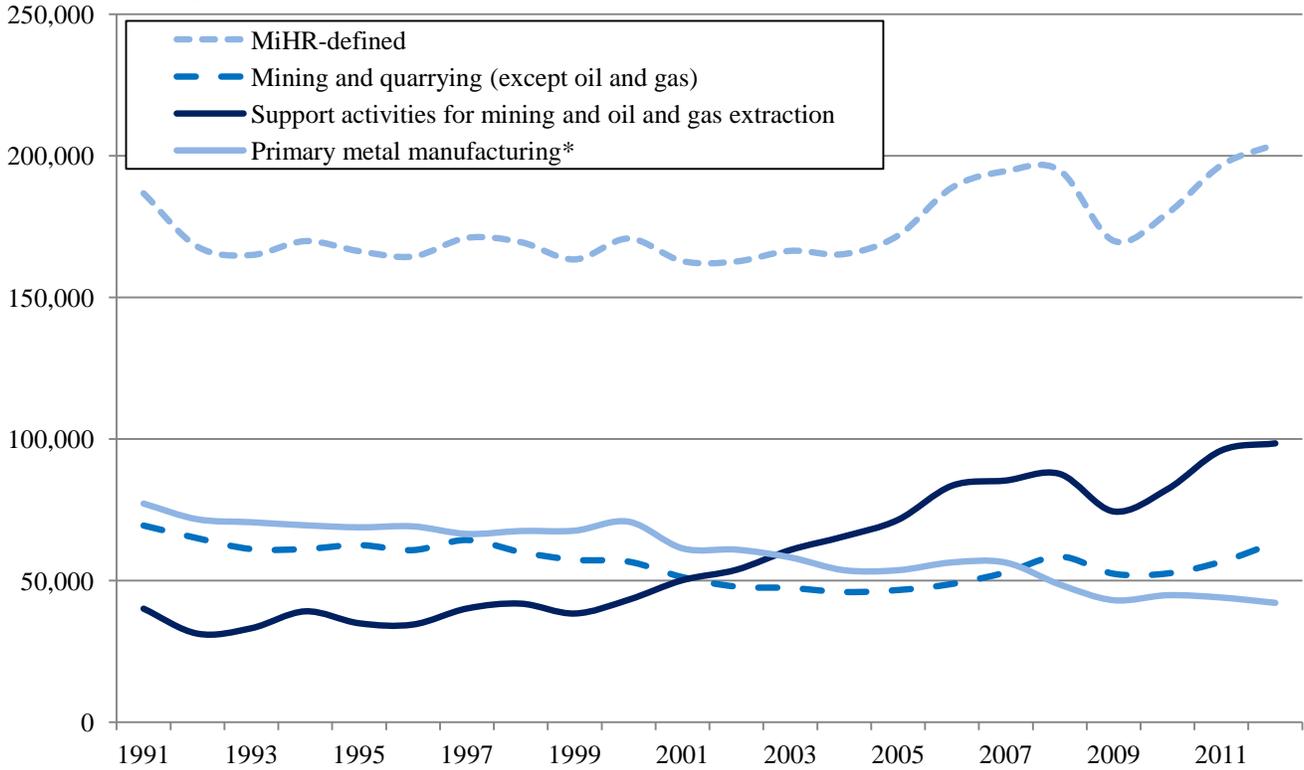
Throughout the remainder of this section, the MiHR definition of the mining industry will be used unless otherwise stated. SEPH and Census employment estimates for the three- and four-digit NAICS levels are used to create aggregate employment estimates based on the MiHR definition of the mining industry. Sometimes the SEPH and Census estimates of MiHR-defined mining industry employment are unavailable due to data suppression. In those cases, the nearest alternative definition for which there is available data (e.g., LFS employment estimates for mining, quarrying, and oil and gas extraction) will be used.

According to SEPH estimates, employment in the mining industry in Canada grew from 186.8 thousand workers in 1991 to 204.0 thousand workers in 2012, an increase of 9.3 per cent (Chart 20 and Table 6). Mining employment actually declined between 1991 and 2002, before increasing rapidly from 2002 to 2008 by 19.8 per cent as demand for metals and minerals boomed and prices skyrocketed. In 2009, however, mining employment – and mineral prices – collapsed, falling 12.8 per cent. Between 2009 and 2012, mining employment recovered quickly, growing by 34.1 thousand workers (or 20.0 per cent). Estimates of the experienced labour force from the 2001 and 2006 Censuses put mining industry employment at 219.0 thousand workers in 2005, up 18.5 per cent from 184.8 thousand workers in 2000.

The contribution of individual NAICS industries to total mining industry employment has changed drastically over the 1991-2011 period. The contribution of the three four-digit NAICS industries classified under primary metal manufacturing that are included in the MiHR definition of the mining industry to total mining employment has fallen steadily from 41.3 per cent in 1991 to 20.7 per cent in 2012, as primary metal manufacturing employment declined by 45.3 per cent. In addition, mining and quarrying (except oil and gas extraction) saw its share of total mining employment fall from 37.2 per cent in 1991 to 31.1 per cent in 2012, as employment in that industry fell 8.7 per cent. Nevertheless, the contribution of mining and quarrying (except oil and gas extraction) to total mining employment bottomed out in 2006 (at 25.9 per cent) before growing by 5.2 percentage points between 2006 and 2012, as employment in that industry rose. Conversely, the contribution of support activities for mining, quarrying and oil and gas extraction to total mining employment grew dramatically from 21.5 per cent in 1991 to 48.2 per cent in 2012, driven by an increase in support activities for mining, quarrying and oil and gas extraction employment of 145.3 per cent. Much of this employment growth was linked to the development of the Alberta oil sands; this is extremely important because it implies that the growing contribution of support activities for mining, quarrying and oil and gas extraction employment to total mining employment was driven by its oil and gas component, which has nothing to do with the mining industry. Consequently, it is best to focus on trends in mining and quarrying (except oil and gas extraction), as it excludes oil and gas extraction.

Mining and quarrying (except oil and gas extraction) employment fell from 69.4 thousand in 1991 to 46.0 thousand in 2004, a decline of 33.8 per cent; however, employment in this industry grew dramatically over the 2004-2012 period (37.9 per cent), which demonstrates that growth in global demand for minerals can drive employment in mineral extraction.

Chart 20: Contribution of NAICS Industries in the MiHR-defined Mining Industry to Changes in Total Mining Industry Employment, Canada, 1991-2012



Source: Statistics Canada, CANSIM Table 281-0024 (SEPH)

* The primary metal manufacturing estimate includes the three four-digit NAICS industries classified under primary metal manufacturing that are included in the MiHR definition of the mining industry.

Table 6: Employment Estimates for Mining-Related NAICS Industries in Total Employment, Canada, 1991-2012

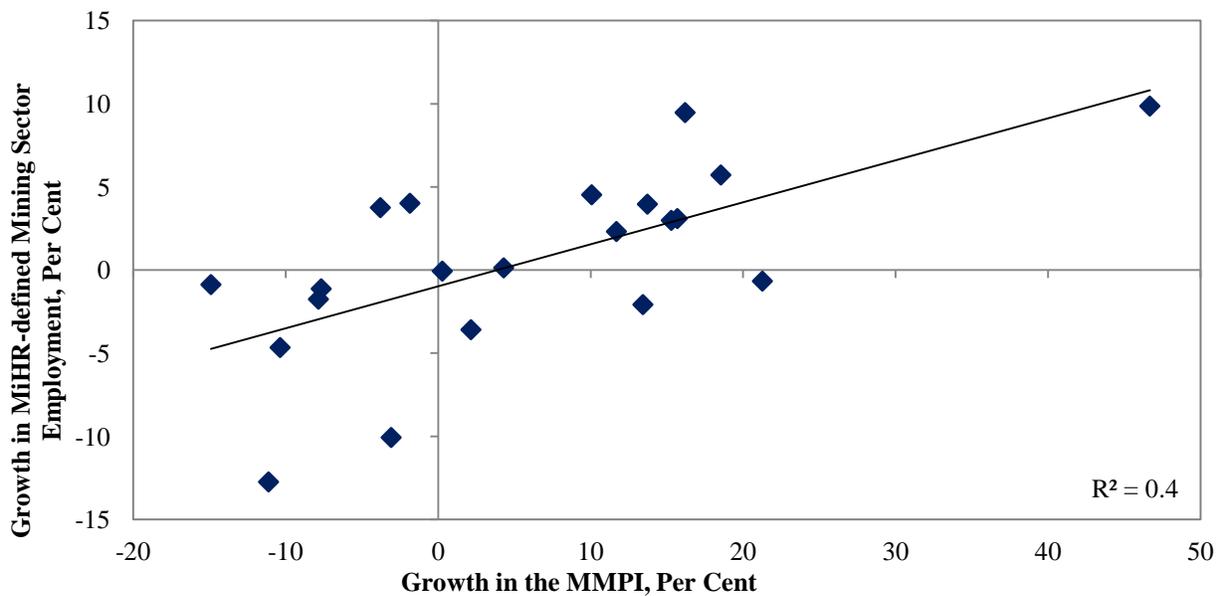
	<i>Industrial aggregate including unclassified businesses</i>	<i>MiHR-defined</i>	<i>Mining, quarrying, and oil and gas extraction</i>	<i>Oil and gas extraction</i>	<i>Mining and quarrying (except oil and gas)</i>	<i>Support activities for mining, quarrying, and oil and gas extraction</i>	<i>Primary metal manufacturing</i>	<i>Iron and steel mills and ferro-alloy manufacturing</i>	<i>Steel product manufacturing from purchased steel</i>	<i>Alumina and aluminum production and processing</i>	<i>Non-ferrous metal (except aluminum) production and processing</i>	<i>Foundries</i>
1991	11,103,151	186,758	152,742	43,186	69,431	40,125	108,829	32,642	14,578	15,701	28,859	17,050
1992	10,781,263	167,932	135,330	39,063	64,956	31,311	102,130	29,810	13,824	15,497	26,358	16,641
1993	10,810,931	164,969	126,664	32,320	61,126	33,218	101,751	28,765	13,624	15,923	25,937	17,502
1994	10,935,585	169,878	135,304	34,968	61,160	39,177	102,587	27,929	12,183	16,044	25,568	20,863
1995	11,169,636	166,330	132,204	34,697	62,536	34,971	102,127	28,725	13,262	15,448	24,650	20,042
1996	11,254,543	164,438	128,240	32,962	60,764	34,514	101,727	28,941	14,067	16,858	23,361	18,500
1997	11,564,203	171,023	138,972	34,457	64,337	40,178	98,828	29,073	13,314	16,521	20,914	19,007
1998	11,793,472	169,511	138,040	36,060	60,090	41,890	100,957	29,779	13,955	16,486	21,266	19,471
1999	11,963,559	163,410	132,392	36,634	57,353	38,405	100,529	29,716	13,953	16,521	21,415	18,924
2000	12,397,667	170,787	136,269	36,310	56,698	43,261	104,253	29,509	14,434	18,232	23,087	18,991
2001	12,951,092	162,810	138,947	37,539	51,231	50,177	91,185	26,976	12,234	15,579	18,847	17,550
2002	13,153,177	162,687	141,225	39,498	47,893	53,834	90,322	27,513	11,057	16,747	16,700	18,305
2003	13,413,314	166,439	149,038	40,831	47,391	60,816	85,402	25,889	10,386	17,621	14,722	16,784
2004	13,642,637	165,312	153,776	42,173	45,986	65,617	79,703	21,977	10,311	17,434	14,298	15,683
2005	13,931,523	171,845	162,488	44,346	46,689	71,453	78,731	21,416	10,221	17,859	14,428	14,807
2006	14,300,677	188,770	180,993	48,677	48,830	83,486	80,681	21,956	9,717	18,277	16,221	14,509
2007	14,606,197	194,593	192,237	54,035	52,877	85,325	78,802	20,311	9,776	19,230	16,850	12,635
2008	14,878,743	194,827	202,436	56,283	58,506	87,648	69,107	18,855	10,819	16,651	13,167	9,615
2009	14,608,100	169,980	181,501	54,652	52,429	74,420	59,413	16,738	8,529	13,241	13,152	7,753
2010	14,740,907	179,679	186,460	51,665	52,532	82,262	61,098	17,012	7,604	14,130	13,743	8,609
2011	14,986,103	196,675	206,667	54,070	56,669	95,928	61,845	15,580	8,367	13,242	15,256	9,399
2012	15,241,457	204,034	220,689	58,851	63,418	98,421	60,734	15,330	8,994	11,380	15,485	9,545

Source: Statistics Canada, CANSIM Table 281-0024 (SEPH)

3. The Relationship between Mining Industry Employment and Mineral Prices

As Chart 21 shows, changes in mineral prices and mining employment are significantly correlated, with a coefficient of 0.7 for the 1992-2012 period. MiHR research supports this fact, showing a strong, positive correlation between mineral commodity prices and employment in the mining industry, as well as a strong, negative correlation between mining industry labour productivity and employment in the mining industry.³⁸ Given the strength of these relationships, both mineral prices and labour productivity play an important role in forecasting employment in the mining industry

Chart 21: The Relationship between Growth in Employment in the MiHR-Defined Mining Industry and the Growth in Metal and Mineral Price Index, Canada, 1992-2012



Source: Statistics Canada, CANSIM Table 281-0024 (SEPH); and the Bank of Canada, Commodity Price Index (MMPI)

4. Mining Industry Employment by Age Group

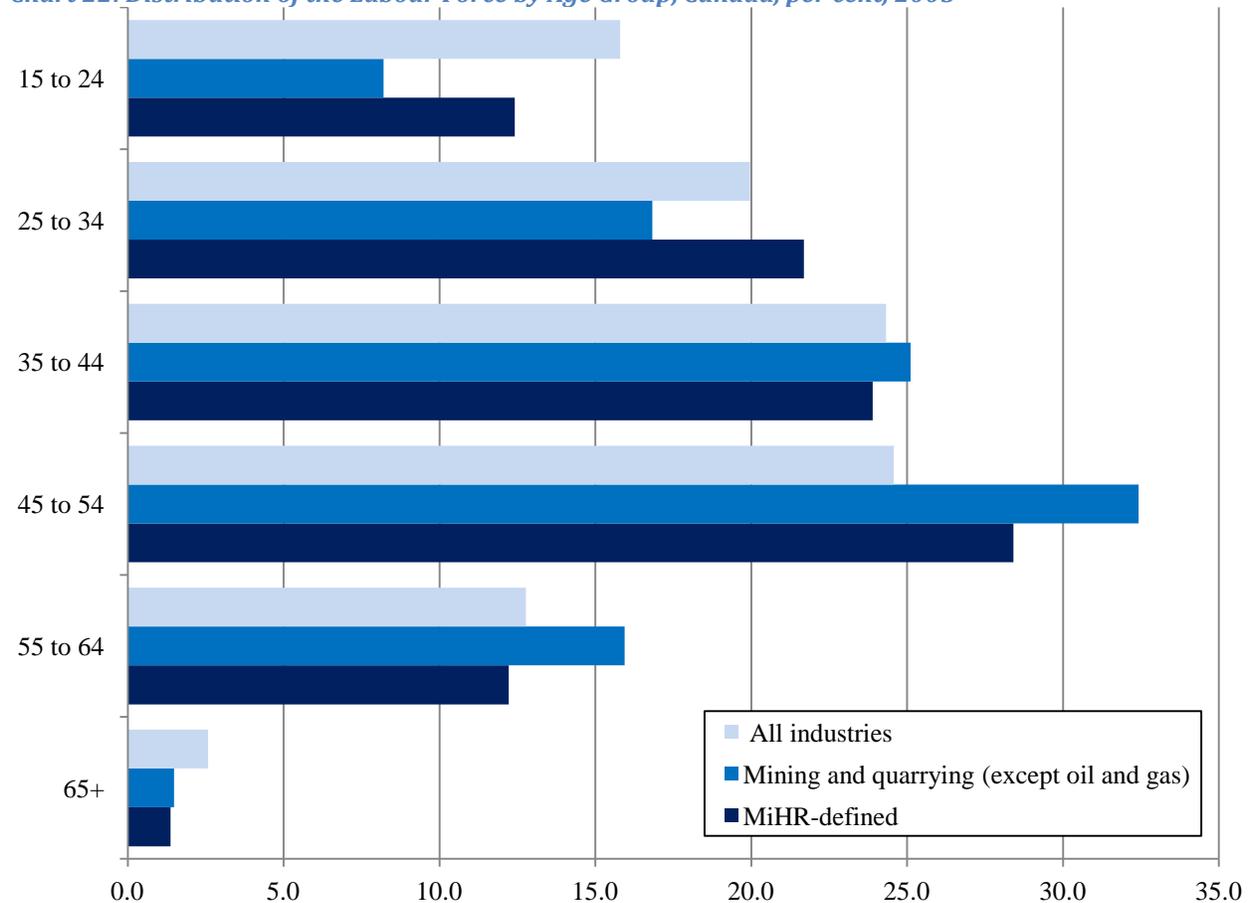
Canada's baby boom generation is reaching retirement age. As a result, many skilled workers will be needed to replace this generation of workers. This need is particularly urgent for the mining industry, as the average age of the mining workforce exceeds 45 years, far above the total economy average of 41 years, and the average retirement age in the mining industry was 59.5 years in Canada over the last two decades – 2.5 years younger than the total economy average of 62.0 years.³⁹ In addition, the proportion of the mining, quarrying, and oil and gas extraction workforce that is 55 years of age or older has increased substantially in Canada from 8.0 per cent in 1987 to 13.3 per cent in 2012.

³⁸ Mining Industry Human Resources Council (2010), "Canadian Mining Employment and Hiring Forecasts," page 50, http://www.mininghrforecasts.ca/en/resources/MiHR_Canadian_Mining_Employment_Forecasts_July2010.pdf

³⁹ Foreign Credential Referral Office, "Mining," <http://www.credentials.gc.ca/immigrants/factsheets/mining.asp>

Using data from the 2006 Census, the distribution of the labour force by age group was calculated for the MiHR-defined mining industry, mining and quarrying (except oil and gas extraction), and the total economy average (Chart 22).⁴⁰ Compared to the average across all industries, the proportion of the mining industry labour force aged 45 to 54 years was large. The share of the MiHR-defined mining industry labour force aged 45 to 54 years was 3.8 percentage points higher than the average across all industries; this gap was 7.9 percentage points for mining and quarrying (except oil and gas extraction). In addition, mining and quarrying (except oil and gas extraction) had a larger share of their labour forces aged 55 to 64 years (by 3.2 percentage points). The smaller proportion of the mining industry labour force aged 65 years and over compared to the total economy average can probably be explained by the fact that mining industry workers retire earlier on average.

Chart 22: Distribution of the Labour Force by Age Group, Canada, per cent, 2005



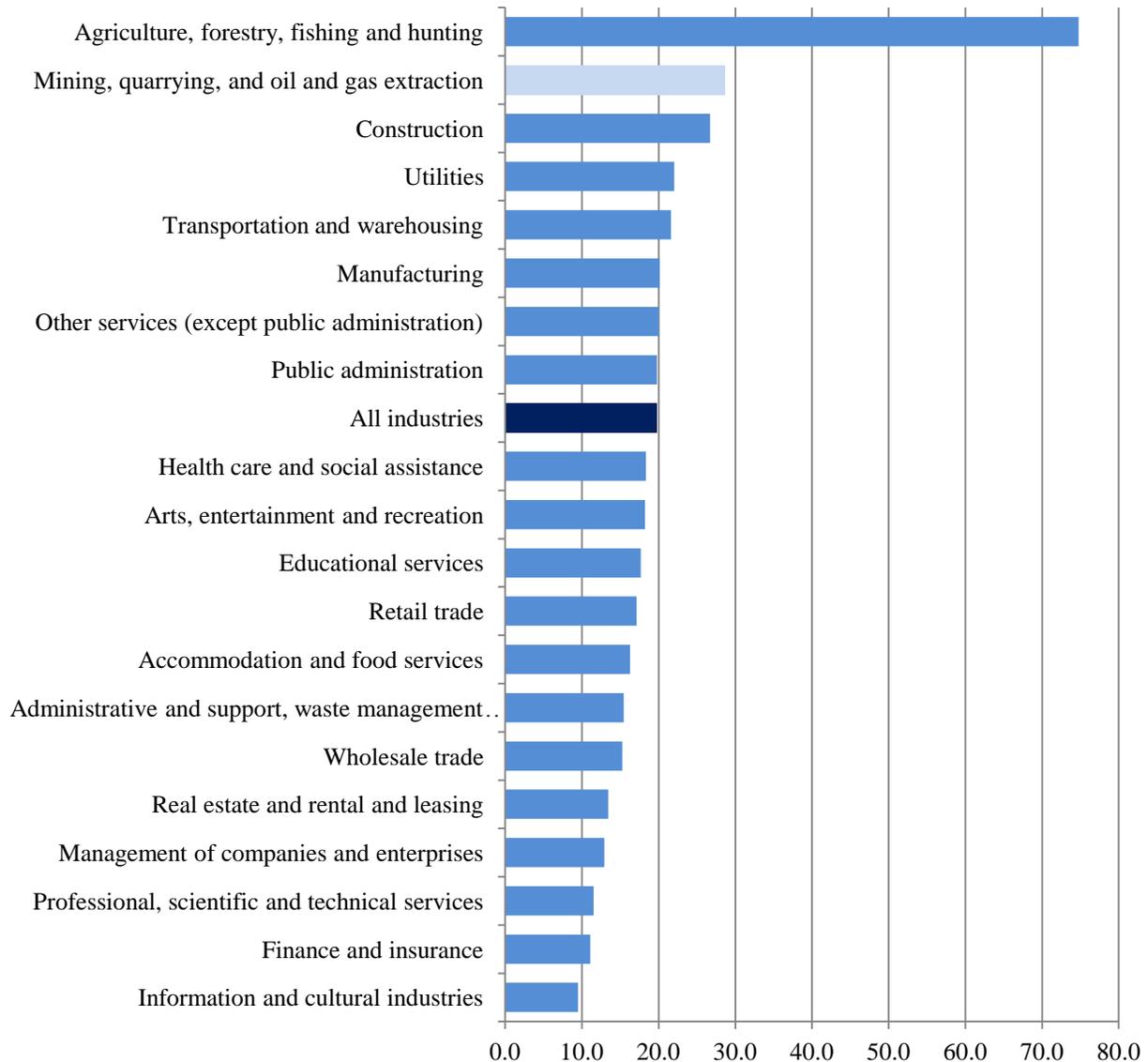
Source: Statistics Canada, 2006 Census Topic Based Tabulations

5. The Proportion of the Labour Force in Non-Urban Areas by Industry

⁴⁰ “Labour force” refers to the experienced labour force population aged 15 years and older. This includes persons who were employed and persons who were unemployed who worked for pay or in self-employment since January 1 of the census reference year. The census reference years are as follows: 2000 for the 2001 Census and 2005 for the 2006 Census.

The average proportion of the total experienced labour force in non-urban areas across all industries was 19.7 per cent in 2005 (Chart 23). Compared to this average, mining, quarrying, and oil and gas extraction was extremely rural with the proportion of its labour force in non-urban at 28.6 per cent in 2005. The proportion of the mining, quarrying, and oil and gas extraction labour force in non-urban areas ranked second among the two-digit NAICS industries in 2005, behind only agriculture, forestry, fishing, and hunting (which was clearly an outlier).⁴¹

Chart 23: Proportion of the Total Labour Force in Non-Urban Areas by Industry, per cent, Canada, 2005



Source: Statistics Canada, 2006 Census Topic Based Tabulations

⁴¹ For a variety of maps illustrating the proximity of Canada's principal producing mines and top 100 exploration sites to Métis communities, visit <http://www.metisportals.ca/healthportal/pages/programs/img.jpg>, <http://www.nrcan.gc.ca/minerals-metals/4437#en4>, and http://apps1.gdr.nrcan.gc.ca/mirage/show_image_e.php?client=jp2&id=292216&image=gscmap-a_900A_e_2013_mn01.sid.

B. The Relevant Provinces

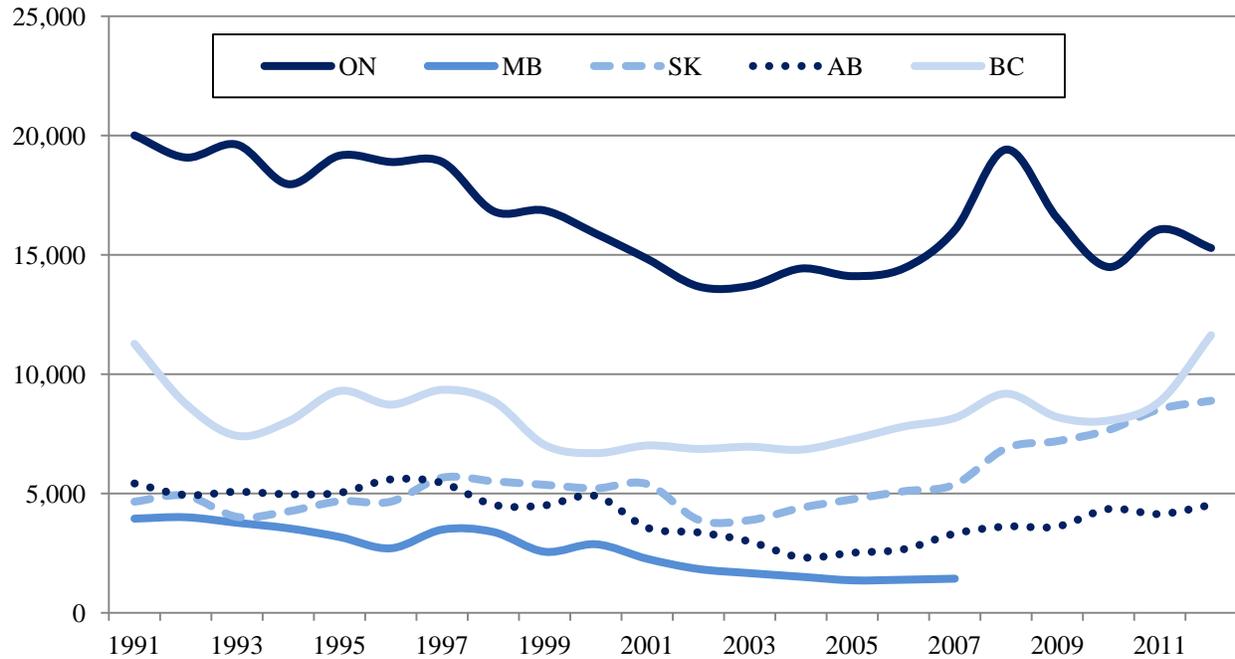
1. SEPH Estimates of Mining Employment

SEPH employment estimates for the MiHR-defined mining industry were not available for the province, but SEPH estimates for mining and quarrying (except oil and gas extraction) employment were available for the provinces. Ontario's mining and quarrying (except oil and gas extraction) workforce has been and remains the largest in Canada. In 2012, 15.3 thousand individuals were employed in Ontario's mining industry, followed by British Columbia (11.6 thousand), Saskatchewan (8.9 thousand), and Alberta (4.5 thousand). Manitoba, for which the latest mining industry employment data estimates were for 2007, had the smallest workforce (1.4 thousand). This ranking is also reflected in the GDP data in Table 3.

Ontario experienced the deepest decline in mining and quarrying (except oil and gas extraction) employment over the 1991-2012 period (4.7 thousand jobs or 22.1 per cent) (Chart 24). Other provinces that experienced declining employment levels in mining and quarrying (except oil and gas extraction) were Alberta (0.9 thousand or 16.6 per cent from 1991 to 2012) and Manitoba (2.5 thousand or 63.7 per cent from 1991 to 2007). Due to data suppression by Statistics Canada, SEPH employment estimates for Manitoba's mining industry after 2007 were not available. Over the 1991-2012 period, Saskatchewan saw its employment in mining and quarrying (except oil and gas extraction) increase by 4.2 thousand or 90.6 per cent. British Columbia had comparable levels of employment in mining and quarrying (except oil and gas extraction) in 1991 as in 2012.

Employment in mining and quarrying (except oil and gas extraction) has been cyclical in all of the provinces relevant to this report over the 1991-2012 period. All of the provincial mining and quarrying (except oil and gas extraction) industries have experienced trends similar to the overall Canadian mining and quarrying (except oil and gas extraction) industry. The provincial trends are characterized by declining or steady employment in mining and quarrying (except oil and gas extraction) from 1991 to 2002/2003, followed by a substantial increase, as mineral prices increased significantly. The fact that mining and quarrying (except oil and gas extraction) employment has increased in recent years bodes well for the Métis; however, future employment trends remains unpredictable as global economic tailwinds often metamorphose suddenly and without warning into headwinds.

Chart 24: Mining and Quarrying (Except Oil and Gas Extraction) Employment, Canada and the Relevant Provinces, 1991-2012



Source: Statistics Canada, CANSIM Table 281-0024 (SEPH)

2. Industry Contributions to Mining Industry Employment

Estimates of the size of the labour force for the MiHR-defined mining industry were available from the 2006 Census for Canada and the provinces (Table 7). In 2005, Alberta employed the largest proportion of the total mining industry (35.2 per cent), followed by Ontario (21.7 per cent), British Columbia (9.2 per cent), and Saskatchewan (7.2 per cent). Manitoba had the smallest mining industry labour force at 2.5 per cent of the Canadian total, or 5.6 thousand workers. Alberta only had such a high proportion of total mining industry employment in 2006, because this province employed 70.9 thousand people in support activities for mining, quarrying, and oil and gas extraction (almost all of which is devoted to its oil and gas component). Since support activities for oil and gas extraction are included in support activities for mining, quarrying, and oil and gas extraction, our aggregate employment figures based on the MiHR definition for the provinces (but particularly Alberta) should be interpreted with caution.⁴²

Mining and quarrying (except oil and gas extraction) employment was most highly concentrated in Ontario (27.2 per cent), followed by British Columbia (14.5 per cent), Saskatchewan (10.7 per cent), Alberta (8.1 per cent), and Manitoba (4.1 per cent). Unsurprisingly, Ontario also had the largest proportion of total employment in the three primary metal manufacturing industries included in the MiHR definition of the mining industry (46.5 per cent).

⁴² Refer to the second section of this report for more information on this issue.

Table 7: Total Labour Force Estimates by NAICS industry, Canada and the Relevant Provinces, 2005

<i>NAICS Code or Equivalent</i>	<i>Canada</i>	<i>ON</i>	<i>MB</i>	<i>SK</i>	<i>AB</i>	<i>BC</i>
All industries	16,861,180	6,473,730	602,150	517,475	1,928,640	2,193,115
MiHR-defined	219,010	47,455	5,555	15,870	77,125	20,155
21 Mining, quarrying, and oil and gas extraction	238,810	25,440	4,575	19,055	134,620	20,025
211 Oil and gas extraction	72,465	2,905	320	3,525	58,655	2,890
212 Mining (except oil and gas)	60,475	16,430	2,620	6,480	4,880	8,740
2121 Coal mining	6,365	140	90	625	2,610	2,650
2122 Metal ore mining	30,520	10,400	1,865	1,845	410	3,950
2123 Non-metallic mineral mining and quarrying	23,600	5,890	665	4,010	1,865	2,140
213 Support activities for mining, quarrying, and oil and gas extraction	103,510	5,455	1,535	8,925	70,875	7,905
219 Mining - Unspecified	2,355	645	100	125	210	485
331 Primary metal manufacturing	84,250	41,570	2,385	1,320	3,825	5,320
3311 Iron and steel mills and ferro-alloy manufacturing	23,535	18,365	445	150	560	280
3312 Steel product manufacturing from purchased steel	13,280	6,640	200	835	1,890	985
3313 Alumina and aluminum production and processing	19,570	3,095	35	10	235	1,885
3314 Non-ferrous metal (except aluminum) production and processing	11,920	4,110	920	305	575	1,345
3315 Foundries	15,945	9,360	785	30	565	825

Source: Statistics Canada, 2006 Census Topic Based Tabulations

VII. The Structure of Employment in the Mining Industry

In this section the structure of employment in the mining industry is discussed. More specifically, this section examines the following topics: how the nature of mining employment changes over the lifespan of a mining project; the various linkages through which a mine creates employment opportunities; employment by NOC-S occupational category; shares of the labour force by highest level of education; hiring practices of mining firms; and the role of unions in mining employment.

A. Employment over a Mine's Lifespan and through its Various Linkages

There are over 120 unique careers in mining. These careers not only have vastly different educational requirements, but are also needed at different points of the mining process. The stages of the mining process (and related jobs) include: **exploration** (which depends on the employment of geologists, prospectors, drill operators, camp staff, etc.); **development** (which employs construction workers, trades workers, engineers, etc.); **operations** (which needs drillers, blasters, underground miners, heavy equipment operators, financial officers, etc.); and

closure/rehabilitation (which depends on environmental monitors and technicians, tree planters, landscapers, etc.).⁴³

During these phases, mining firms are extremely interested in engaging with local communities, hiring local workforces, and using local businesses to provide essential goods and services. Working on a remote mine often involves working on-site for a certain time period and then being transported off-site for a break. Hiring locally cuts down on transportation costs, as flying workers in from distant regions for a few weeks of work and then flying them back home is expensive. Nonetheless, mining firms are primarily concerned with getting the right talent according to Martha Roberts, Director of Research at MiHR, and Melanie Sturk, Director of Attraction, Retention and Transition at MiHR; if they cannot satisfy this need locally, of course they will broaden their search for workers. As a result, it is imperative that local communities have the necessary skills to satisfy the demands of mining firms.

As part of a primarily export-oriented industry, mines create three sorts of connections during their lifespan that create spinoff employment and economic activity: forward, backward and “final demand” linkages.⁴⁴ **Backward linkages** arise when a mine generates a demand for inputs that can be supplied by local producers. Backward linkages in mining create spin-off employment opportunities, as sub-contractors supply goods and services to exploration and mining companies such as truck and air transportation, construction, and catering. **Forward linkages** arise when a mine’s production of any metal or mineral creates opportunities for other kinds of domestic production that use said metal or mineral as an input. For example, the development of a metallic ore mine creates an opportunity for smelters and foundries to develop. **Final demand linkages** have to do with the incomes generated in the local economy by a mine’s existence; they can also be referred to as the income multiplier effect. Much of the generated incomes will get spent in the local economy, which increases the demand for locally produced goods and services. As a result of the increased demand for locally produced goods and services, local employment grows.

A study on the economic impacts of a representative mine in Ontario by Dungan and Murphy (2007) illustrates the impact a mine can have on the domestic and local economy through its various linkages.⁴⁵ Dungan and Murphy found that this mine “adds about \$140 million to Ontario GDP and generates almost 2,000 jobs annually” during its development and “adds approximately \$280 million to Ontario GDP and increases Ontario’s employment by almost 2,300” during its production phrase. On top of that, two-thirds of the jobs created are local.

⁴³ Natural Resources Canada (2007), “Aboriginal Employment Opportunities,” <http://www.nrcan.gc.ca/minerals-metals/aboriginal/bulletin/3222>

⁴⁴ University of Toronto, “The Linkages,” <http://homes.chass.utoronto.ca/~reak/hist/linkages.htm>

⁴⁵ The “representative” mine was located in northern Ontario and produced nickel and copper.

B. An Occupational Breakdown of Mining Industry Employment

According to a breakdown of the MiHR defined mining industry labour force by NOC-S done by the CSLS based on data from the 2006 Census (Table 8), 17.2 per cent of jobs in the mining industry were occupations unique to forestry operations, mining, quarrying, and oil and gas extraction and fishing (excluding labourers)⁴⁶ in 2005, followed by mechanics (6.9 per cent), heavy equipment and crane operators (including drillers) (6.7 per cent), machine operators in manufacturing (6.0 per cent), clerical occupations (5.8 per cent), primary production labourers (5.8 per cent), professional occupations in natural and applied sciences⁴⁷ (5.6 per cent), and technical occupations related to natural and applied sciences⁴⁸ (5.2 per cent). These eight occupational groupings explained 59.3 per cent of the total mining industry labour force in 2005, and clearly display the two main activities of that industry: mineral extraction and metal and mineral manufacturing. The 23 occupational categories shown in Table 8 accounted for 19 out of 20 jobs in the mining industry in 2005.

⁴⁶ The most relevant occupations to the mining industry in this broad NOC-S category were mining supervisors, underground production and development miners, and underground mine service and support workers.

⁴⁷ The most relevant occupations to the mining industry in this broad NOC-S category were geoscientists, metallurgical and materials engineers, mining engineers, and geological engineers.

⁴⁸ The most relevant occupation to the mining industry in this broad NOC-S category was geological and mineral technologists and technicians.

Table 8: Division of the MiHR-Defined Mining Industry Labour Force by NOC-S, Canada, 2000 and 2005

<i>National Occupational Classification for Statistics (NOC-S)</i>	2000	2005
All occupations	184,795	219,020
I1 Occupations unique to forestry operations, mining, oil and gas extraction, and fishing, excluding labourers	29,415	37,620
H4 Mechanics	13,090	15,205
H6 Heavy equipment and crane operators, including drillers	12,155	14,770
J1 Machine operators in manufacturing	15,660	13,230
B5 Clerical occupations	8,680	12,655
I2 Primary production labourers	10,815	12,610
C0 Professional occupations in natural and applied sciences	8,680	12,305
C1 Technical occupations related to natural and applied sciences	9,135	11,435
H7 Transportation equipment operators and related workers, excluding labourers	7,030	10,125
H3 Machinists, metal forming, shaping and erecting occupations	8,235	9,875
A3 Other managers, n.e.c.	6,815	8,380
J3 Labourers in processing, manufacturing and utilities	10,000	7,515
H8 Trades helpers, construction, and transportation labourers and related occupations	4,900	5,950
H2 Stationary engineers, power station operators and electrical trades and telecommunications occupations	6,215	5,325
A1 Specialist managers	3,455	4,575
H1 Construction trades	3,215	4,205
J0 Supervisors in manufacturing	4,460	3,935
B3 Administrative and regulatory occupations	2,350	3,680
B0 Professional occupations in business and finance	2,640	3,560
G9 Sales and service occupations, n.e.c.	1,975	3,445
B2 Secretaries	2,450	2,770
H0 Contractors and supervisors in trades and transportation	2,290	2,585
A0 Senior management occupations	2,195	2,535

Source: Statistics Canada, 2001 and 2006 Census Topic Based Tabulations

According to a division of the mining and quarrying (except oil and gas extraction) labour force by NOC-S (Table 9), 20.7 per cent of jobs in the mining industry were occupations unique to forestry operations, mining, quarrying, and oil and gas extraction and fishing (excluding labourers) in 2005, followed by heavy equipment and crane operators (including drillers) (11.9 per cent), mechanics (10.0 per cent), professional occupations in natural and applied sciences (5.9 per cent), technical occupations related to natural and applied sciences (5.3 per cent), and transportation equipment operators and related workers (excluding labourers) (5.3 per cent). These six occupational categories accounted for 59.2 per cent of the mining and quarrying (except oil and gas extraction) labour force in 2005. The difference between the major occupations in the mining and quarrying (except oil and gas extraction) and the MiHR-defined mining industry illustrates the fact that MiHR includes mineral and metal manufacturing in the mining industry whereas mining and quarrying (except oil and gas extraction) only refers to

mineral extraction. The twenty occupational categories included in Table 9 accounted for 19 out of 20 jobs in the mining industry in 2005.

Table 9: Division of the Mining and Quarrying (Except Oil and Gas Extraction) Labour Force by NOC-S, Canada, 2000 and 2005

<i>National Occupational Classification for Statistics (NOC-S)</i>	2000	2005
All occupations	58,970	60,480
I1 Occupations unique to forestry operations, mining, quarrying, and oil and gas extraction and fishing, excluding labourers	11,945	12,570
H6 Heavy equipment and crane operators, including drillers	6,680	7,220
H4 Mechanics	6,040	6,055
C0 Professional occupations in natural and applied sciences	1,940	3,570
C1 Technical occupations related to natural and applied sciences	2,585	3,205
H7 Transportation equipment operators and related workers, excluding labourers	3,235	3,200
B5 Clerical occupations	2,440	2,845
J1 Machine operators in manufacturing	2,690	2,445
H8 Trades helpers, construction and transportation labourers and related occupations	2,455	2,405
I2 Primary production labourers	3,040	2,080
H2 Stationary engineers, power station operators and electrical trades and telecommunications occupations	2,490	1,905
A3 Other managers, n.e.c.	1,655	1,885
H3 Machinists, metal forming, shaping and erecting occupations	2,170	1,595
A1 Specialist managers	980	1,315
B0 Professional occupations in business and finance	715	1,080
G9 Sales and service occupations, n.e.c.	650	985
B3 Administrative and regulatory occupations	575	810
J3 Labourers in processing, manufacturing and utilities	1,160	660
A0 Senior management occupations	575	590
H1 Construction trades	685	485

Source: Statistics Canada, 2001 and 2006 Census Topic Based Tabulations

C. Employment Requirements for the Mining Industry

In an advanced economy such as Canada, individuals need specialized skills and training to perform most jobs. The mining industry is no exception. Some mining jobs require university education (e.g., geologists or engineers), while others require a high school diploma, on-the-job training, or trades certificates (e.g., underground miners).⁴⁹ Canada has 25 colleges and 10 universities that provide appropriate qualifications for occupations in the mining industry.⁵⁰

³⁴ Natural Resources Canada (2007), "Aboriginal Employment Opportunities," <http://www.nrcan.gc.ca/minerals-metals/aboriginal/bulletin/3222>

⁵⁰ Mining Industry Human Resources Council, "Get the Right Training: Mining Programs in Canada," <http://www.acareerinmining.ca/en/careers/training.asp>

Individuals working in **regulated occupations** in the mining industry (e.g., professional and technical occupations like engineering and certain trades) must have a Canadian license or certificate.⁵¹ Certification requirements are set by each province or territory. For example, skilled trades workers must be certified according to procedures determined by the province or territory in which they work. After that, individuals working in most regulated occupations can participate in the Interprovincial Standards Red Seal Program to obtain an endorsement on their provincial/territorial certificates and to guarantee interprovincial mobility.

The standards for those working in **unregulated occupations**, however, are decided by individual firms. These unregulated occupations, which include many production-related mining jobs, are often uncertified as training is generally provided on the job.⁵² MiHR is currently developing an optional system for the certification of workers in certain occupations in the mining industry called the Canadian Mining Credentials Program (CMCP).⁵³ The CMCP is based on MiHR's National Occupational Standards (NOS), which is being developed under the guidance of the industry stakeholders. The purpose of the CMCP is "to provide recognized, portable credentials that will help employees work anywhere in Canada with greater ease."⁵⁴ The CMCP provides certification to workers in certain mining-specific occupations for which there is no official certification (e.g., underground miners and service miners), because there is no equivalent of the Red Seal program for these occupations. As part of the CMCP, workers must be able to demonstrate their skills in the workplace to a certified assessor. In this sense, while the CMCP will not help workers *enter* the mining industry, it will enhance inter-firm mobility of those who already work in mining.

The educational makeup of the mining industry is significantly different from that of the Canadian economy as a whole. According to the 2006 Census, 20.7 per cent of the mining industry labour force reported that their highest level of education was an apprenticeship or trades certificate or diploma, 8.9 percentage points above the average across all industries (Chart 25). Only 10.8 per cent of the mining industry labour force reported that their highest level of education was a university degree at the bachelor's level or above, 11.1 percentage points below the average across all industries. The relatively small share of the mining industry's labour force with at least a bachelor's and the relatively large share with an apprenticeship or trades certificate are explained by the fact that most mining industry jobs require very specific skills and training that are not available at the university level, but only through specialized college programs or on-the-job training. This is also the case for mining and quarrying (except oil and gas extraction). Of course, it is important to keep in mind that some occupations – such as mining engineer or geologist – do require a university degree.

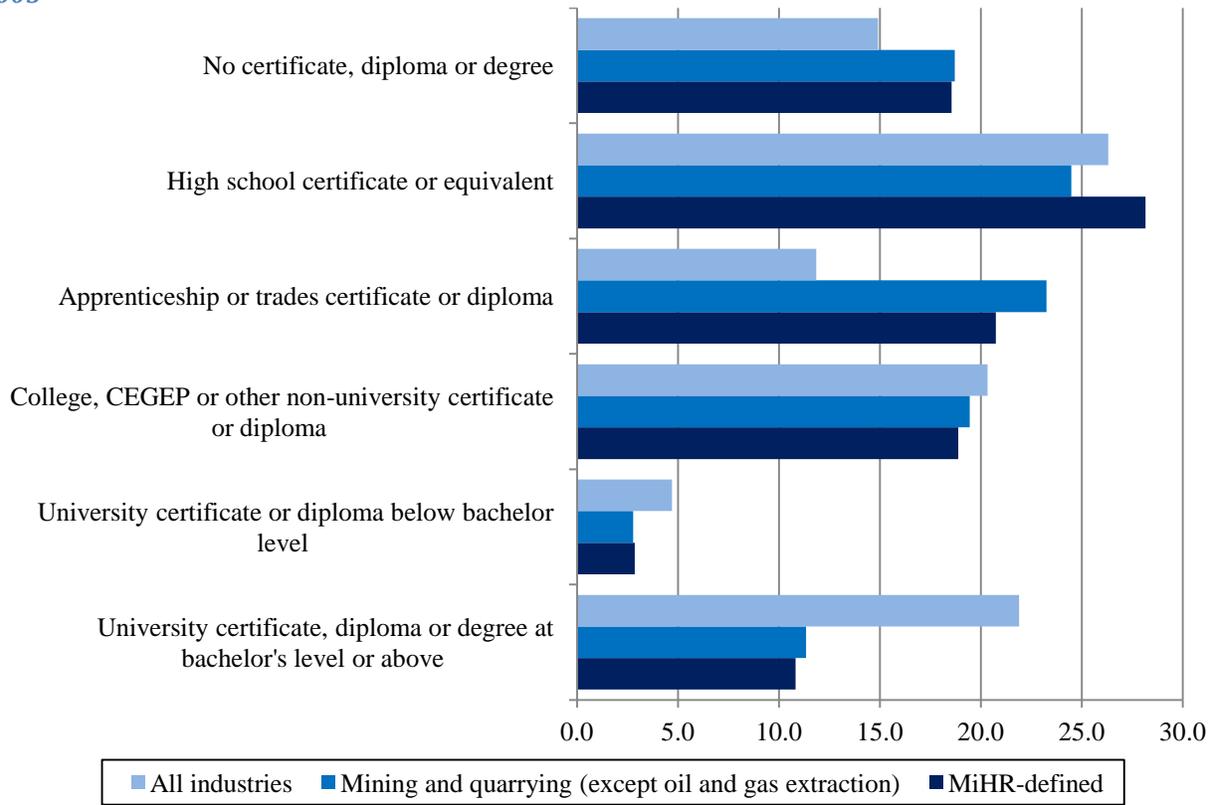
⁵¹ Mining Industry Human Resources Council, "Mining Industry Human Resources Guide for Aboriginal Communities," <http://www.mihr.ca/en/resourcesGeneral/ResourceGuide.pdf>

⁵² Mining Industry Human Resources Council, "Mining Industry Human Resources Guide for Aboriginal Communities," <http://www.mihr.ca/en/resourcesGeneral/ResourceGuide.pdf>

⁵³ Foreign Credential Referral Office, "Mining," <http://www.credentials.gc.ca/immigrants/factsheets/mining.asp>

⁵⁴ Foreign Credential Referral Office, "Mining," <http://www.credentials.gc.ca/immigrants/factsheets/mining.asp>

Chart 25: Distribution of the Labour Force by Highest Education Level by Industry, per cent, Canada, 2005



Source: Statistics Canada, 2006 Census Topic Based Tabulations

According to LFS estimates, the educational makeup of workers in the mining industry changed rapidly between 2007 and 2011, as the workforce became increasingly educated (Table 10). The proportion of mining, quarrying, and oil and gas extraction employees with some post-secondary education or less fell by 5.4 percentage points, from 44.3 per cent in 2007 to 38.9 per cent in 2011, while the proportion of employees who completed post-secondary education grew by 5.4 percentage points, from 55.7 per cent in 2007 to 61.1 per cent in 2011. The increasing educational attainment of the mining industry workforce is unsurprising, as it follows the general trend in the Canadian labour market of employers expanding educational requirements and Canadians flocking to colleges and universities in record numbers.

Table 10: Employment Shares by Highest Education Level in Mining, Quarrying, and Oil and Gas Extraction, per cent, 2007-2011

<i>Level of Educational Attainment</i>	2007	2008	2009	2010	2011
Total, all education levels	100.0	100.0	100.0	100.0	100.0
Some post-secondary education or less	44.3	42.5	41.2	39.6	38.9
Less than high school	13.1	12.5	11.5	11.5	11.0
0 - 8 years	2.0	1.8	1.3	1.7	1.5
Some high school	11.1	10.8	10.2	9.8	9.5
9 to 10 years	5.3	5.7	5.7	5.4	5.0
11 to 13 years, non-graduate	5.8	5.0	4.5	4.4	4.5
High school graduate or some post-secondary	31.2	29.9	29.7	28.0	27.9
High school graduate	23.5	22.5	22.5	21.5	21.7
Some post-secondary	7.7	7.5	7.2	6.5	6.3
Completed post-secondary education	55.7	57.5	58.8	60.5	61.1
Post-secondary certificate or diploma	39.1	38.7	40.0	41.1	40.8
Trade certificate	21.6	20.7	21.4	22.5	22.9
College diploma	15.7	16.2	16.9	17.2	16.2
Certificate or diploma below bachelor	1.8	1.8	1.8	1.3	1.7
University degree	16.7	18.8	18.8	19.3	20.3
Bachelor's degree	12.7	14.1	14.1	14.0	14.8
Above bachelor's degree	4.0	4.7	4.7	5.3	5.4

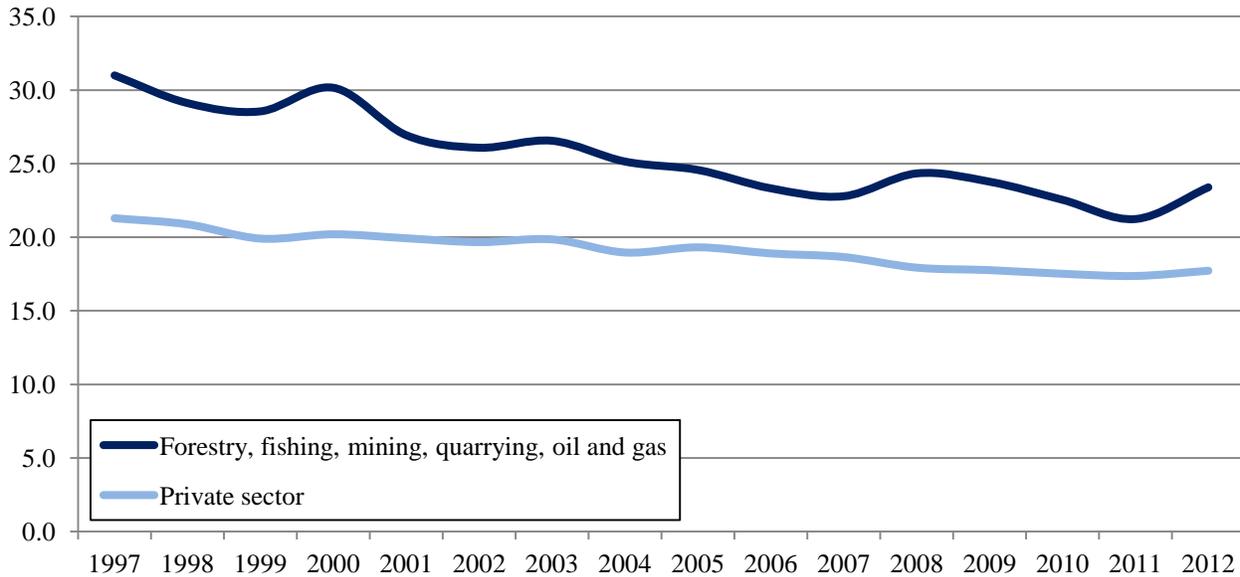
Source: Statistics Canada, unpublished Labour Force Survey estimates

C. The Role of Unions in Mining Industry Employment

Unionization rates are a factor affecting wage and pension coverage in the labour market as a whole. The proportion of employees in the Canadian private industry under union coverage has declined over the past 15 years from 21.3 per cent in 1997 to 17.7 per cent in 2012 (Chart 26).⁵⁵ Union coverage in forestry, fishing, mining, quarrying, oil and gas was higher than the private industry average over the entire 1997-2012 period, but declined much more dramatically, from 31.0 per cent in 1997 to 23.4 per cent in 2012 – a decline of 7.6 percentage points versus 3.6 percentage points for the private sector as a whole.

⁵⁵ Employees under union coverage include employees who are members of a union and employees who are not union members but who are covered by a collective agreement or a union contract.

Chart 26: Proportion of Employees with Union Coverage in the Private industry as a Whole and in Forestry, Fishing, Mining, Quarrying, Oil and Gas, Canada, per Cent, 1997-2012



Source: Statistics Canada, CANSIM Table 282-0078

According to a 2010 MiHR survey of mining industry employers, only one third of respondents indicated that they had no unionized employees. “Of the employers with unionized employees, half reported that 51–75 per cent of their workforce is unionized, and over a quarter reported that more than 75 per cent of their workforce is unionized.”⁵⁶ Therefore, the role of unions in the hiring processes of mining firms can vary significantly: unions are small players at certain mining operations, but major players in others. Some of the major unions relevant to mining industry occupations include: United Steelworkers of America (USWA); Construction Maintenance and Allied Workers (CMAW); Labourers’ International Union of North America (Canada); and United Mine Workers of America (UNWA).

While union coverage is declining in the mining industry, contractors are becoming a more important component of its workforce. According to MiHR’s employer survey, “on average, 13 per cent of respondents’ workforces are comprised of independent contractors. However, respondents also reported contracting out some activities more than others. For example, the majority of respondents contract out drilling and blasting, boring, and tunnelling activities. Education and training activities were also commonly contracted out, as were transportation, material-moving, and heavy equipment operators and mechanic activities.”⁵⁷

⁵⁶ MiHR (2010), “Canadian Mining Employment Forecasts 2010,” page 19, http://www.mininghrforecasts.ca/en/resources/MiHR_Canadian_Mining_Employment_Forecasts_July2010.pdf

⁵⁷ MiHR (2010), “Canadian Mining Employment Forecasts 2010,” page 20, http://www.mininghrforecasts.ca/en/resources/MiHR_Canadian_Mining_Employment_Forecasts_July2010.pdf

VIII. An Overview of Métis Participation in the Mining Industry

The participation of Aboriginal Canadians in the mining industry has risen dramatically in recent years. This bodes well for Canada's Aboriginal population, as the mining industry provides some of the highest wages in the economy (\$1,100 per week versus the total economy average of \$747 per week).⁵⁸ According to NRCAN, the average annual income of Aboriginal Canadians working in the mining industry was more than double the overall average for Aboriginal Canadians.⁵⁹ Nonetheless, a wage gap between Aboriginal Canadians and non-Aboriginal Canadians in the mining industry of \$18,000 per annum existed in 2006.⁶⁰ This gap is largely explained by the fact that Aboriginal Canadians in the mining industry continue to be chiefly employed in occupations with lower salaries due to low levels of educational attainment relative to non-Aboriginal Canadians. The Métis are no exception.

This section of the report examines Métis participation in the mining industry. The section is divided into three parts: the first focuses on Canada, the second discusses provincial comparisons, while the third takes a closer look at Métis participation in the mining industry at the provincial level.

In the first part of this section, the following topics are covered: Métis employment in the mining industry; employment shares by level of education attainment for the Métis and the total population; shares of the Métis labour force by area of residence and industry; labour force shares by level of educational attainment for the Métis and the total population; and shares of the Métis labour force by occupational categories. The second part of this section discusses: provincial mining industry labour force counts; the proportion of the total labour force that is Métis by industry; the share of the Métis mining industry labour force in the total Métis labour force; and provincial shares of the total national Métis labour force by industry. The final part of this section looks at the participation of the Métis in the mining industry of each of the relevant provinces, focusing on how employment has evolved over time, as well as on the breakdown of Métis participation in provincial mining industries.

Estimates for the Métis labour force for the three- and four-digit NAICS industries are only available from the 2006 Census, obtained via special request from Statistics Canada. Consequently, the MiHR-defined mining industry and mining and quarrying (except oil and gas extraction) cannot be used to analyze changes in Métis employment over time in this section. To

⁵⁸ Natural Resources Canada (2007), "Aboriginal Employment Opportunities," <http://www.nrcan.gc.ca/minerals-metals/aboriginal/bulletin/3222>

⁵⁹ Natural Resources Canada (2007), "Aboriginal Participation: Statistical Profile," <http://www.nrcan.gc.ca/minerals-metals/aboriginal/bulletin/3605>

⁶⁰ Natural Resources Canada (2007), "Aboriginal Participation: Statistical Profile," <http://www.nrcan.gc.ca/minerals-metals/aboriginal/bulletin/3605>

do this, LFS employment estimates for mining, quarrying, and oil and gas extraction are used.⁶¹ Employment estimates for mining, quarrying, and oil and gas extraction include oil and gas extraction and support activities for mining, quarrying, and oil and gas extraction, which make it a poor measure of Métis participation in mining for any region with a large petroleum industry (i.e., Alberta and Canada as a whole).⁶²

A. Canada

The mining industry is a laggard in terms of employing women and immigrants, with only 11.5 per cent of the workers being women and 8.1 per cent being immigrants in 2005 (compared to 47.3 per cent and 21.0 per cent in all industries, respectively). This is not the case for the Métis, however, as 3.3 per cent of the Canadian mining industry labour force was Métis in 2005, a large share considering that the Métis accounted for merely 1.2 per cent of the total labour force in all industries.

1. Métis Employment in the Mining Industry

In 2005, 6,520 Métis were employed in the MiHR-defined mining industry (Table 11). Of this total, 1,900 were employed in mining and quarrying (except oil and gas extraction), 4,050 were employed in support activities for mining, quarrying, and oil and gas extraction, and 570 were employed in the three primary metal manufacturing subsectors included in this definition of the mining industry. It is safe to assume that a large share of the 4,050 Métis engaged in support activities for mining, quarrying, and oil and gas extraction labour force was actually working in support activities for oil and gas extraction. Therefore, a more meaningful measure of Métis participation in the mining industry is the size of the Métis mining and quarrying (except oil and gas extraction) labour force.

Unfortunately, a time series for Métis participation in mining was only available for mining, quarrying, and oil and gas extraction (Chart 27). In 2005, this NAICS industry's labour force totalled 7,865 Métis, most of which was accounted for by support activities for mining, quarrying, and oil and gas extraction (4,050), followed by mining and quarrying (except oil and gas extraction) (1,900), and oil and gas extraction (1,860). It is clear that mining, quarrying, and oil and gas extraction is not a good measure of Métis mining employment for Canada. Mining,

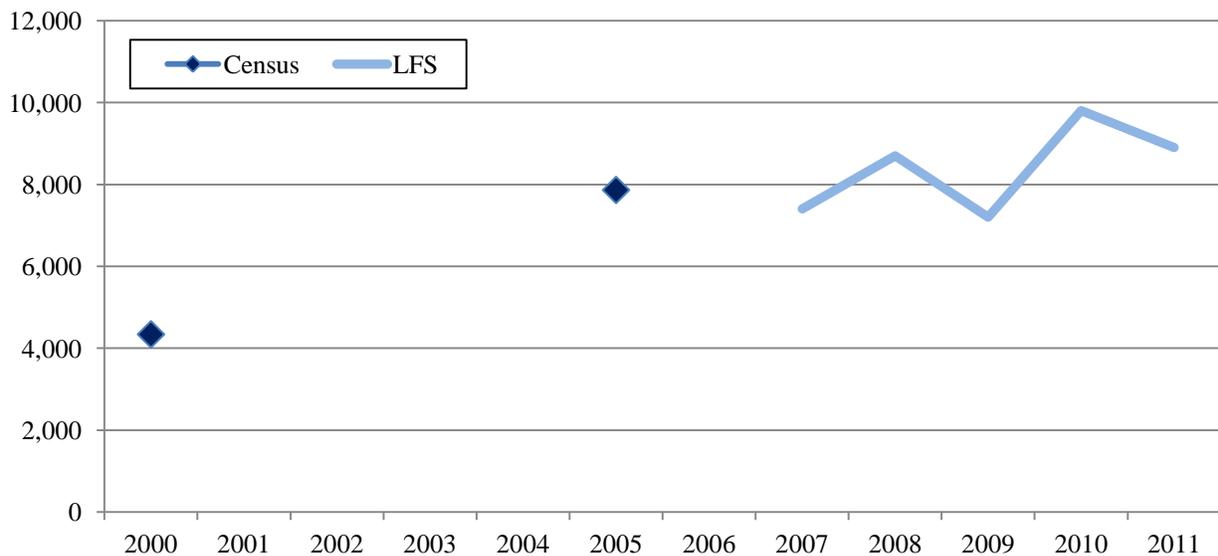
⁶¹ Mining, quarrying, and oil and gas extraction (NAICS code 21) is a two-digit NAICS industry composed of the following three-digit NAICS subsectors: oil and gas extraction (NAICS code 211), mining and quarrying (except oil and gas extraction) (NAICS code 212), and support activities for mining, quarrying, and oil and gas extraction (NAICS code 213). It differs from the MiHR-defined mining industry, which is the aggregate of: mining and quarrying (except oil and gas extraction) (NAICS code 212), support activities for mining, quarrying, and oil and gas extraction (NAICS code 213), iron and steel mills and ferro-alloy manufacturing (NAICS code 3311), alumina and aluminum production and processing (NAICS code 3313); and non-ferrous metal (except aluminum) production and processing (NAICS code 3314).

⁶² Census estimates used in this section are for the size of the "labour force". The "labour force" is defined as the experienced labour force population including persons aged 15 years and older who were employed and persons who were unemployed who worked for pay or in self-employment between January 1, 2005 and May 16, 2006. Therefore, the labour force estimates from the Census are different (and therefore not perfectly comparable with) from the employment estimates from the LFS, which provides the number of individuals aged 15 years and older that were employed in an industry (main job only).

quarrying, and oil and gas extraction employed 8,900 Métis in 2011 according to the LFS, up 20.3 per cent from 7,400 in 2007 (Chart 27). LFS estimates for Métis employment are unavailable for Canada before 2007; however, similar data (i.e., the experienced labour force) is available from the Census for the pre-2005 period. The Métis mining, quarrying, and oil and gas extraction labour force totalled 7,865 workers in 2005, up a staggering 81.2 per cent from 4,340 workers in 2000. The increase in the mining industry labour force far outpaced growth in the total Métis labour force, which increased 44.3 per cent to 199,890 workers in 2005. As a direct consequence, the share of the Métis labour force devoted in mining, quarrying, and oil and gas extraction rose 0.8 percentage point, from 3.1 per cent in 2000 to 3.9 per cent in 2005.

Since overall mining and quarrying (except oil and gas extraction) employment grew over the 2003-2012 period according to SEPH, Métis mining and quarrying (except oil and gas extraction) participation probably grew over this period too. If this is the case, the upward trend for Métis mining, quarrying, and oil and gas extraction employment found in Chart 27 would also be the case for Métis mining and quarrying (except oil and gas extraction) employment.

Chart 27: Métis Mining, Quarrying, and Oil and Gas Extraction Employment, Canada, 2000, 2005, 2007-2011



Source: Statistics Canada, unpublished Labour Force Survey estimates; and 2001 and 2006 Census Topic Based Tabulations

Note: Data for 2000 and 2005 are labour force estimates from the Census and data from 2007 to 2011 are employment estimates from the LFS.

2. A Detailed Breakdown of the Mining Labour Force for the Métis and the Total Population

Tables 11a, 11b and 11c present an in-depth breakdown of the mining industry labour force into its various subsectors for both the Métis and the total population. This breakdown includes all industries classified under mining, quarrying, and oil and gas extraction (NAICS code 21) and all industries classified under primary metal manufacturing (NAICS code 331).

Table 11a: Métis and Total Population Labour Force Counts by NAICS Industry, Canada and the Relevant Provinces, 2005

<i>NAICS Code or Equivalent</i>	<i>Canada</i>		<i>Ontario</i>		<i>Manitoba</i>		<i>Saskatchewan</i>		<i>Alberta</i>		<i>British Columbia</i>	
	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>
Total labour force	204,165	16,861,180	39,830	6,473,730	36,945	602,150	23,340	517,475	46,345	1,928,640	31,285	2,193,115
MiHR-defined	6,520	219,010	745	47,455	680	5,555	955	15,870	2,880	77,125	680	20,155
21 Mining and oil and gas extraction	7,865	238,810	620	25,440	575	4,575	1,060	19,055	4,415	134,620	705	20,025
211 Oil and gas extraction	1,860	72,465	10	2,905	15	320	125	3,525	1,570	58,655	105	2,890
212 Mining and quarrying(except oil and gas)	1,900	60,475	385	16,430	255	2,620	440	6,480	220	4,880	280	8,740
2121 Coal mining	265	6,365	0	140	0	90	25	625	115	2,610	115	2,650
2122 Metal ore mining	1,060	30,520	295	10,400	175	1,865	305	1,845	20	410	120	3,950
2123 Non-metallic mineral mining and quarrying	580	23,600	90	5,890	75	665	105	4,010	90	1,865	55	2,140
213 Support activities for mining, quarrying, and oil and gas	4,050	103,510	200	5,455	290	1,535	490	8,925	2,620	70,875	320	7,905
219 Mining - Unspecified	65	2,355	30	645	15	100	10	125	0	210	0	485
331 Primary metal manufacturing	870	84,250	245	41,570	190	2,385	55	1,320	80	3,825	105	5,320
3311 Iron and steel mills and ferro-alloy manufacturing	200	23,535	95	18,365	65	445	10	150	20	560	0	280
3312 Steel product manufacturing from purchased steel	150	13,280	25	6,640	15	200	25	835	45	1,890	20	985
3313 Alumina and aluminum production and processing	125	19,570	10	3,095	0	35	0	10	10	235	15	1,885
3314 Non-ferrous metal (except alum.) production and processing	245	11,920	55	4,110	70	920	15	305	10	575	65	1,345
3315 Foundries	150	15,945	65	9,360	30	785	0	30	0	565	10	825

Source: Statistics Canada, Custom Tabulation based on the 2006 Census

Table 11b: Industry Shares of the Total Labour Force for the Métis and the Total Population Labour, Canada and the Relevant Provinces, per cent, 2005

<i>NAICS Code or Equivalent</i>	<i>Canada</i>		<i>Ontario</i>		<i>Manitoba</i>		<i>Saskatchewan</i>		<i>Alberta</i>		<i>British Columbia</i>	
	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>
Total labour force	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
MiHR-defined	3.19	1.30	1.87	0.73	1.84	0.92	4.09	3.07	6.21	4.00	2.17	0.92
21 Mining and oil and gas extraction	3.85	1.42	1.56	0.39	1.56	0.76	4.54	3.68	9.53	6.98	2.25	0.91
211 Oil and gas extraction	0.91	0.43	0.03	0.04	0.04	0.05	0.54	0.68	3.39	3.04	0.34	0.13
212 Mining and quarrying(except oil and gas)	0.93	0.36	0.97	0.25	0.69	0.44	1.89	1.25	0.47	0.25	0.89	0.40
2121 Coal mining	0.13	0.04	0.00	0.00	0.00	0.01	0.11	0.12	0.25	0.14	0.37	0.12
2122 Metal ore mining	0.52	0.18	0.74	0.16	0.47	0.31	1.31	0.36	0.04	0.02	0.38	0.18
2123 Non-metallic mineral mining and quarrying	0.28	0.14	0.23	0.09	0.20	0.11	0.45	0.77	0.19	0.10	0.18	0.10
213 Support activities for mining, quarrying, and oil and gas	1.98	0.61	0.50	0.08	0.78	0.25	2.10	1.72	5.65	3.67	1.02	0.36
219 Mining - Unspecified	0.03	0.01	0.08	0.01	0.04	0.02	0.04	0.02	0.00	0.01	0.00	0.02
331 Primary metal manufacturing	0.43	0.50	0.62	0.64	0.51	0.40	0.24	0.26	0.17	0.20	0.34	0.24
3311 Iron and steel mills and ferro-alloy manufacturing	0.10	0.14	0.24	0.28	0.18	0.07	0.04	0.03	0.04	0.03	0.00	0.01
3312 Steel product manufacturing from purchased steel	0.07	0.08	0.06	0.10	0.04	0.03	0.11	0.16	0.10	0.10	0.06	0.04
3313 Alumina and aluminum production and processing	0.06	0.12	0.03	0.05	0.00	0.01	0.00	0.00	0.02	0.01	0.05	0.09
3314 Non-ferrous metal (except alum.) production and processing	0.12	0.07	0.14	0.06	0.19	0.15	0.06	0.06	0.02	0.03	0.21	0.06
3315 Foundries	0.07	0.09	0.16	0.14	0.08	0.13	0.00	0.01	0.00	0.03	0.03	0.04

Source: Table 11a

Table 11c: Provincial Shares of the National Labour Force for the Métis and the Total Population by NAICS Industry, Canada and the Relevant Provinces, per cent, 2005

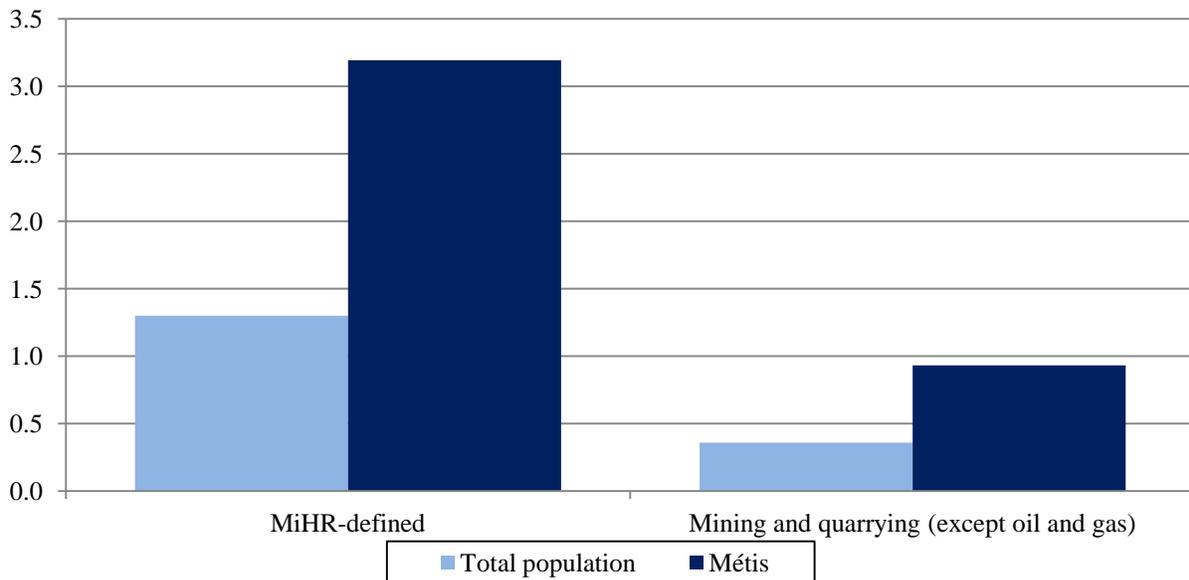
<i>NAICS Code or Equivalent</i>	<i>Canada</i>		<i>Ontario</i>		<i>Manitoba</i>		<i>Saskatchewan</i>		<i>Alberta</i>		<i>British Columbia</i>	
	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>	<i>Métis</i>	<i>Total</i>
Total labour force	100.00	100.00	19.51	38.39	18.10	3.57	11.43	3.07	22.70	11.44	15.32	13.01
MiHR-defined	100.00	100.00	11.43	21.67	10.43	2.54	14.65	7.25	44.17	35.22	10.43	9.20
21 Mining and oil and gas extraction	100.00	100.00	7.88	10.65	7.31	1.92	13.48	7.98	56.13	56.37	8.96	8.39
211 Oil and gas extraction	100.00	100.00	0.54	4.01	0.81	0.44	6.72	4.86	84.41	80.94	5.65	3.99
212 Mining and quarrying(except oil and gas)	100.00	100.00	20.26	27.17	13.42	4.33	23.16	10.72	11.58	8.07	14.74	14.45
2121 Coal mining	100.00	100.00	0.00	2.20	0.00	1.41	9.43	9.82	43.40	41.01	43.40	41.63
2122 Metal ore mining	100.00	100.00	27.83	34.08	16.51	6.11	28.77	6.05	1.89	1.34	11.32	12.94
2123 Non-metallic mineral mining and quarrying	100.00	100.00	15.52	24.96	12.93	2.82	18.10	16.99	15.52	7.90	9.48	9.07
213 Support activities for mining, quarrying, and oil and gas	100.00	100.00	4.94	5.27	7.16	1.48	12.10	8.62	64.69	68.47	7.90	7.64
219 Mining - Unspecified	100.00	100.00	46.15	27.39	23.08	4.25	15.38	5.31	0.00	8.92	0.00	20.59
331 Primary metal manufacturing	100.00	100.00	28.16	49.34	21.84	2.83	6.32	1.57	9.20	4.54	12.07	6.31
3311 Iron and steel mills and ferro-alloy manufacturing	100.00	100.00	47.50	78.03	32.50	1.89	5.00	0.64	10.00	2.38	0.00	1.19
3312 Steel product manufacturing from purchased steel	100.00	100.00	16.67	50.00	10.00	1.51	16.67	6.29	30.00	14.23	13.33	7.42
3313 Alumina and aluminum production and processing	100.00	100.00	8.00	15.82	0.00	0.18	0.00	0.05	8.00	1.20	12.00	9.63
3314 Non-ferrous metal (except alum.) production and processing	100.00	100.00	22.45	34.48	28.57	7.72	6.12	2.56	4.08	4.82	26.53	11.28
3315 Foundries	100.00	100.00	43.33	58.70	20.00	4.92	0.00	0.19	0.00	3.54	6.67	5.17

Source: Table 11a

3. Comparing the Importance of Mining Employment for the Métis and the Total Population

Métis participation in the mining industry is more intensive than it is for the Canadian population as a whole. Of the 16.9 million Canadians in the experienced labour force in 2005, only 1.3 per cent were employed in the MiHR-defined mining industry and only 0.4 per cent were employed in mining and quarrying (except oil and gas extraction) (Chart 28). These shares were much larger for the Métis: 3.2 per cent of the total Métis labour force (which totalled 204,165) was accounted for by the MiHR-defined mining industry in 2005 and 0.9 per cent was accounted for by mining and quarrying (except oil and gas extraction); these shares were more than double their respective shares for the total population.

Chart 28: Share of the MiHR-defined Mining Industry Labour Force and the Mining and Quarrying (Except Oil and Gas Extraction) Labour Force in the Total Labour Force for the Métis and the Total Population, Canada, per cent, 2005



Source: Statistics Canada, Custom Tabulation based on the 2006 Census

4. Comparing the Share of the Métis Labour Force by Area of Residence

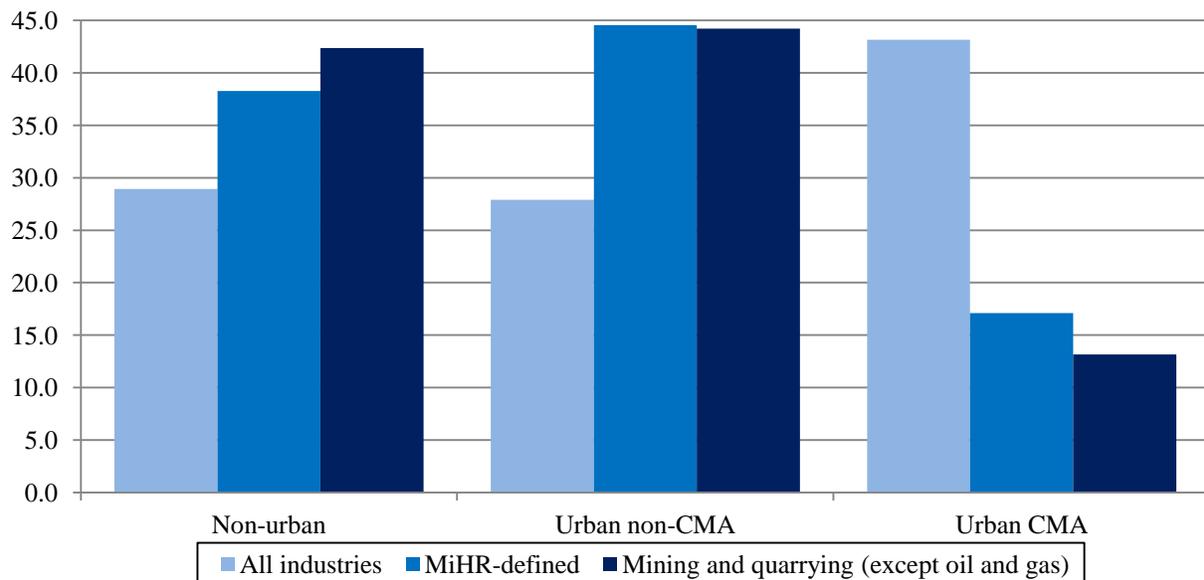
The Métis population's proximity to mining establishments is a major advantage for employment in the mining industry. The high share of the Métis labour force devoted to the MiHR-defined mining industry and mining and quarrying (except oil and gas extraction) relative to the total population is explained by the fact that these industries are overrepresented in non-urban areas as well as smaller urban areas, both of which are areas where the Métis are overrepresented.

In 2005, 38.3 per cent of the Métis mining and quarrying (except oil and gas extraction) labour force and 42.4 per cent of the Métis MiHR-defined mining industry labour force worked in non-urban areas, compared to the average for Métis across all industries of 28.9 per cent (Chart 29). Even within urban areas, the Métis mining and quarrying (except oil and gas extraction)

labour force and the Métis MiHR-defined mining industry labour force were primarily located outside of major metropolitan areas, with 44.6 per cent and 44.2 per cent of their respective labour forces located in urban non-CMAS, compared to the all industries average for Métis of 27.9 per cent.

The overrepresentation of Métis in the mining industry is caused by the proximity of the Métis population to mining establishments in non-urban areas, which gives them the advantage of nearness. As can be seen by comparing maps of primary mining establishments in 2012, major mining exploration regions in 2012, and the location of Métis population centres and communities, there are certain mining-intensive regions with significant Métis populations such as the Sudbury-North Bay area in northern Ontario, northern Saskatchewan (where significant uranium production occurs), as well as areas like La Loche, Kelowna-Kamloops and Prince George in British Columbia.⁶³

Chart 29: Share of the Métis Labour Force by Area of Residence, Canada, per cent, 2005



Source: Statistics Canada, Custom Tabulation based on the 2006 Census

Note: An urban area has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square km. All territory outside urban areas is classified as rural. Rural and urban areas do not include reserves. Non-urban areas, however, include both rural areas and reserves. A census metropolitan area (CMA) is an urban area with a population of at least 100,000. Urban non-census metropolitan areas are smaller urban areas with a population of less than 100,000.

5. The Link Between the Share of an Industry's Labour Force that is Located in Rural Areas Relative to Other Industries and the Size of its Métis Labour Force Compared to Other Industries

In general, there is a relationship between the share of an industry's employment that is in rural areas and the size of that industry's Métis labour force relative to other industries; this

⁶³ For a variety of maps illustrating the proximity of Canada's principal producing mines and top 100 exploration sites to Métis communities, visit <http://www.metisportals.ca/healthportal/pages/programs/img.jpg>, <http://www.nrcan.gc.ca/minerals-metals/4437#en4>, and http://apps1.gdr.nrcan.gc.ca/mirage/show_image_e.php?client=jp2&id=292216&image=gscmap-a_900A_e_2013_mm01.sid.

supports our assertion that Métis are more likely to be employed in the mining industry than the average Canadian because they are overrepresented in rural areas. A strong positive correlation of 0.63 was found between (1) the percentage point difference between a two-digit NAICS industry's share of the total Métis labour force in all industries and its share of the total non-Aboriginal labour force in all industries and (2) the percentage point difference between that two-digit NAICS industry's share of the total labour force located in non-urban areas and the share of the total labour force located in non-urban areas in all industries (Chart 30). Basically, this correlation tells us that the more an industry is based in non-urban areas, the bigger the difference will be between the proportion of total Métis employment in that industry and the proportion of total non-Aboriginal employment in that industry. Therefore, Métis employment in an industry will be more intensive than non-Aboriginal employment when that industry is heavily situated in non-urban areas. This supports this report's conclusion that the high share of Métis employment in mining relative to the total population is explained by the fact that mining employment is located in non-urban areas as well as smaller and more remote urban areas.

Chart 30: The Link Between the Proportion of an Industry's Labour Force that is Located in Rural Areas Relative to Other Industries and the Size of its Métis Labour Force Relative to Other Industries, Canada, 2005



Source: Statistics Canada, 2006 Census Topic Based Tabulations

Note: This chart describes the relationship between (1) the percentage point difference between a two-digit NAICS industry's share of the total Métis labour force in all industries and its share of the total non-Aboriginal labour force in all industries and (2) the percentage point difference between that two-digit NAICS industry's share of the total labour force located in non-urban areas and the share of the total labour force located in non-urban areas in all industries.

6. The Educational Performance of the Métis in the Mining Industry

The poor educational performance of the Métis relative to the total Canadian population is a significant impediment to Métis employment in general; however, the relatively strong

educational performance of the Métis in terms of receiving apprenticeships or trades certificates or diplomas may assist their employment in that industry. A relatively small share of the mining industry's total labour force has a university degree or above and a relatively large share has an apprenticeship or trades certificate or diploma, because most mining industry jobs require very specific skills and training that can only be obtained through specialized college programs or on the job training. Consequently, the Métis are a good fit for employment in the mining industry. Nonetheless, many professional occupations in the mining industry require university education (e.g., geoscientists and metallurgical and materials engineers), but the share of the mining industry labour force with a university degree is still small relative to other industries.

The share of the total Métis labour force that completed post-secondary education was 46.8 per cent in 2005, 12.0 percentage points below the share for the total Canadian labour force (58.8 per cent) (Table 12). This gap was even worse at the university level (14.6 percentage points), as 26.6 per cent of the total Canadian labour force had a university degree at bachelor's level or above compared to only 12.0 per cent of the total Métis labour force. However, a higher proportion of the total Métis labour force than the total Canadian labour force had an apprenticeship or trades certificate or diploma (14.7 per cent versus 11.9 per cent).

In the mining industry in particular, the Métis also have a larger proportion of the labour force with apprenticeship or trades certificates relative to the overall Canadian population. According to 2006 Census data, 23.0 per cent of the Métis in the MiHR-defined mining industry had an apprenticeship or trades certificate (vs. 20.7 per cent for the overall labour force). In mining and quarrying (except oil and gas extraction) specifically, 26.3 per cent of the Métis had an apprenticeship or trades certificate (vs. 23.2 per cent for the overall labour force). In addition, the gap between the proportion of the Métis mining labour force and the total Canadian mining labour force that completed post-secondary education was also substantial (10.4 percentage points for the MiHR-defined mining industry and 6.8 percentage points for mining and quarrying (except oil and gas extraction)). The proportion of the Métis mining labour force with a university degree was also much smaller than it was for the total Canadian mining labour force, but this gap was smaller than it was across all industries.

The mining industry relies more heavily of workers with apprenticeships or trades certificates than it does on workers with university degrees. Since a higher share of the total Métis labour force relative to the total Canadian labour force has an apprenticeship or trades certificate or diploma, the average Métis meets the employment requirements for most occupations in the mining industry better than the average Canadian. Nonetheless, the small share of the Métis labour force with a university education relative to the total Canadian labour force (both in the mining industry and across all industries) means that Métis are less likely to have a career in a professional occupation in the mining industry (which pay higher salaries) than the average Canadian.

The major impediment to Métis participation in mining, according to Martha Roberts, Director of Research at MiHR, and Melanie Sturk, Director of Attraction, Retention and Transition at MiHR, is the gap in work readiness and essential skills between Aboriginal and non-Aboriginal Canadians. This gap must be bridged in order to increase Aboriginal and Métis participation in mining, which is why the MiHR has developed their *Mining Essentials* program in conjunction with the Assembly of First Nations (AFN). After Métis have the essential skills to enter the mining workforce, then they will be able to develop the necessary skills to work their way up in mining companies, as firms often provide financial support to workers interested in increasing their level of education.

Table 12: Share of the Labour Force by Highest Level of Educational Attainment for the Métis and the Total Population, Canada, per cent, 2005

Level of Educational Attainment	Total Labour Force		MiHR-defined		Mining and quarrying (except oil and gas)	
	Métis	Total	Métis	Total	Métis	Total
Total - Highest certificate, diploma or degree	100.0	100.0	100.0	100.0	100.0	100.0
No certificate, diploma or degree	24.8	14.9	28.0	18.5	26.1	18.7
Certificate, diploma or degree	75.2	85.1	72.0	81.5	73.9	81.3
High school certificate or equivalent	28.4	26.3	29.1	28.2	23.9	24.5
Apprenticeship or trades certificate or diploma	14.7	11.9	23.0	20.7	26.3	23.2
College, CEGEP or other non-university certificate or diploma	20.1	20.3	15.8	18.9	18.4	19.4
University certificate, diploma or degree	12.0	26.6	4.1	13.7	5.0	14.1
University certificate or diploma below bachelor level	3.1	4.7	1.6	2.9	2.4	2.8
University certificate or degree	8.9	21.9	2.4	10.8	2.6	11.3
Bachelor's degree	6.4	14.2	1.9	7.7	2.1	7.9
University certificate or diploma above bachelor level	0.9	2.2	0.2	0.9	0.0	0.9
Degree in medicine, dentistry, veterinary medicine or optometry	0.2	0.7	0.0	0.0	0.0	0.0
Master's degree	1.2	4.1	0.5	1.8	0.5	2.3
Earned doctorate	0.2	0.8	0.0	0.3	0.0	0.3

Source: Statistics Canada, Custom Tabulation based on the 2006 Census

7. A Breakdown of Métis Employment in Mining by NOC-S Occupational Categories

Table 13 provides a breakdown of the Métis labour force for the MiHR-defined mining industry and for mining and quarrying (except oil and gas extraction) by two-digit NOC-S occupational categories. The 20 occupations shown in Table 13 represent the most important occupational categories for the mining industry, accounting for 94.6 per cent of the Métis MiHR-defined mining industry labour force and 96.1 percent of the Métis mining and quarrying (except oil and gas extraction) labour force. By far, the most important occupational category for both definitions of the mining industry was occupations unique to forestry operations, mining, oil and gas extraction and fishing (excluding labourers). This category includes the following occupations

relevant to mining: underground production and development miners, supervisors for mining and quarrying, and underground mine service and support workers.

Table 13: Division of the Labour Force by NOC-S, Canada, 2005

<i>National Occupational Classification for Statistics (NOC-S)</i>	<i>MiHR-defined</i>	<i>Mining and quarrying (except oil and gas)</i>
Total labour force	6,520	1,900
I1 Occupations unique to forestry operations, mining, oil and gas extraction and fishing, excluding labourers	1,830	510
I2 Primary production labourers	595	80
H6 Heavy equipment and crane operators, including drillers	560	315
H7 Transportation equipment operators and related workers, excluding labourers	350	75
H4 Mechanics	320	135
C1 Technical occupations related to natural and applied sciences	310	120
J1 Machine operators in manufacturing	285	95
H3 Machinists, metal forming, shaping and erecting occupations	235	65
A3 Other managers, n.e.c.	230	35
H8 Trades helpers, construction and transportation labourers and related occupations	230	70
B5 Clerical occupations	215	35
H1 Construction trades	200	35
G9 Sales and service occupations, n.e.c.	180	40
J3 Labourers in processing, manufacturing and utilities	135	30
C0 Professional occupations in natural and applied sciences	130	75
H2 Stationary engineers, power station operators and electrical trades and telecommunications occupations	95	35
J0 Supervisors in manufacturing	90	10
B0 Professional occupations in business and finance	75	40
B21 Secretaries, recorders and transcriptionists	55	10
B3 Administrative and regulatory occupations	50	15

Source: Statistics Canada, Custom Tabulation based on the 2006 Census

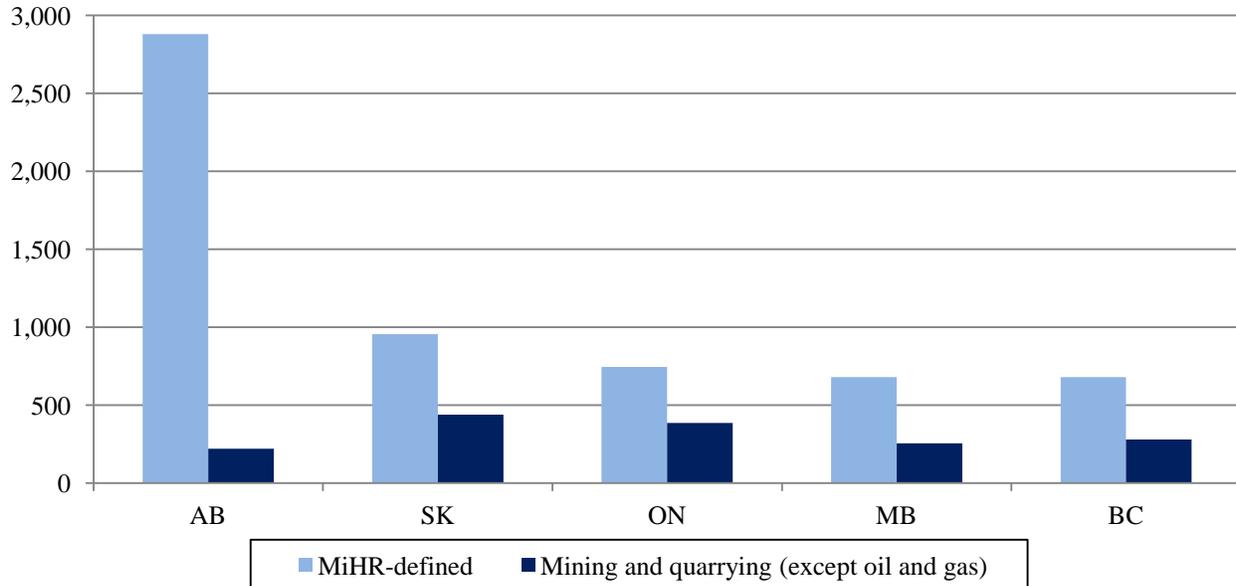
B. Provincial Comparisons

1. Métis Employment in the Mining Industry by Province

According to the 2006 Census, the Métis MiHR-defined mining industry labour force was highest in Alberta (2,880), followed by Saskatchewan (955), Ontario (745), Manitoba (680), and British Columbia (680) (Chart 31). For mining and quarrying (except oil and gas extraction), the Métis labour force was largest in Saskatchewan (440 workers), followed by Ontario (385), British Columbia (280), Manitoba (255), and Alberta (220). Compared to its Métis MiHR-defined mining industry labour force, Alberta had a miniscule Métis mining and quarrying (except oil and gas extraction) labour force; this is easily explained by the fact that our MiHR-based figure includes support activities for mining, quarrying, and oil and gas extraction. Since the petroleum industry is

so significant in Alberta, the support activities for oil and gas extraction labour force is large, which inflates the MiHR figure for Alberta.

Chart 31: Métis Labour Force Counts for the Mining Industry, the Relevant Provinces, 2005



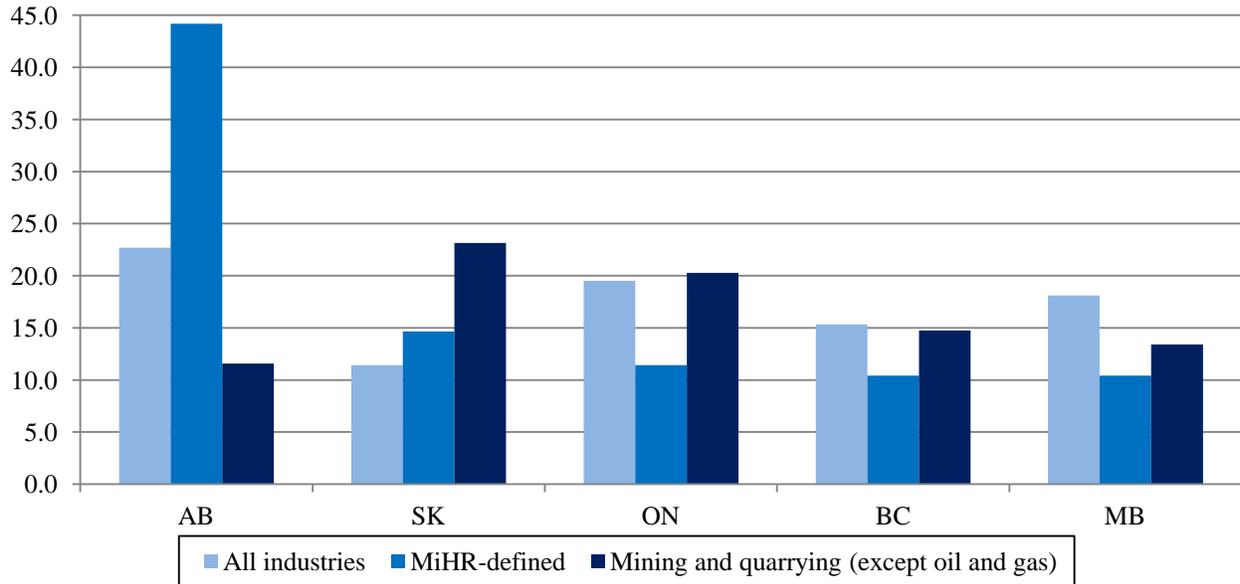
Source: Statistics Canada, Custom Tabulation based on the 2006 Census

2. Provincial Shares of the National Métis Labour Force by Industry

According to the Census, there were 204,165 Métis in the Canadian labour force in 2005. Of this total, Alberta had the largest share (22.7 per cent), followed by Ontario (19.5 per cent), Manitoba (18.1 per cent), British Columbia (15.3 per cent), and Saskatchewan (11.4 per cent) (Chart 32). Alberta's share of the Canadian Métis MiHR-defined mining industry labour force was 44.2 per cent, almost double its share of the national Métis labour force in all industries, and its share of the national Métis mining and quarrying (except oil and gas extraction) labour force was 11.6 per cent, almost half its share of the national Métis labour force in all industries. Yet again, this is explained by the immensity of the support activities for mining, quarrying, and oil and gas extraction labour force in Alberta. Since ranking the shares of the national Métis MiHR-defined mining industry labour force by province is not particularly meaningful, we focus on the ranking for mining and quarrying (except oil and gas extraction).

There were 1,900 Métis in the Canadian mining and quarrying (except oil and gas extraction) labour force in 2005. Of this total, Saskatchewan had the largest share (23.2 per cent), followed by Ontario (20.3 per cent), British Columbia (14.7 per cent), Manitoba (13.4 per cent), and Alberta (11.6 per cent). By comparing a province's share of the national Métis labour force in all industries and its share of the national Métis mining and quarrying (except oil and gas extraction) labour force, it is clear that Métis mining employment is overrepresented in Saskatchewan (most notably) as well as Ontario (albeit barely), while the opposite is true for British Columbia (albeit barely), Manitoba, and especially Alberta.

Chart 32: Provincial Shares of the National Métis Labour Force by Industry, per cent, 2005

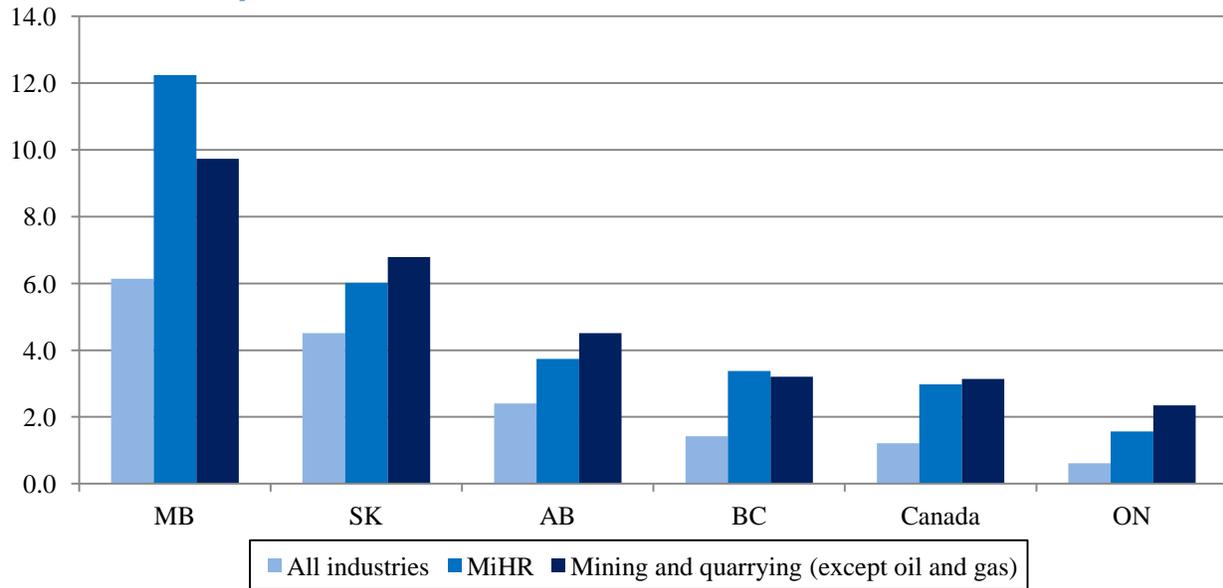


Source: Statistics Canada, Custom Tabulation based on the 2006 Census

3. The Proportion of the Total Labour Force that is Métis by Industry

In Canada, 1.2 per cent of the total labour force was Métis in 2005, compared to 3.0 per cent of the MiHR-defined mining industry labour force and 3.1 per cent of the mining and quarrying (except oil and gas extraction) labour force. As such, the Métis are overrepresented in the Canadian mining industry; this fact is true across all provinces relevant to this report, as can be seen in Chart 33. Unsurprisingly, the provincial ranking in terms of the share of the provincial mining industry that is Métis corresponds to the provincial ranking in terms of the share of the provincial labour force that is Métis.

Chart 33: The Proportion of the Provincial Labour Force that is Métis by Industry, Canada and the Relevant Provinces, per cent, 2005

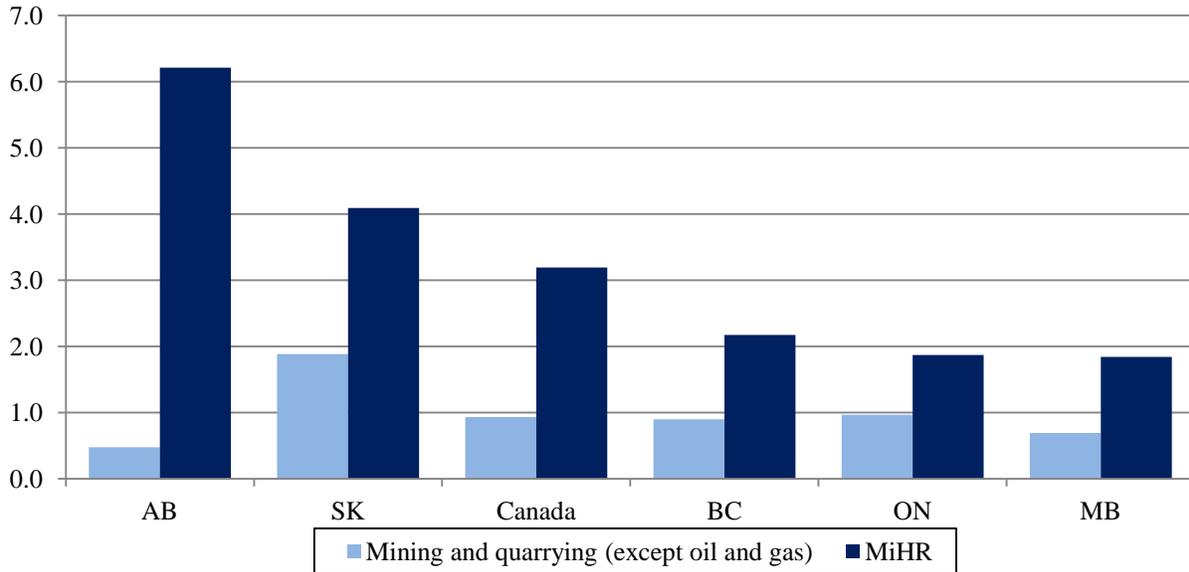


Source: Statistics Canada, Custom Tabulation based on the 2006 Census

4. The Métis Mining Labour Force's Share of the Total Métis Labour Force by Province

In 2005, the proportion of the Métis labour force devoted to the MiHR-defined mining industry was highest in Alberta (6.2 per cent) and Saskatchewan (4.1 per cent), both of which had higher shares than the Canadian average (3.2 per cent) (Chart 34). The share of the Métis labour force in the MiHR-defined mining industry was lower than the Canadian average for British Columbia, Ontario and Manitoba at 2.2 per cent, 1.9 per cent and 1.8 per cent, respectively. The proportion of the Métis labour force employed in mining and quarrying (except oil and gas extraction) was the highest in Saskatchewan (1.9 per cent), followed by Ontario (1.0 per cent), British Columbia (0.9 per cent), Manitoba (0.7 per cent), and Alberta (0.5 per cent). Regardless of the definition used, the Métis had a higher proportion of their labour force working in the mining industry than the total population (Table 11).

Chart 34: The Proportion of the Total Métis Labour Force that is Accounted for by the Mining Industry, Canada and the Relevant Provinces, per cent, 2005



Source: Statistics Canada, Custom Tabulation based on the 2006 Census

C. A Closer Look at the Relevant Provinces

i. Ontario

According to the 2006 Census, 745 Métis were in the MiHR-defined mining industry labour force in Ontario in 2005, accounting for 1.9 per cent of the provincial Métis labour force (Table 11). Of the 745 Métis in the mining industry labour force, 385 were employed in mining and quarrying (except oil and gas extraction), 200 in support activities for mining, quarrying, and oil and gas extraction, and 160 in the three four-digit NAICS industries classified under primary metal manufacturing. Within the Métis mining and quarrying (except oil and gas extraction) labour force, 295 Métis worked in metal ore mining and 90 Métis worked in non-metallic mineral mining and quarrying. Since Ontario does not have a significant petroleum industry, it is safe to assume that almost all of the Métis in the support activities for mining, quarrying, and oil and gas extraction labour force were accounted for by its mining and quarrying component.

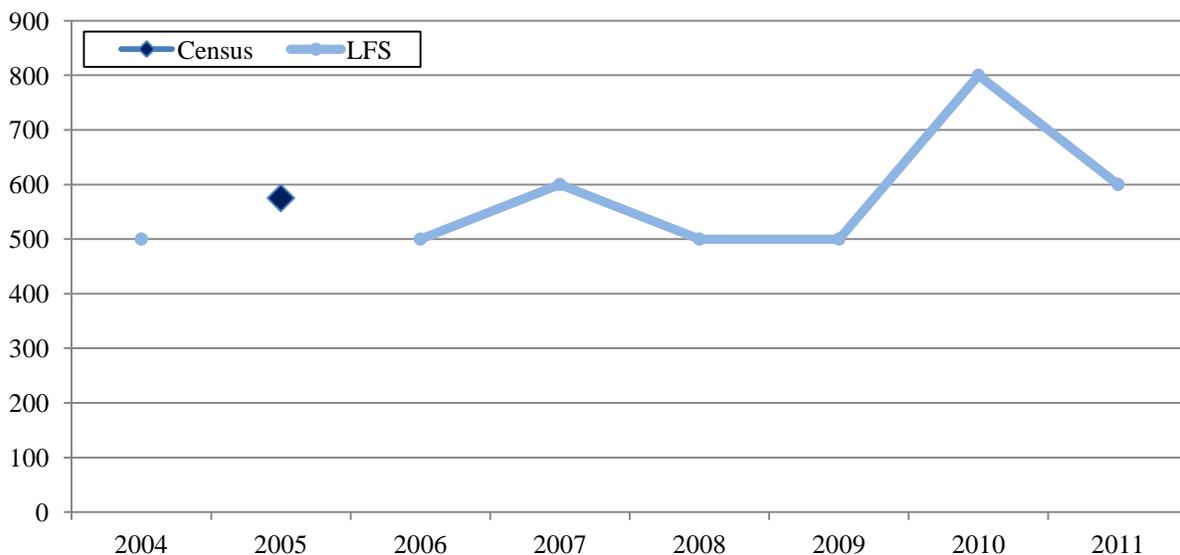
ii. Manitoba

According to the 2006 Census, Manitoba's Métis labour force in the MiHR-defined mining industry totalled 680 workers in 2005 (Table 11). Of this total, 255 Métis were accounted for by mining and quarrying (except oil and gas extraction), 290 by support activities for mining, quarrying, and oil and gas extraction, and 135 by the three relevant four-digit NAICS industries classified under primary metal manufacturing. In 2005, Manitoba's Métis mining and quarrying (except oil and gas extraction) labour force included: 175 Métis in metal ore mining and 75 Métis in non-metallic mineral mining and quarrying.

LFS employment estimates for mining, quarrying, and oil and gas extraction (NAICS code 21) employment are used to provide a time series for Métis mining employment in Manitoba, Saskatchewan, Alberta, and British Columbia. LFS estimates for Métis employment in mining, quarrying, and oil and gas extraction were not available for Ontario. It is important to remember that employment estimates for mining, quarrying, and oil and gas extraction include oil and gas extraction (NAICS code 211) and support activities for mining, quarrying, and oil and gas extraction (NAICS code 213) in addition to mining and quarrying (except oil and gas extraction) (NAICS code 212). The Métis mining and quarrying (except oil and gas) labour force accounted for 44.3 per cent of the Métis mining, quarrying, and oil and gas extraction labour force in 2005 and almost all of the Métis support activities for mining, quarrying, and oil and gas extraction labour force was probably devoted to support activities for mining and quarrying, as the Métis oil and gas extraction labour force only accounted for 2.6 per cent of the Métis mining, quarrying, and oil and gas extraction labour force in 2005. Therefore, the estimates for Métis mining employment in Chart 35 are a reliable representation of Métis mining employment in Manitoba.

According to the LFS, 600 of Manitoba's Métis were employed in mining, quarrying, and oil and gas extraction in 2011, down from 800 in 2010 and up from 500 in 2004 (Chart 35). The Census estimate for the size of the Manitoba's Métis labour force in mining, quarrying, and oil and gas extraction was 575 in 2005, which was similar to the 2004 and 2006 LFS employment estimates of 500 workers. Métis mining, quarrying, and oil and gas extraction employment estimates from the LFS for Manitoba were suppressed for 2005, which means that employment was below 500 workers.

Chart 35: Métis Mining, Quarrying, and Oil and Gas Extraction Employment, Manitoba, 2004-2011



Source: Statistics Canada, unpublished Labour Force Survey estimates; and 2006 Census Topic Based Tabulations

Note: Data for 2005 is a Census labour force estimate and data for 2004 and 2006 to 2011 are LFS employment estimates.

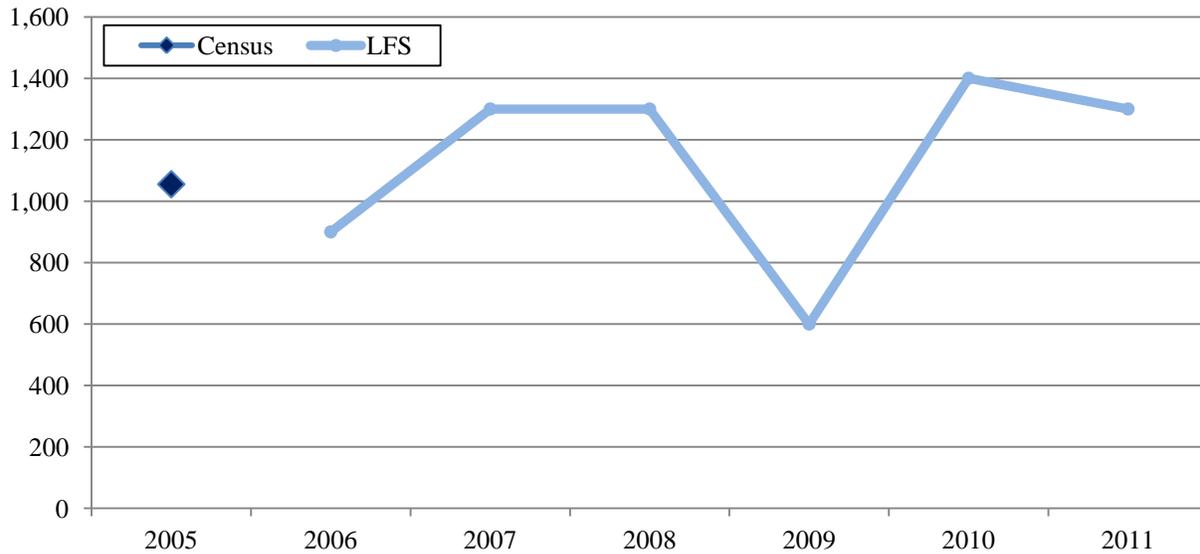
iii. Saskatchewan

According to the 2006 Census, the Métis labour force in the MiHR-defined mining industry totalled 955 workers in Saskatchewan in 2005 (Table 11). Of this total, 440 Métis were in mining and quarrying (except oil and gas extraction), 490 in support activities for mining, quarrying, and oil and gas extraction, and only 25 in the three four-digit NAICS industries classified under primary metal manufacturing that are included in the MiHR definition of the mining industry. Saskatchewan's Métis mining and quarrying (except oil and gas extraction) labour force had the following breakdown: 25 Métis in coal mining, 305 Métis in metal ore mining, and 105 Métis in non-metallic mineral mining and quarrying.

According to LFS estimates, 1,300 Métis were employed in mining, quarrying, and oil and gas extraction in 2011. Métis mining, quarrying, and oil and gas extraction employment was deeply affected by the 2009 recession, declining from 1,300 workers in 2008 to 600 workers in 2009; however, Métis employment in this industry quickly recovered in 2010, reaching a peak of 1,400 workers (Chart 36).

According to the 2006 Census, Saskatchewan's Métis mining, quarrying, and oil and gas extraction labour force totalled 1,055 workers in 2005, which was close to the 2006 LFS employment estimate of 900 workers. Métis mining, quarrying, and oil and gas extraction employment estimates from the LFS for Saskatchewan were suppressed for 2004 and 2005, which implies that employment was below 500 workers.

The Métis mining and quarrying (except oil and gas) labour force in Saskatchewan accounted for 41.5 per cent of the province's Métis labour force in mining, quarrying, and oil and gas extraction in 2005 and it is likely that most of the Métis support activities for mining, quarrying, and oil and gas extraction labour force referred to support activities for mining and quarrying, as Métis oil and gas extraction employment represented only 11.8 per cent to the Métis mining, quarrying, and oil and gas extraction labour force in 2005. As a result, Chart 36 is an accurate illustration of Métis primary mining employment in Saskatchewan over the 2005-2011 period.

Chart 36: Métis Mining, Quarrying, and Oil and Gas Extraction Employment, Saskatchewan, 2005-2011

Source: Statistics Canada, unpublished Labour Force Survey estimates; and 2006 Census Topic Based Tabulations
 Note: Data for 2005 is a Census labour force estimate and data for 2006 to 2011 are LFS employment estimates.

iv. Alberta

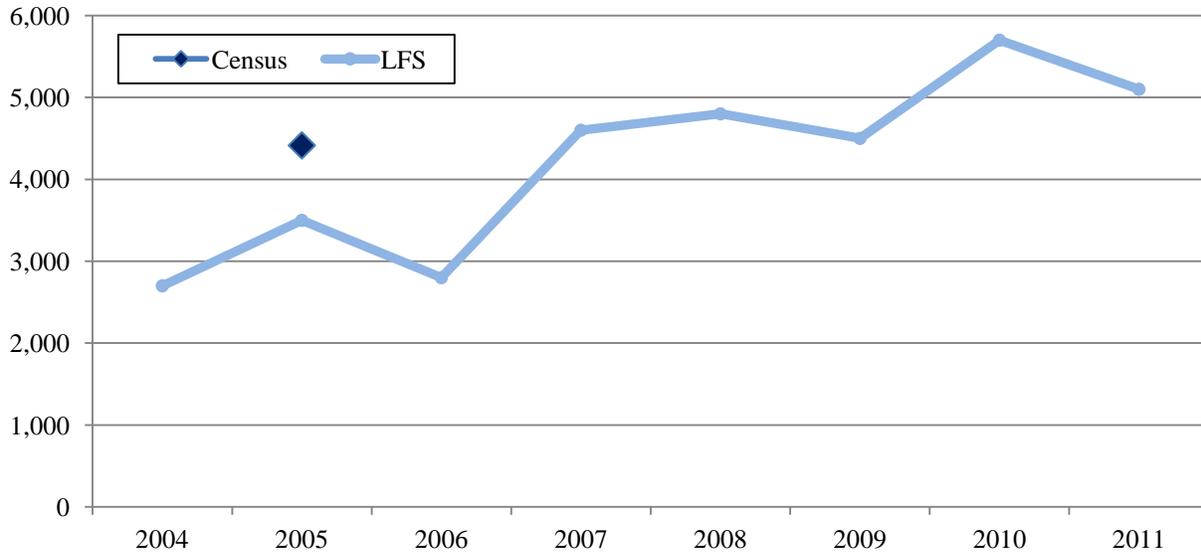
According to the 2006 Census, 2,880 Métis were employed by the MiHR-defined mining industry in Alberta. Of this total, 220 worked in mining and quarrying (except oil and gas extraction), 2620 in support activities for mining, quarrying, and oil and gas extraction, and 40 in the three relevant four-digit NAICS industries classified under primary metal manufacturing (Table 11). 51.1 per cent of the Métis labour force in mining and quarrying (except oil and gas extraction) was devoted to coal mining, 40.0 per cent to non-metallic mineral mining and quarrying, and merely 8.9 per cent to metal ore mining.

According to the LFS, 5,100 Métis were employed in mining, quarrying, and oil and gas extraction in Alberta in 2011, down from 5,700 in 2010 (Chart 37). Over the 2004-2011 period, Métis employment in mining, quarrying, and oil and gas extraction grew by 88.9 per cent from 2,700 workers to 5,100 workers. Métis employment growth in Alberta's mining industry experienced significant drops in 2006, 2009 and 2011. The Census estimate for the size of the Métis labour force in mining, quarrying, and oil and gas extraction was 4,415 in 2005, substantially above the 2005 LFS employment estimate of 3,500 workers.

According to the 2006 Census, Alberta's Métis labour force in mining, quarrying, and oil and gas extraction had the following breakdown: oil and gas extraction (43.6 per cent), mining and quarrying (except oil and gas) (5.1 per cent), and support activities for mining, quarrying, and oil and gas extraction (52.6 per cent). It is likely that most of the Métis support activities for mining, quarrying, and oil and gas extraction labour force was accounted for by support activities for oil and gas extraction, as Métis employment in mining and quarrying (except oil and gas extraction) was negligible in Alberta. The importance of the oil and gas component in Alberta's Métis

mining, quarrying, and oil and gas extraction labour force implies that the LFS estimates in Chart 37 do not provide an accurate account of Métis mining employment over the 2004-2011 period.

Chart 37: Métis Mining, Quarrying, and Oil and Gas Extraction Employment, Alberta, 2004-2011



Source: Statistics Canada, unpublished Labour Force Survey estimates; and 2006 Census Topic Based Tabulations
 Note: Data for 2005 is a Census labour force estimate and data for 2004 to 2011 are LFS employment estimates.

v. British Columbia

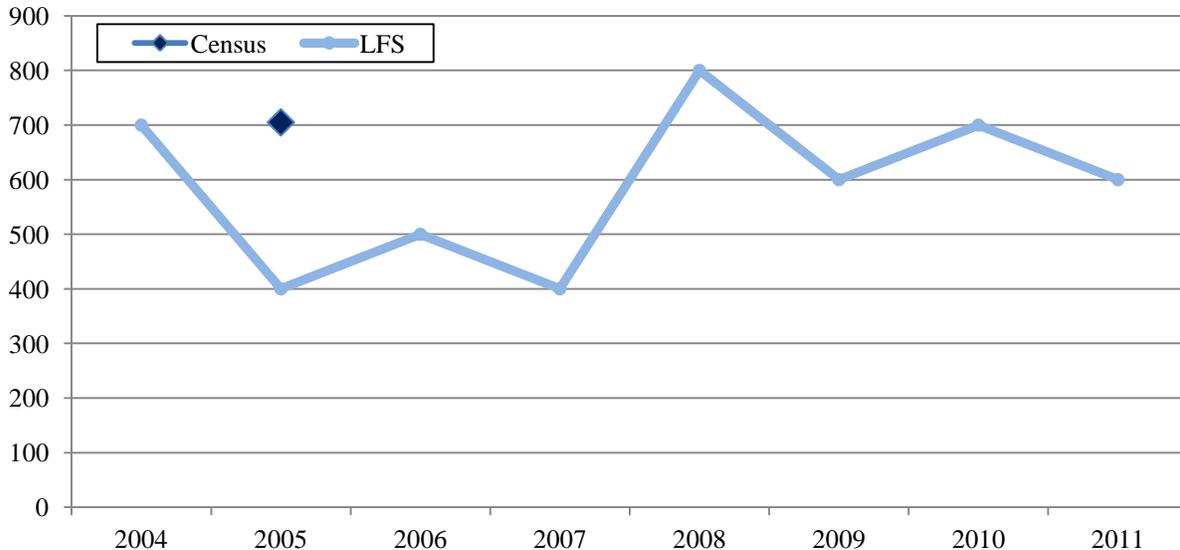
According to the 2006 Census, British Columbia's Métis MiHR-defined mining industry labour force totalled 680 workers in 2005 (Table 11). Of this total, 280 Métis were employed in mining and quarrying (except oil and gas extraction), 320 in support activities for mining, quarrying, and oil and gas extraction, and 80 in the three four-digit NAICS industries classified under primary metal manufacturing that are included in the MiHR definition of the mining industry. In 2005, British Columbia's Métis mining and quarrying (except oil and gas extraction) labour force included: 115 workers in coal mining, 120 workers in metal ore mining, and 55 workers in non-metallic mineral mining and quarrying.

According to LFS estimates, 600 Métis were employed in mining, quarrying, and oil and gas extraction in British Columbia in 2011, down from 700 in 2004 (Chart 38). Métis employment in mining, quarrying, and oil and gas extraction employment has changed little over the 2004-2011 period. Métis employment in this industry reached a high of 800 workers in 2008 as mineral and oil prices peaked, but it did not recover to this pre-recession high by 2011. According to the 2006 Census, British Columbia's Métis mining, quarrying, and oil and gas extraction labour force totalled 705 workers in 2005, which was 76.3 per cent above the 2005 LFS employment estimate of 400 workers.

In British Columbia, the Métis mining and quarrying (except oil and gas) labour force accounted for 39.7 per cent of the Métis mining, quarrying, and oil and gas extraction labour force

in 2005. Most of the Métis support activities for mining, quarrying, and oil and gas extraction labour force were probably devoted to support activities for mining and quarrying, as Métis oil and gas extraction employment represented only 14.9 per cent of the total Métis mining, quarrying, and oil and gas extraction labour force in 2005. In this sense, Chart 38 provides a reasonable representation of Métis primary mining employment in British Columbia over the 2004-2011 period.

Chart 38: Métis Mining, Quarrying, and Oil and Gas Extraction Employment, Alberta, 2004-2011



Source: Statistics Canada, unpublished Labour Force Survey estimates; and 2006 Census Topic Based Tabulations
 Note: Data for 2005 is a Census labour force estimate and data for 2004 to 2011 are LFS employment estimates.

IX. Hiring Projections for the Mining Industry

This section provides an overview of hiring projections for the mining industry as well as an overview of the educational requirements for the occupations that are expected to need the most new workers. It is divided into three parts. The first part of this section presents long-term hiring projections for the Canadian mining industry done by the Mining Industry Human Resources Council's (MiHR).⁶⁴ The second part of this section analyzes MiHR's hiring projections for NOC-S occupations relevant to the mining sector and discusses the educational requirements for the occupations that are expected to need the most new workers. The third part of this section provides forecasts provided for hiring, employment and GDP in mining and quarrying (except oil and gas extraction) for the 2011-2020 period from Human Resources and Skills Development Canada's (HRSDC) Canadian Occupational Projection System (COPS)⁶⁵

⁶⁴ MiHR's 2011 and 2013 forecasts only include support activities for mining and quarrying, because they were able to divide support activities for mining, quarrying and oil and gas extraction (NAICS code 213) into its mining and quarrying and oil and gas extraction components. Nonetheless, MiHR's hiring projections do include subsectors of primary metal manufacturing which are less relevant to the Métis.

⁶⁵ According to MiHR's 2013 forecast, the mining industry employed 234.8 thousand workers in 2013; however, 72.1 thousand workers (or 31 per cent of the mining industry) was accounted for by mineral processing.

The hiring projections for the mining industry used in this section are taken from MiHR's "Canadian Industry and Hiring Forecasts" published in the summer of 2011 and their "Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook" published in May 2013. MiHR's reports provide job openings forecasts according to contractionary, baseline and expansionary scenarios. MiHR's 2013 forecast differs from its 2011 counterpart in many significant ways; the 2013 forecast is based on an updated methodology, including a new definition of the mining industry in terms of NAICS codes (i.e., architectural, engineering and related services (NAICS code 5413) is now included).⁶⁶ In addition, MiHR's 2013 report includes hiring requirements for the four stages of mining (i.e., exploration and advanced development, extraction, processing, and support services for exploration and mining); however, it only provides forecasts for Canada as a whole, while the 2011 report also provides regional forecasts. MiHR's 2013 forecast offers the most up-to-date projections for hiring, employment growth, retirements and non-retirement separation for the mining industry; these forecasts are also broken down by subsector.

A. MiHR Forecasts for the Mining Industry as a Whole

i. Canada

MiHR's 2013 forecast provides a breakdown of cumulative hiring projections by its three components – changes in employment, retirement, and non-retirement separation⁶⁷ – for Canada as a whole under contractionary, baseline and expansionary scenarios. The baseline scenario for MiHR's 2013 forecast is based on the assumption that mineral prices are expected to recover from their current weakness by 2014 and increase steadily afterwards.⁶⁸ This differs from the baseline scenario for MiHR's 2011 forecast, which was based on the assumption that inelastic global supply and strong global demand would "lead to modest increases in minerals and metals prices" in the short-term (boosting mining employment), but that these prices would "soften" in the long-term as the supply expands while the growth in demand from developing economies slows.⁶⁹ The baseline scenarios for both forecasts assume that growing labour productivity will put downward pressure on mining employment.

1. Cumulative Hiring Requirement for the Mining Industry from MiHR's 2013 Forecast

⁶⁶ For more information on the methodology used by MiHR in their 2013 hiring projections, see http://www.mihr.ca/en/resources/MiHR_10_Year_Outlook_2013.pdf.

⁶⁷ Changes in employment are caused by changes in mineral prices, labour productivity growth, and the level of employment in the previous year. Replacement requirements are based on retirement rates and non-retirement separation rates. Non-retirement separations are all separations for reasons other than retirement that result in a loss to the mining industry as a whole. Non-retirement separations do not include employer-to-employer churning within the industry, but only exits from the mining industry for reasons such as emigration, death and industry transfer.

⁶⁸ Mining Industry Human Resources Council (2013), "Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook," http://www.mihr.ca/en/resources/MiHR_10_Year_Outlook_2013.pdf

⁶⁹ Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 3, http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

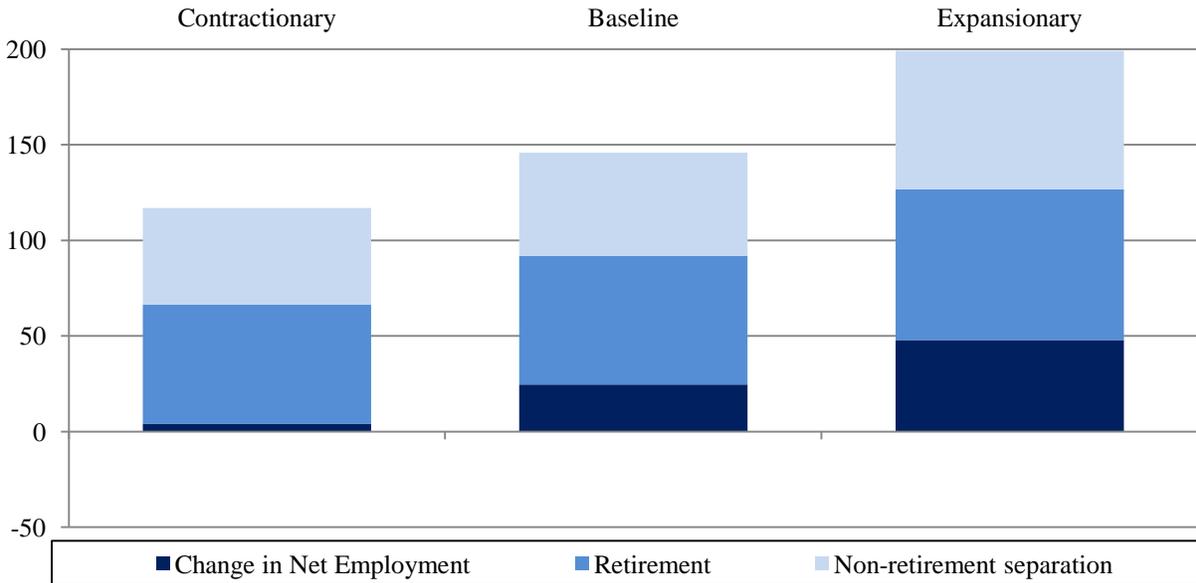
Cumulative hiring requirements are the sum of the change in employment, retirement, and non-retirement separation. According to MiHR's 2013 report, the mining industry will need to hire 145,870 workers in their baseline scenario between 2013 and 2023 (Chart 39). Of this total, 24,600 workers (or 16.7 per cent) will be accounted for by net employment growth, 67,180 workers (or 46.1 per cent) by retirements, and 54,100 workers (or 37.1 per cent) by non-retirement separation. Unlike MiHR's 2011 report, which forecast net employment in the mining industry to fall by 1,000 over the 2011-2021 period according to the baseline scenario, the 2013 report forecasts net employment to rise by 24,600 workers over the 2013-2023 period; however, the level of retirements and non-retirement separations in the 2013 report were similar to the figures in the 2011 report. In other words, the primacy of retirements in driving cumulative hiring requirements for the mining industry was similar between MiHR's 2011 and 2013 forecasts, but net employment growth for the mining industry was substantially higher in the latter as their expectations for mineral prices were revised upwards.

In the expansionary scenario, cumulative job openings for the mining industry reached 199,150 workers by 2023 due to an increase in net employment of 47,820 workers. Despite this increase, net employment growth would still account for only 24.0 per cent of the cumulative hiring requirements from 2013 to 2023. Retirement and non-retirement separation replacement requirements would still explain 39.7 per cent and 36.3 per cent of the total hiring requirements, respectively.

In the contractionary scenario, cumulative hiring requirements in the mining industry would be 116,850 by 2023, with net employment increased by only 3,910 workers. As was the case for the other two scenarios, retirement and non-retirement separation requirements were the factors truly driving hiring in the mining industry.

The key difference between the three scenarios is the magnitude by which net employment changes, as retirement and non-retirement separation replacement requirements only differ marginally by scenario. Mining industry employment growth differs greatly by scenario as it is driven by a factor that is hard to predict: mineral commodity prices. Regardless of the actual path of net employment growth, however, the main source of employment opportunities in the mining industry will be retirement replacement requirements.

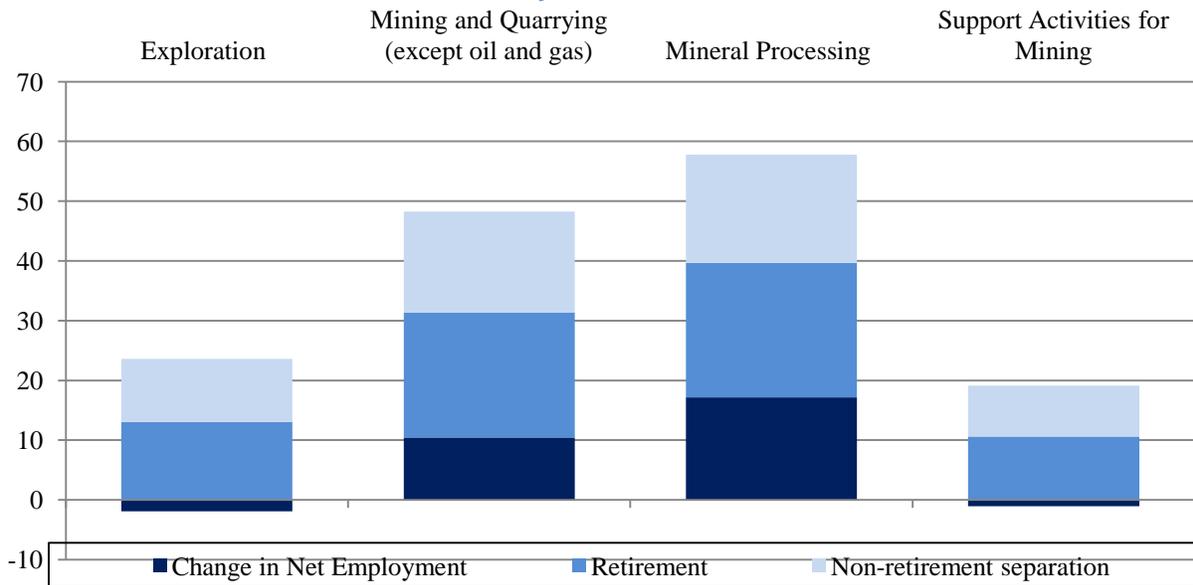
Chart 39: MiHR's Total Hiring Requirement Projections for the Mining Industry Forecasts by Scenario for Canada, Thousands of Workers, 2013-2023



Source: Mining Industry Human Resources Council (2013), "Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook," http://www.mihrc.ca/en/resources/MiHR_10_Year_Outlook_2013.pdf

MiHR's hiring projections can also be broken down according to the four sub-sectors of the mining industry that correspond to different stages in the mining process: exploration, mining and quarrying (except oil and gas extraction), mineral processing, and support activities for mining (Chart 40). Net employment is expected to grow in mining and quarrying (except oil and gas extraction) and mineral processing over the 2013-2023 period by 10,425 workers and 17,136 workers, respectively. However, it is expected to fall in exploration and support activities for mining by 1,935 workers and 1,040 workers, respectively. Trends for the overall mining industry's hiring requirements are reflected in each of its sub-sectors as retirements are the most important driver of cumulative hiring requirements for every sub-sector, followed by non-retirement separations, and finally net employment growth.

Chart 40: MiHR's Total Hiring Requirement Projections for the Mining Industry Forecasts by Mining Stage for the Baseline Scenario, Canada, Thousands of Workers, 2013-2023



Source: Mining Industry Human Resources Council (2013), "Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook," http://www.mihr.ca/en/resources/MiHR_10_Year_Outlook_2013.pdf

2. Cumulative Hiring Requirement for the Mining Industry from MiHR's 2011 Forecast

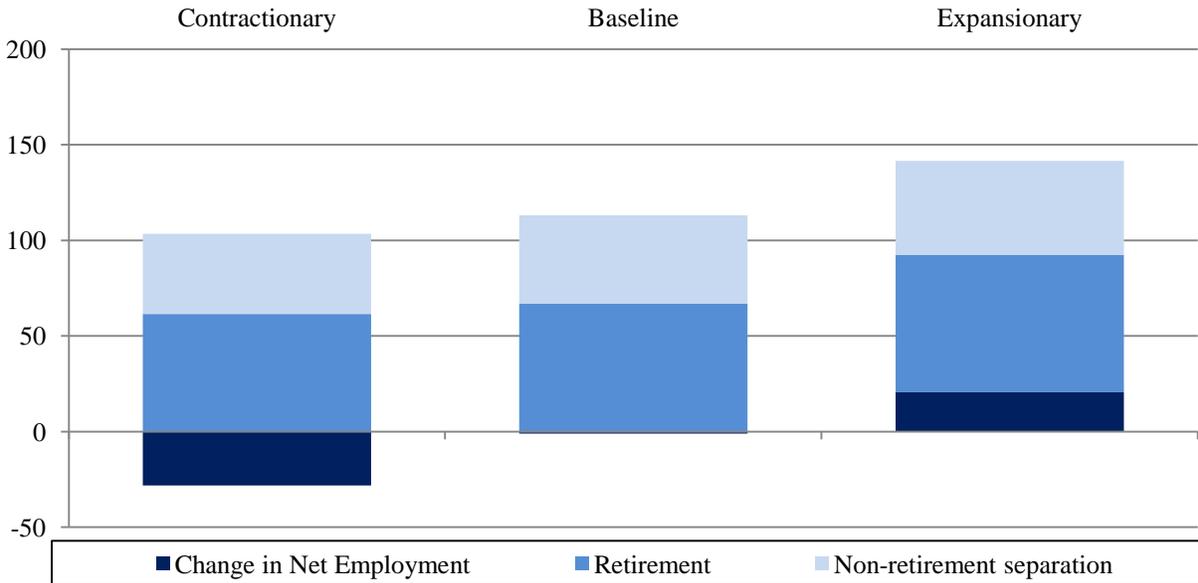
According to MiHR's 2011 report, 112,020 workers were expected to be hired by the mining industry according to the baseline scenario between 2011 and 2021 (Chart 41).⁷⁰ Even though mining industry employment was forecast to decline by 1,000 workers, as labour productivity grows and prices remain soft, cumulative hiring requirements would remain strong due to a large number of retirements (67,080 workers) and non-retirement separations (45,940 workers) over 2011-2021 period.

In the expansionary scenario the cumulative job openings for the mining industry would be higher than the baseline scenario at 141,540 workers by 2021 due to an increase in net employment of 20,500 workers. Even with such an optimistic prediction, net employment growth would still only account for 14.5 per cent of the cumulative hiring requirements from 2011 to 2021. Retirement and non-retirement separation replacement requirements would still explain 50.7 per cent and 34.8 per cent of the total hiring requirements, respectively.

In the contractionary scenario, the mining industry would still need to hire an additional 75,280 workers by 2021, despite a decrease in net employment of 28,200 workers. As was the case for the other two scenarios, retirement and non-retirement separation requirements would be the main factors driving hiring in the industry.

⁷⁰ For MiHR's 2011 report, a model to forecast mining industry hiring requirements was not developed at the national level, only for the following six regions: the Atlantic (Newfoundland and Labrador, Nova Scotia and New Brunswick), Quebec, Ontario, the Prairies (Manitoba, Saskatchewan and Alberta), British Columbia, and the Territories (Nunavut, Northwest Territories and Yukon). The jobs openings projections for each of these regions were aggregated by MiHR to provide estimates at the national level.

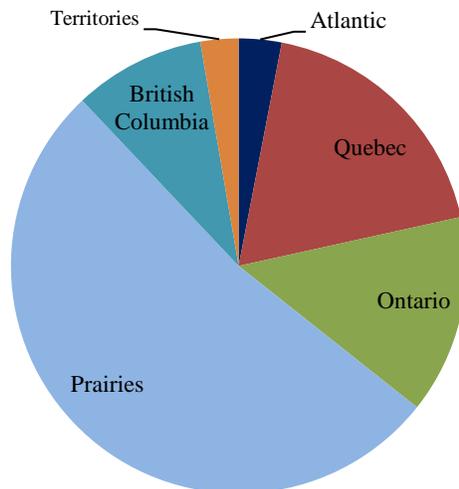
Chart 41: MiHR's Total Hiring Requirement Projections for the Mining Industry Forecasts by Scenario for Canada, Thousands of Workers, 2011-2021



Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihrc.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

Between 2011 and 2021, 52.2 per cent of the total job openings are expected to come from the Prairies, followed by Quebec (18.5 per cent), Ontario (14.1 per cent), and British Columbia (9.3 per cent) (Chart 42). The remaining share of the total cumulative hiring requirements (5.7 per cent) would come from Atlantic Canada and the Territories. A total of 75.7 per cent of the total cumulative mining industry hiring requirements from 2011 to 2021 are expected to occur in the provinces with the largest Métis populations – the provinces this report focuses on. In addition, over half of the projected hiring is projected to occur in the Prairies, a region that is home to 52.7 per cent of the Métis.

Chart 42: Share of MiHR's Total Hiring Requirement Projections for the Mining Industry Forecasts by Region for the Baseline Scenario, Per Cent, 2011-2021



Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihrc.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

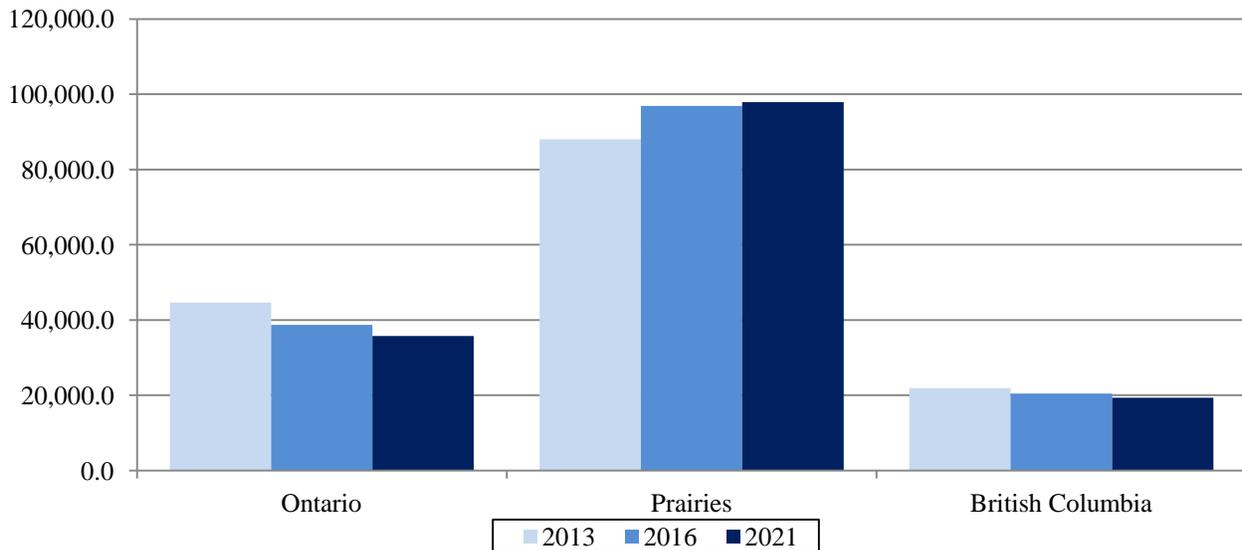
ii. The Relevant Provinces

MiHR's 2011 report offers hiring projections for the mining industry by region. They were not available at the provincial level because the relevant provincial data was suppressed by Statistics Canada to meet the confidentiality requirement of the Statistics Act.⁷¹ According to the MiHR, "comparisons across the regions should be approached with caution [as] economic factors affecting changes in employment differ for each region [and] there are also differences in the age profiles of the mining workforce in different parts of the country."⁷²

1. Mining Employment Forecasts by Region

Between 2013 and 2021, mining employment is expected to decrease in Ontario by 8,800 workers (or 24.6 per cent) from 44,600 workers to 35,800 workers (Chart 43). Similarly, employment in British Columbia's mining industry is estimated to fall to 19,400 in 2021 from 21,900 in 2013, down 2,500 workers or 12.9 per cent. Unlike Ontario, British Columbia and Canada as a whole, mining employment in the Prairies is expected to rise by 10.1 per cent from 88,000 in 2013 to 97,900 in 2021. Employment growth in the Prairies will remain strong in 2013 and 2014 due to high commodity prices, but it is expected to gradually weaken as we near the end of the forecast period.⁷³ The Territories are also expected to experience an increase in mining employment.

Chart 43: MiHR's Employment Forecasts for the Mining Industry by Region for the Baseline Scenario, 2013, 2016, 2021



Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

⁷¹ Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 14, http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

⁷² Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 14, http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

⁷³ Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 22, http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

2. Cumulative Hiring Requirements for the Mining Industry by Region

Even though the Prairies is the only region expected to experience an increase in mining employment, the cumulative hiring requirements for Ontario, the Prairies and British Columbia will be enormous (Table 14). In Ontario, 15,810 workers will be hired by 2021 according to the baseline scenario; these requirements vary little by scenario. Ontario's hiring requirements are concentrated after 2016, when retirement replacement requirements peak (remaining high until the end of the forecast period).

Under the baseline scenario, the cumulative hiring requirement for the Prairies' mining industry by 2021 is 58,500 workers, larger than any other region due to an increase in mining employment of 9,900 from 2013 to 2021. After 2014, net employment growth becomes negligible and retirements become the dominant source of opportunities for employment in the mining industry.⁷⁴ The closer we get to 2021, the smaller the role net employment growth has to play in determining cumulative hiring requirements, with the importance of retirements increasing substantially.

In British Columbia, 10,460 workers are expected to be hired by 2021. This figure is almost one-sixth of the Prairies' cumulative hiring requirements and two-thirds of Ontario's. Over the 2013-2021 period, hiring will be driven primarily by retirement and non-retirement replacement requirements, as mining employment is forecast to fall.⁷⁵

Table 14: MiHR's Cumulative Hiring Requirements Forecasts for the Mining Industry, Canada, Ontario, the Prairie Region and British Columbia by Scenario, 2011-2021

	2013	2016	2021
	Ontario		
Contractionary	2,200	5,410	14,080
Baseline	2,850	6,700	15,810
Expansionary	3,400	7,640	16,910
	Prairie Region		
Contractionary	14,850	23,190	34,960
Baseline	20,340	35,230	58,500
Expansionary	25,200	45,650	78,260
	British Columbia		
Contractionary	2,930	3,950	6,990
Baseline	3,950	5,910	10,460
Expansionary	4,880	7,540	13,100

Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihhr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

⁷⁴ Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 22, http://www.mihhr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

⁷⁵ Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 24, http://www.mihhr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

B. MiHR Forecasts for Mining Industry Job Openings by Occupation

i. Canada

1. Cumulative Hiring Requirement for the Mining Industry by Broad Occupational Category

MiHR's forecasting system also includes job openings projections for 66 NOC-S occupations in the mining industry. The occupations represent approximately two out of every three workers in the mining industry (as defined by the NAICS industries used by MiHR).⁷⁶ These 66 occupations can be aggregated into six broad groupings (Table 15). Of these broad groups, the most job openings over the 2011-2021 will by far be in trades and undesignated occupations (40,100 workers or 57.8 per cent of the total), followed by support workers (11,170 workers or 16.1 per cent of the total), and supervisors, coordinators and foremen (8,180 workers or 11.8 per cent of the total). These three broad groupings will account for 85.6 per cent of the cumulative hiring requirements in the mining industry by 2021. Of the remaining 14.4 per cent of the total job openings in the mining industry, 5.7 percentage points will come from professional and physical science occupations, 5.2 percentage points from technical occupations, and 3.4 percentage points from human resources and financial occupations. For a list of the occupations under each of these broad categories, see Appendix Table 1.

Table 15: MiHR's Cumulative Hiring Requirements Forecasts for Canada by Broad NOC-S Category, Canada, 2011-2021

<i>National Occupational Classification for Statistics (NOC-S)</i>	<i>2021</i>
<i>Trades and undesignated occupations</i>	40,100
<i>Support workers</i>	11,170
<i>Supervisors, coordinators, and foremen</i>	8,180
<i>Professional and physical science occupations</i>	3,980
<i>Technical occupations</i>	3,635
<i>Human resources and financial occupations</i>	2,370

Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

2. Cumulative Hiring Requirement for the Mining Industry by Detailed Occupational Category

According to a ranking of mining industry occupations by projected hiring requirements over the 2011-2021 period, the top 30 of the 66 occupations for which the MiHR published projections account for 90.0 per cent of the total job openings by 2021. The 30 occupations expected to hire the most workers in the mining industry are represented in Table 16. The educational requirements for these occupations are detailed in Appendix Table 2.

⁷⁶ Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," page 11, http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

Table 16: MiHR's Cumulative Hiring Requirements Forecasts for Canada for the Top 30 Narrow NOC-S Category, Canada, 2011-2021

<i>National Occupational Classification for Statistics (NOC-S)</i>	<i>2021</i>
<i>Production clerks</i>	6,960
<i>Heavy-equipment operators (except crane)</i>	5,795
<i>Truck drivers</i>	4,955
<i>Underground production and development miners</i>	4,475
<i>Construction millwrights and industrial mechanics (except textile)</i>	4,335
<i>Primary production managers (except agriculture)</i>	3,265
<i>Welders and related machine operators</i>	2,755
<i>Labourers in mineral and metal processing</i>	2,545
<i>Heavy-duty equipment mechanics</i>	2,465
<i>Machine operators, mineral and metal processing</i>	2,330
<i>Supervisors, mining and quarrying</i>	2,000
<i>Industrial electricians</i>	1,915
<i>Central control and process operators, mineral and metal processing</i>	1,615
<i>Supervisors, mineral and metal processing</i>	1,515
<i>Geological and mineral technologists and technicians</i>	1,470
<i>Secretaries (except legal and medical)</i>	1,465
<i>Geologists, geochemists and geophysicists</i>	1,370
<i>Construction trades helpers and labourers</i>	1,160
<i>Mine labourers</i>	1,140
<i>Financial auditors and accountants</i>	1,135
<i>Steamfitters, pipefitters and sprinkler system installers</i>	1,125
<i>Inspectors and testers, mineral and metal processing</i>	1,110
<i>Material handlers</i>	1,065
<i>Underground mine service and support workers</i>	1,010
<i>Contractors and supervisors, pipefitting trades</i>	845
<i>Mining engineers</i>	665
<i>Chemical technologists and technicians</i>	560
<i>Dispatchers and radio operators</i>	530
<i>Electrical and electronics engineering technologists and technicians</i>	485
<i>Drillers and blasters — Surface mining, quarrying and construction</i>	465

Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

3. Employment Requirements for the Top-Hiring Mining Industry Occupations

A CSLS investigation of the employment requirements for the 30 top-hiring mining industry occupations determined that only one of these occupations did not specify any desired level of education (construction trades helpers and labourers); however, this occupation accounts for only 1.9 per cent of the total expected hiring requirements of top 30 occupations by 2021 (Table 17). For the 30 top-hiring mining occupations, 45.1 per cent of the openings will require only the completion of secondary education; this may seem like a large proportion, but 58.6 per

cent of these jobs involve intensive on-the-job training lasting months. Some examples of mining occupations requiring only a high school education with on-the-job training include underground production and development miners; central control and process operators for mineral and metal processing; and drillers and blasters for surface mining, quarrying and construction. Occupations that only require a high school education without intensive on-the-job training include production clerks and labourers in mineral and metal processing.

Apprenticeships and trades certificates will be an important qualification for individuals seeking a career in the mining industry, as 30.8 per cent of the total job openings for the 30 top-hiring mining occupations by 2021 will require this level of education. Only 12.0 per cent of job openings for the 30 top-hiring mining occupations will require either a college certificate or diploma (below the bachelor level). Finding employment in occupations that require an apprenticeship or trades certificate (e.g., heavy-equipment operators and construction millwrights and industrial mechanics) is much more common in the mining industry than finding work in occupations that demand either a college degree other non-university certificate (e.g., mining and quarrying supervisors and geological and mineral technologists and technicians). This is also the case for mining industry occupations requiring a university degree at or above the bachelor's level (e.g., mining engineers, geologists, geochemists and geophysicists, and financial auditors and accountants). The proportion of total job openings in the 30 top-hiring mining occupations requiring a university degree is only 10.3 per cent. These occupations tend to pay high wages, but usually require more than a bachelor's degree. For a comprehensive list of the employment requirements for the 30 top-hiring mining occupations, see Appendix Table 2.

Table 17: Employment Requirements for the 30 Top Hiring NOC-S Occupations, Canada, 2011-2021

<i>Desired Level of Educational Attainment</i>	<i>Per Cent of the Top 30 Occupations</i>
None specified	1.9
High school certificate or equivalent	45.1
Apprenticeship or trades certificate or diploma	30.8
College certificate or diploma, university certificate or diploma below bachelor level, or other non-university certificate or diploma	12.0
University certificate or degree at or above the bachelor's level	10.3

Source: CSLS Calculation based on Appendix Table 1 and Table 11

ii. The Relevant Provinces

MiHR also published the 10 top-hiring occupations in the mining industry for Ontario, the Prairies, and British Columbia (Table 18). Unsurprisingly, all of these occupations are represented in the 30 top-hiring mining occupations at the national level. It is also interesting to note that there are no major differences between the top-hiring occupations for each of the regions represented in Table 13.

Table 18: MiHR's Cumulative Hiring Requirements Forecasts for Ontario, the Prairie Region and British Columbia by Narrow NOC-S Category, 2011-2021

2006 National Occupational Classification for Statistics (NOC-S)	2021
	Ontario
<i>Production clerks</i>	1,640
<i>Underground production and development miners</i>	1,300
<i>Labourers in mineral and metal processing</i>	880
<i>Construction millwrights and industrial mechanics (except textile)</i>	830
<i>Heavy-equipment operators (except crane)</i>	575
<i>Supervisors, mineral and metal processing</i>	485
<i>Industrial electricians</i>	480
<i>Supervisors, mining and quarrying</i>	400
<i>Machine operators, mineral and metal processing</i>	375
<i>Heavy-duty equipment mechanics</i>	340
	Prairies
<i>Truck drivers</i>	3,305
<i>Heavy-equipment operators (except crane)</i>	2,795
<i>Production clerks</i>	2,575
<i>Primary production managers (except agriculture)</i>	2,340
<i>Construction millwrights and industrial mechanics (except textile)</i>	1,580
<i>Welders and related machine operators</i>	1,500
<i>Underground production and development miners</i>	1,345
<i>Secretaries (except legal and medical)</i>	1,055
<i>Heavy-duty equipment mechanics</i>	970
<i>Steamfitters, pipefitters and sprinkler system installers</i>	820
	British Columbia
<i>Heavy-equipment operators (except crane)</i>	870
<i>Production clerks</i>	725
<i>Truck drivers</i>	590
<i>Heavy-duty equipment mechanics</i>	400
<i>Underground production and development miners</i>	400
<i>Primary production managers (except agriculture)</i>	390
<i>Construction millwrights and industrial mechanics (except textile)</i>	315
<i>Geologists, geochemists and geophysicists</i>	280
<i>Geological and mineral technologists and technicians</i>	280
<i>Supervisors, mining and quarrying</i>	260

Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts 2011," http://www.mihhr.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

C. COPS Projections for Mining and Quarrying (Except Oil and Gas Extraction)

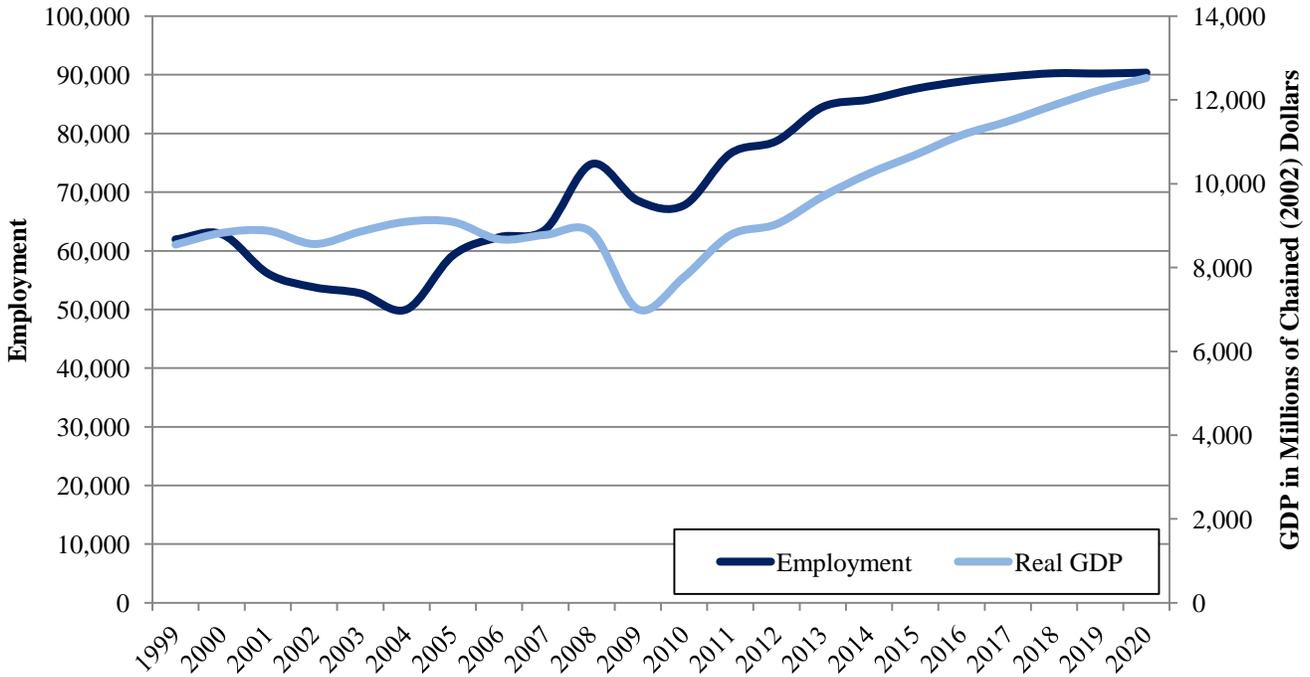
This section presents HRSDC's Canadian Occupational Projection System (COPS) forecasts for hiring, employment and GDP in mining and quarrying (except oil and gas extraction) (NAICS code 212) for the 2011-2020 period. COPS forecasts are specifically for mining and quarrying (except oil and gas extraction) and based on a completely different methodology than the MiHR forecasts. As a result, one cannot compare COPS and MiHR forecasts. COPS forecasts are better than the MiHR counterparts in that they provide projections specifically for mining (i.e., primary metal manufacturing is excluded), but they are worse in that their projections are not broken down by NOC-S occupational categories. It is important to analyze mining and quarrying (except oil and gas extraction) individually, because it represents mineral extraction establishments that have a better record in employing Métis.

1. Mining Industry Employment and GDP Forecasts

Unlike the MiHR projection that employment in the overall mining industry will fall in the next eight years, HRSDC estimated that employment in mining and quarrying (except oil and gas extraction) will increase by 22,602 workers (33.4 per cent or 2.9 per cent per annum) from 76,562 workers in 2010 to 90,364 workers in 2020 (Chart 44). Real GDP is expected to grow more dramatically between 2010 and 2020 (by 61.0 per cent or 4.9 per cent per annum), which implies that real labour productivity growth in the mining and quarrying (except oil and gas extraction) is expected to grow by 20.8 per cent or 1.9 per cent per annum.

These projections of employment and real GDP growth for mining and quarrying (except oil and gas extraction) were both based on mineral price forecasts. The projections were done in the spring of 2011, and actual developments since then suggest that the COPS projections are overly optimistic. The forecast for mineral prices were quite strong, especially for 2011 and 2012, and it turned out that mineral prices actually fell in real terms. Consequently, COPS projections for both employment and real GDP growth for 2011 and 2012 were overly optimistic. As a result, it is safe to assume that the cumulative number of job openings in mining and quarrying (except oil and gas extraction) forecasted by COPS over the 2011-2020 period was also too high.

Chart 44: COPS's Employment and GDP Forecasts for the Mining and Quarrying (Except Oil and Gas Extraction), Canada, 1999-2020



Source: Human Resources and Skills Development Canada, COPS projections

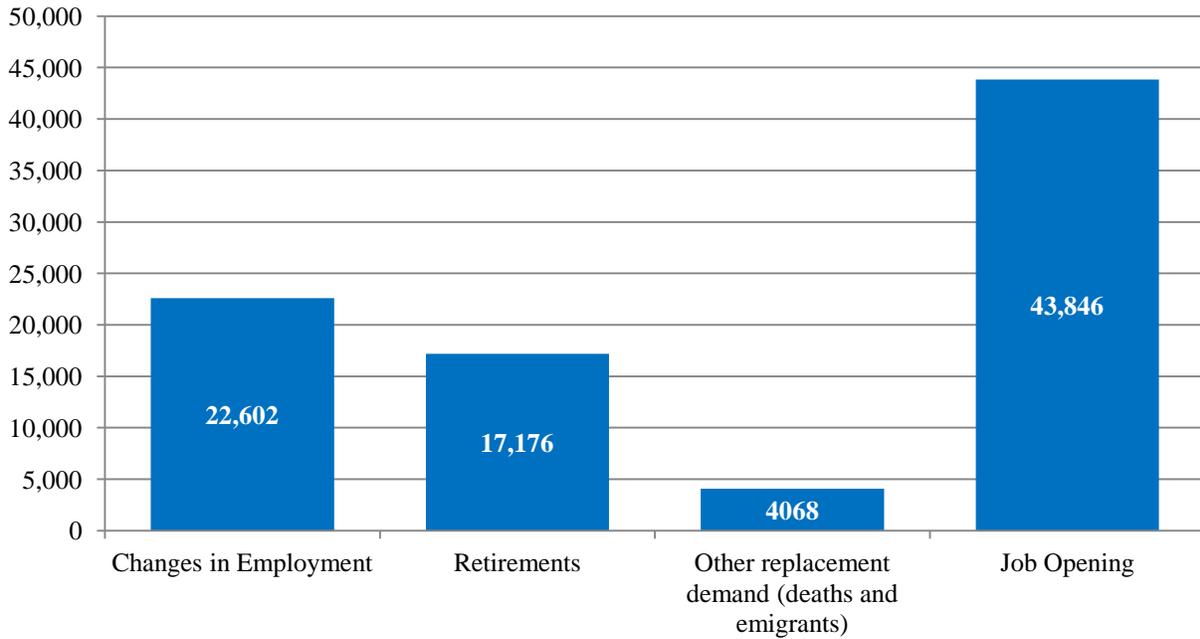
2. Forecasted Job Openings in the Mining Industry by Component

Between 2011 and 2020, 43,846 job openings are expected in mining and quarrying (except oil and gas extraction). Net employment growth is expected to be the biggest driver of job openings in that subsector at 51.5 per cent of the total, followed by retirements at 39.2 per cent and other replacement demand (i.e., deaths and emigration) at 9.3 per cent (Chart 45).⁷⁷

Between 2010 and 2013, 75.3 per cent of hiring requirements were due to net employment growth according to HRSDC projections. The primacy of employment growth in explaining job openings diminishes after 2013, however, as merely 27.1 per cent of job opening from 2014 to 2020 were due to employment growth (Chart 46). As employment growth weakens further into the forecast period, retirement and non-retirement separation requirements become more important drivers. Between 2011 and 2020, retirements and other replacement are expected to increase by 46.2 per cent and 22.5 per cent, respectively. In addition, the contributions of retirements and other replacement demand to new job openings is expected to rise from 19.7 per cent and 5.0 per cent respectively over the 2010-2013 period to 59.3 per cent and 13.7 per cent respectively over the 2014-2020 period as employment growth slows and retirements and other replacement demand swells.

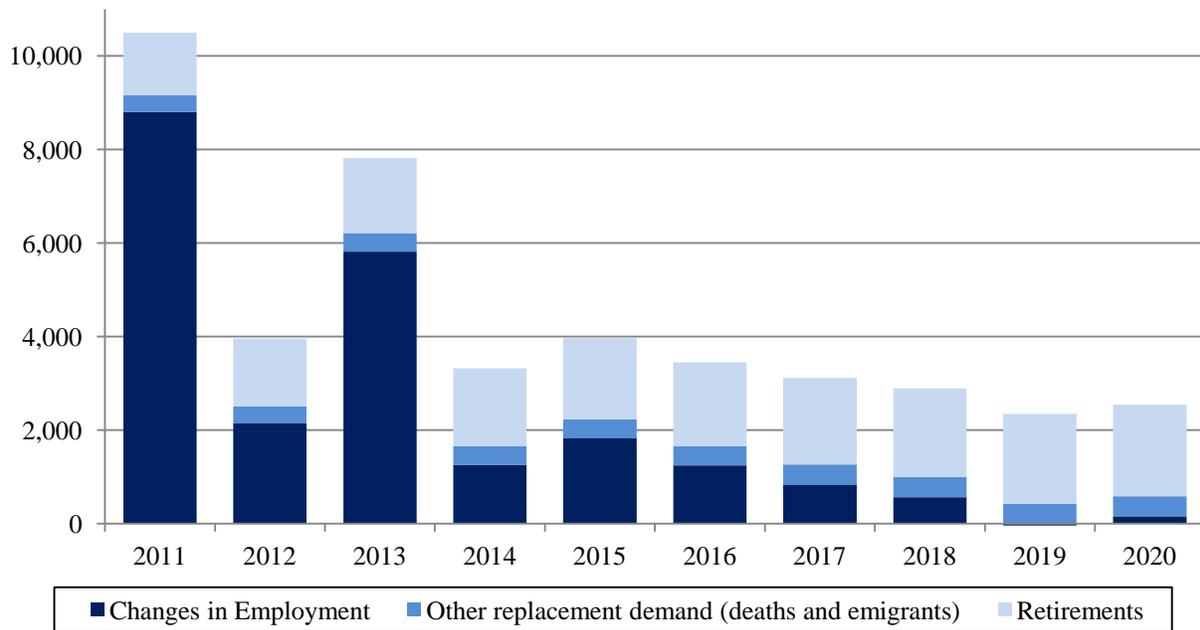
⁷⁷ Job openings are the number of new jobs due to changing economic activity and positions becoming vacant because of death, retirement, occupational mobility, and temporary labour force withdrawal. Other replacement demand refers to the job openings resulting from all other reasons but retirement.

Chart 45: COPS's Cumulative Hiring Requirements Projection for the Mining and Quarrying (Except Oil and Gas Extraction) by Component, Canada, 2011-2020



Source: Human Resources and Skills Development Canada, COPS projections

Chart 46: COPS's Hiring Requirements Projections for the Mining and quarrying (except oil and gas extraction) by Component, Canada, 2011-2020



Source: Human Resources and Skills Development Canada, COPS projections

X. Summary of the Opportunities for and Barriers to Métis Employment in the Mining Industry

This section presents a set of twelve stylized facts that are vital to understanding the opportunities for, barriers to and unknowns regarding the prospects for Métis employment in the mining industry derived the preceding sections of this report, as well as a synthesis of these facts.

A. Key Facts Pertaining to Métis Prospects in the Mining Industry

The key facts regarding the prospects for Métis employment in the mining industry are:

1. Mineral prices are volatile and hard to predict.

Discrepancies between the growth of global demand for mining products and the growth of global supply for mining products translate into changes in the prices of minerals. Since both of the drivers are cyclical by nature, mineral prices are volatile and hard to predict. Such volatility is demonstrated by the 2009 recession, in which mineral prices fell 11.1 per cent (according to the MMPI) and the value of mineral production fell 33.1 per cent. In 2010 and 2011, however, these prices rose by 18.5 per cent and 16.2 per cent respectively, before falling in 2012 by 3.8 per cent.

2. There is a close association between mineral prices and mining output and employment.

High mineral prices make it profitable for corporations to explore for mineral deposits, open new mining establishments and increase output, all of which entail an increase in mining employment. Low prices have the opposite effect. Between 1978 and 2011, the correlation between changes in metals and minerals prices and changes in the value of mineral production was 0.8 where 0.0 indicates that there is no linear relationship and 1.0 signifies a perfect positive linear relationship. This was also the case for mineral prices and mining employment: the correlation between the changes in these two variables between 1992 and 2012 was 0.7, indicating a strong relationship between mineral prices and mining employment.

3. Mineral prices are expected to remain soft in the medium- to long-term.

Commodity prices fell 3.8 per cent in 2012 according to the MMPI, after growing 16.2 per cent in 2011 and 18.5 per cent in 2010. Mineral prices are expected to remain soft in the long-term as supply increases and the growth in demand from emerging markets experiences a slowdown.⁷⁸ According to commodity price projections by Consensus Economics, of the nine metals that are relevant to the Canadians mining industry for which they have long-term projections – coal, uranium, copper, nickel, zinc, iron ore, gold, and silver –, only uranium and zinc are expected to have higher prices, on average, during the 2017-2021 period. Nonetheless, the prospects for the mining industry are still good according to Pierre Gratton at the MAC because

⁷⁸ Mining Industry Human Resources Council (2011), “Canadian Mining Employment and Hiring Forecasts,” page 3, http://www.mihrc.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

commodity prices for many minerals remain at historically high levels despite their recent weaknesses.

4. Replacement demand, not net employment growth, will create job opening in mining.

Between 2013 and 2023, 145,870 workers are expected to be hired by the mining industry according to the MiHR's baseline scenario. Of this total, 24,600 workers (or 16.7 per cent) will be accounted for by net employment growth, 67,180 workers (or 46.1 per cent) by retirements, and 54,100 workers (or 37.1 per cent) by non-retirement separation. Even though the COPS projections for net employment growth in mining and quarrying (except oil and gas extraction) were strong for the 2011-2020 period, this forecast is overly optimistic as it was based on the expectation that commodity prices would remain higher than they currently are.

5. Compared to non-Aboriginal Canadians, the Métis population is particularly youthful.

The Métis population is much younger than the non-Aboriginal population, with more than one third of its population under the age of 20 in 2006. Among the non-Aboriginal population, less than a quarter of the population was under 20 years old. In addition, the Métis population in four of the provinces relevant to this report – namely, Manitoba, Saskatchewan, Alberta and British Columbia – was younger than the Métis national average.

6. Mining is primarily situated in non-urban and remote locations.

The proportion of the mining, quarrying, and oil and gas extraction labour force located in non-urban areas was 28.6 per cent in 2005, much higher than the total economy average of 19.7 per cent.

7. Compared to non-Aboriginal Canadians, the Métis population is particularly non-urban.

The Métis population is more concentrated in rural and remote locations than the general population. In 2006, 30.6 per cent of all Métis lived in non-urban areas, compared to only 19.0 per cent of the non-Aboriginal population. Even within urban areas, Métis tend to live in smaller centres. The national trend is reflected in the provinces relevant to this report.

8. The Métis are overrepresented in the mining industry labour force.

The Métis represented for 1.2 per cent of the total labour force in Canada in 2005. In the MiHR defined mining industry, however, the Métis accounted for 3.0 per cent of the labour force, while accounting for 3.1 per cent of the labour force in mining and quarrying (except oil and gas extraction). As such, the Métis are overrepresented in the Canadian mining industry. This holds not only for Canada as a whole, but also for all the five provinces relevant to this report.

9. Relative to the average across all industries, a small proportion of the mining industry labour force has a university degree but a large proportion has an apprenticeship or trades certificate or diploma.

According to the 2006 Census, 20.7 per cent of the MiHR-defined mining industry labour force reported that their highest level of education was an apprenticeship or trades certificate or diploma, 8.9 percentage points above the average across all industries. In addition, merely 10.8 per cent of the mining industry labour force reported that their highest level of education was a university degree at the bachelor's level or above, 11.1 percentage points below the average across all industries. The relatively small share of the mining industry's labour force with a university degree and the relatively large share with an apprenticeship or trades certificate or diploma are explained by the occupational makeup of the mining industry, where most jobs require very specific skills that are not taught at universities.

10. Most upcoming jobs in the mining industry require more than a high school education, with almost one third demanding an apprenticeship or trades certificate or diploma.

A CSLS investigation of the employment requirements for the 30 most-in-demand mining industry occupations determined that 53.1 per cent of job openings from 2011 to 2021 will require more than a high school education. Apprenticeships and trades certificates will be an important qualification for individuals seeking a career in the mining industry, as 30.8 per cent of the job openings in the 30 top-hiring occupations will require this level of education by 2021. The proportion of job openings requiring college diplomas or certificates below the bachelor level will be 12.0 per cent. Finally, the proportion of the job openings in the 30 most-in-demand mining occupations that will require a university degree at or above the bachelor's level will be only 10.3 per cent. Even though 45.1 per cent of job openings from 2011 to 2021 will require only the completion of secondary education, 58.6 per cent of these jobs involve intensive on-the-job training lasting months.

11. Compared to the non-Aboriginal labour force, the Métis have, overall, low levels of education attainment.

The proportion of the Métis labour force with a university degree was 12.0 per cent in 2011, 14.3 percentage points below the proportion for the non-Aboriginal population. Additionally, the proportion of the Métis labour force with less than a high school education was almost double the proportion for the non-Aboriginal population in 2011 (18.4 per cent versus 10.4 per cent).

12. Compared to the non-Aboriginal labour force, a high share of the Métis labour force indicated that an apprenticeship or trades certificate or diploma was their highest level of education.

In 2011, 14.6 per cent of the Métis labour force indicated that an apprenticeship or trades certificate or diploma was their highest level of education, 3.3 percentage points above the share

for the non-Aboriginal labour force. For college diplomas, the respective shares were 20.0 per cent and 21.7 per cent.

B. A Synthesis of the Key Facts

Prospects for MiHR-defined mining industry employment are being driven by replacement demand, not net job creation, which is hard to predict due to the volatility of commodity prices. Between 2013 and 2023, only 16.7 per cent of mining industry hiring requirement are expected to be accounted for by net employment growth, while 46.1 per cent will be accounted for by retirements. The importance of this human resources challenge is reflected by a recent BDO survey of 132 mining executives across the U.S., Australia, Canada, South Africa and the UK, in which 79.0 per cent of respondents felt that “the lack of a skilled workforce will have a negative impact on their business this year.”⁷⁹ In order to meet its human resources challenges, the mining industry will need to engage with many different groups. According to Martha Roberts, Director of Research at MiHR, and Melanie Sturk, Director of Attraction, Retention and Transition at MiHR, mining firms are primarily interested in engaging and enhancing the participation of two groups: women and Aboriginals.

While the mining industry already has a good record for employing Métis, this population still offers a large potential pool of workers. Compared to non-Aboriginal Canadians, the Métis population is youthful, growing quickly, and overrepresented in rural and remote areas near mining developments. These characteristics are competitive advantages for Métis employment in the mining industry.

First, the relative youthfulness and fast growth of the Métis population makes it a huge potential source of labour, which must be tapped in order to fulfill the mining industry’s hiring requirements. Second, the proximity of the Métis population to mining establishments in non-urban areas gives them the advantage of nearness. There are several regions where major Métis communities are located near mining establishments, such as: the Sudbury-North Bay, Timmins and Thunder Bay areas in northern Ontario; northern Saskatchewan, where significant uranium production occurs and there are relatively large Métis centres like La Loche; and the Kelowna-Kamloops and Prince George areas in British Columbia.⁸⁰

Primary mining offers more of an opportunity to the Métis than other components of the mining industry; this industry is concentrated in remote areas near many Métis communities and population centres. It is also easier for individuals that have grown up in rural areas like many Métis to contemplate employment in remote locations. Higher wages are also used to attract and

⁷⁹ BDO (2012), “Mining industry embraces technology as skilled workforce diminished, according to BDO study,” <http://www.bdointernational.com/News/Pages/Mining-industry-embraces-technology-as-skilled-workforce-diminishes.aspx>

⁸⁰ For a variety of maps illustrating the proximity of Canada’s principal producing mines and top 100 exploration sites to Métis communities, visit <http://www.metisportals.ca/healthportal/pages/programs/img.jpg>, <http://www.nrcan.gc.ca/minerals-metals/4437#en4>, and http://apps1.gdr.nrcan.gc.ca/mirage/show_image_e.php?client=jp2&id=292216&image=gscmap-a_900A_e_2013_mm01.sid.

retain a workforce in an industry that is primarily based in isolated areas and where workers work on rotations. Weekly wages were \$1,632 in 2010. Wages in the mining industry exceeded those in forestry by 72 per cent, in manufacturing by 70 per cent, in finance by 56 per cent, and in construction by 53 per cent.⁸¹ An opportunity to increase Métis employment in such a well-paying industry must be seized; however, their participation in the mining industry may be held back by relatively poor educational attainment among other barriers.

The Métis are at risk of being unable to take advantage of upcoming job openings due to their lacklustre educational performance: the proportion of the Métis labour force with less than a high school education was almost double the proportion for non-Aboriginal Canadians in 2011 (18.4 per cent versus 10.4 per cent). Given that 45.1 per cent of expected job openings in the mining industry requiring the completion of secondary school education, the overall low levels of Métis educational attainment pose a challenge to further Métis employment in the mining industry. However, compared to the non-Aboriginal labour force, a larger share of the Métis labour force indicated that an apprenticeship or trades certificate or diploma was their highest level of education, which is good for the Métis since having this type of qualification is, overall, more important in the mining industry than having a university degree

Mining firms try to utilize nearby sources of labour before importing workers from further but larger population centres. Mining firms are willing to train new workers in entry-level positions, but they usually require a high school diploma or an equivalent at a minimum. For jobs requiring specialized skills and training that can only be obtained at accredited institutions, mining firms are likely to bring in non-local workers with the right credentials if that need cannot be satisfied locally.

A major issue for Métis living in remote areas is poor access to post-secondary institutions. Some Métis may not own cars, and therefore are unable to commute to nearby schools. Others may live too far from schools to commute and cannot afford the costs associated with going away to school. In addition, some Métis cannot afford to commute to or relocate near a mine in order to enter the mining industry through an entry-level position. This “proximity barrier” to education and employment can prevent some Métis from participating in mining.

Another major barrier to Métis mining employment can be a general lack of awareness of the career opportunities in that industry. If Métis are not aware of the different careers that mining has to offer or what mines are located nearby, they are unlikely to try to enter the mining workforce through an entry-level position or receive the education necessary to pursue more skilled mining careers.

⁸¹ Mining Association of Canada (2011), “Facts and Figures of the Canadian Mining Industry, 2011,” page 60, http://www.mining.ca/www/media_lib/MAC_Documents/F&F2011-English.pdf

XI. An Overview of Existing Programs and Policies Relevant to Métis Participation in the Mining Industry

There are numerous avenues through which Aboriginal participation in the mining industry is promoted in Canada; these avenues will be presented in this section of the report. First, the Crown's duty to consult and accommodate, Impact and Benefit Agreements (IBAs), and their respective roles in enhancing Aboriginal opportunities in mining are studied. Second, a myriad of Métis labour market programs are examined.

A. The Duty to Consult and Accommodate & Impact and Benefit Agreements

In a series of landmark rulings, the Supreme Court of Canada (SCC) affirmed that the Crown has a duty to consult and accommodate Aboriginal interests in development projects. *Haida* (2004), *Taku River* (2004) and *Mikisew Cree* (2005) determined that the Crown has a duty to consult and accommodate when three elements are present: "Contemplated Crown conduct; Potential adverse impact; and Potential or established Aboriginal or Treaty rights recognized and affirmed under section 35 of the Constitution Act, 1982." As a result of these rulings, the federal government developed *Guiding Principles and Consultation Directives* to "guide federal officials in their efforts to address the duty to consult and, where appropriate, accommodate." The key guiding principle adopted is as follows:

"The Government of Canada, in carrying out its activities, will respect the potential or established Aboriginal or Treaty rights of First Nation, Métis and Inuit people by consulting with Aboriginal groups whose rights and related interests may be adversely impacted by a proposed Government of Canada activity."⁸²

According to the Métis Nation of Ontario (MNO), "the purpose of the duty is achieved when government addresses, modifies or reconciles its actions with Aboriginal interests in a real and substantive way."⁸³ Aboriginal consultation is a non-transferable Crown responsibility. Third parties, such as mining firms, have no legal obligation to consult Aboriginal groups; however, third parties can assist in the Crown's consultation and accommodation processes. According to Aboriginal Affairs and Northern Development Canada (AANDC), "industry proponents are often in the best position to accommodate an Aboriginal group for any adverse impacts on its potential or established Aboriginal or Treaty rights, for example, by modifying the design or routing of a project." In many cases, industry has aimed to satisfy the Crown's duty to accommodate by formalizing Impact and Benefit Agreements (IBAs).

The duty to consult is the Crown's responsibility, but mining companies have accepted that they have to consult and work with local communities and Aboriginals groups if they want to make their projects to succeed. According to Pierre Gratton, President and CEO of the MAC,

⁸² Aboriginal Affairs and Northern Development Canada (2011), "Aboriginal Consultation and Accommodation: Updated Guidelines for Federal Officials to Fulfill the Duty to Consult," <http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER>

⁸³ Métis Nation of Ontario, "Duty to Consult," <http://www.metisnation.org/programs/lands,-resources--consultations/duty-to-consult>

mining firms now consider consulting and accommodating local communities and Aboriginal groups to be a normal business practice and they are very proactive in this regard. Natural resource development inevitably impacts Aboriginals more than the average Canadian. Mining firms know that if they want a mining development to proceed, they need to consult and accommodate those who will be affected; this is illustrated by the MAC's *Sustainable Mining* (TSM) initiative.

Firms that become MAC members must adhere to the key principle of TSM, which states that members' actions "must demonstrate a responsible approach to social, economic and environmental performance that is aligned with the evolving priorities of our communities of interest [...] [which includes] all of the individuals and groups who have an interest in the management of decisions about mining operations they may affect them."⁸⁴ Three other guiding principles relevant to this report include: a promise to "recognize and respect the unique role, contribution and concerns of Aboriginal peoples (First Nations, Inuit and Métis) and indigenous peoples worldwide", to "support the capability of communities to participate in opportunities provided by new mining projects and existing operations", and to "be responsive to community priorities, needs and interests through all stages of mining exploration, development, operations and closure."⁸⁵ The MAC has over 30 members who are part of this initiative.

When mining firms start planning to develop a mine, they often begin by engaging the local communities to breed a "mutually beneficial partnership engagement strategies," which can either be basic Memoranda of Understanding (MOUs) (which typically occur in the exploration stage) or wide-ranging IBAs (which usually occur when a firm commits to developing a mine).⁸⁶ These agreements between Aboriginal groups and mining firms provide an opportunity for training and employment.

IBAs are formal bilateral agreements signed between Aboriginal groups and mining firms "in order to establish formal relationships between them, to reduce the predicted impact of a mine [on local communities and their environments], and [to] secure economic benefit for affected communities."⁸⁷ IBAs tend to focus on providing Aboriginal communities with literacy, job training, and employment opportunities by setting employment targets for local people in mining ventures. IBAs may also involve the provision business contracts, capacity funding/community investment, and financial payments to Aboriginal groups. A total of 171 projects involve IBAs between businesses (most of which are in mineral exploration and development) and Aboriginal

⁸⁴ Mining Association of Canada, "Towards Sustainable Mining: Guiding Principles," http://www.mining.ca/www/media_lib/TSM_Documents/principleseng.pdf

⁸⁵ Mining Association of Canada, "Towards Sustainable Mining: Guiding Principles," http://www.mining.ca/www/media_lib/TSM_Documents/principleseng.pdf

⁸⁶ Mining Industry Human Resources Council, "Mining Industry Human Resources Guide for Aboriginal Communities," <http://www.mihrc.ca/en/resourcesGeneral/ResourceGuide.pdf>

⁸⁷ Irene Sosa and Karyn Keenan (2001), "Impact Benefit Agreements Between Aboriginal Communities and Mining Companies: Their Use in Canada," <http://metisportals.ca/MetisRights/>

groups.⁸⁸ Of the 171 IBAs, 27 are concerned with the establishment of mines. Before beginning production at Diavik Diamond Mine, Rio Tinto signed Socio-Economic Monitoring and Participation agreements in 2000/2001 with three First Nations in the Northwest Territories, the Kitikmeot Inuit Association, and the North Slave Métis Alliance. These agreements exemplify the potential positive impact of IBAs on local communities in the Northwest Territories. As a result of these participation agreements – which included promises concerning company training, employment and business commitments – 70 per cent of Diavik’s work force is northern and 38 per cent is Aboriginal.⁸⁹

Historically, IBAs were only carried out with First Nations and Inuit, because the Métis own substantially less land than First Nations. Consequently, there are few examples of IBAs between the Métis and mining firms compared to those between First Nations and mining firms. However, there is significant Métis land ownership in Alberta where eight Métis Settlements were established by the *Métis Settlements Act* first drafted at the Alberta-Métis Settlements Accord of 1989. The SCC recently ruled that the federal government failed to follow through on a promise it made to the Métis after the 1870 land deal that ended the Red River resistance; this may open up new opportunities for Métis in Manitoba.

Métis IBAs have started emerging in the last five years for three reasons. First, *Powley* (2003) affirmed Métis hunting, fishing and gathering rights. Second, *Haida* (2004), *Taku River* (2004) and *Mikisew Cree* (2005) affirmed the Crown’s duty to consult and accommodate rights bearing Aboriginal peoples. Third, the pace of natural resource development has increased. Known IBAs between mining firms and Métis organizations include: an agreement between the North Slave Métis Alliance and BHP Billiton concerning the Ekati Diamond Mine in 1998; an agreement between the North Slave Métis Alliance and De Beers Canada concerning the Snap Lake Project in 2006; and an agreement between the Métis Nation of Ontario (MNO) and Detour Gold Corporation (DGC) concerning the Detour Lake Project in northeastern Ontario in 2012.⁹⁰ The IBA between the MNO and DGC included the following terms: “employment and business opportunities, training and education initiatives and financial participation” throughout the life of the mine.⁹¹ A scholarship and bursary program for the Métis at College Boreal and Northern College was also established as part of these agreements. Gary Lipinski, the President of the MNO, said, “This IBA is the first-of-its-kind between a mining company and a Métis community. It represents a significant step forward in relations between the mining industry and Ontario Métis. We applaud Detour Gold’s leadership in working collaboratively with the Métis community on environmental issues and ensuring it will benefit from the Detour Lake project.”⁹²

⁸⁸ Mining Association of Canada (2011), “Facts and Figures of the Canadian Mining Industry, 2011,” page 72, http://www.mining.ca/www/media_lib/MAC_Documents/F&F2011-English.pdf

⁸⁹ An example of an IBA (between Detour Gold Company and the Métis Nation of Ontario) can be found at <http://www.metisnation.ca/index.php/news/detour-gold-concludes-impact-and-benefit-agreement>.

⁹⁰ IBA Research Network, “List of Known IBAs,” http://www.impactandbenefit.com/IBA_Database_List/

⁹¹ Métis Nation of Ontario (2012), “Detour Gold Concludes Impact and Benefit Agreement with Métis Nation of Ontario,” <http://www.metisnation.org/news--media/news/-detour-gold-concludes-impact-and-benefit-agreement-with--metis-nation-of-on>

⁹² See http://www.metisnation.ca/wp-content/uploads/2013/03/13_03_22-Metis-Industry-PartnershipPDF.pdf for more information.

Although IBAs would greatly benefit the Métis, they are not the best possible outcome. Ideally, the Métis will own or manage mining industry businesses and make it part of their mandate to promote the participation of Métis. The recent joint venture of One Earth Oil & Gas Inc., a private oil junior based in Calgary, with a Métis community in Alberta represents a model for a primary resources development partnership between Aboriginals and the business industry. The chief executive officer of One Earth Oil & Gas Inc., Blaine Favel, is the only Aboriginal CEO in Canada's oil industry. Favel has "locked up a joint venture with the Gift Lake Métis Settlement in the Peace River area of northwest Alberta to develop the Gift Bluesky heavy oil project."⁹³ So far, the Gift Lake Métis Settlement will benefit from this venture by participating in "the preparation work for a 3D seismic program and the drilling of four wells to size-up the resource" in addition to being half-owners.⁹⁴ If this project leads to significant production, more benefits for this Métis settlement are sure to come. An outcome such as this is less likely in other parts of Canada, where the Métis do not have land designated to them by provincial governments.

B. Métis Labour Market Programs⁹⁵

Métis governments have been active in labour market development since 1996 when Ottawa first devolved responsibilities for Aboriginal labour market programs to representatives of the Aboriginal peoples in Canada. Some of the most significant initiatives that these organizations are involved in would not have been possible without partnerships with other organizations including schools, businesses, and government. Some programs offer opportunities specifically for individuals interested in a career in the mining industry, whereas others provide training and employment opportunities more generally. These labour market initiatives are discussed in this section.

1. Aboriginal Skills and Employment Training Strategy (ASETS)

HRSDC currently runs a number of programs that are specifically aimed towards improving Aboriginal labour market outcomes. The two main labour market programs are the Aboriginal Skills and Employment Training Strategy (ASETS) and the Skills and Partnership Fund (SPF). ASETS is a five-year strategy launched in the 2010-11 fiscal year, replacing the Aboriginal Human Resources Development Agreement (AHRDA) and the Métis Human Resource Development Agreement (MHRDA) both of which expired in the 2009-10 fiscal year.⁹⁶ ASETS is now the federal government's key Aboriginal labour market strategy, integrating Aboriginal labour market programming under a single umbrella. ASETS has three main pillars: linking training to employment, encouraging partnerships with industry and other stakeholders, and using

⁹³ Claudia Cattaneo, "First-ever aboriginal oil sands deal built on common interests," *Financial Post*, 25 January 2013, http://business.financialpost.com/2013/01/25/first-ever-aboriginal-oil-sands-deal-built-on-common-interests/?__lsa=1e93-4532

⁹⁴ Claudia Cattaneo, "First-ever aboriginal oil sands deal built on common interests," *Financial Post*, 25 January 2013, http://business.financialpost.com/2013/01/25/first-ever-aboriginal-oil-sands-deal-built-on-common-interests/?__lsa=1e93-4532

⁹⁵ A list of Métis-specific training programs can be found at http://metisportals.ca/ecodev/?page_id=3&sourcePage=7.

⁹⁶ For an exhaustive analysis of the AHRDA and the MHRDA, see Arsenault and Sharpe (2009).

accountability to improve results. In general, the purpose of ASETS is to assist Aboriginal people to prepare for, find, and keep jobs. The following is HRSDC's description of ASETS:

“ASETS is designed to help Aboriginal people prepare for and find high-demand jobs quickly, as well as keep them in the long term. All Aboriginal people, regardless of status or location, may access its programs and services, which include: skills development; training for high-demand jobs; job finding; programs for youth; programs for urban and Aboriginal people with disabilities; and access to child care.”⁹⁷

The strategy delegates control and responsibility for the design and delivery of labour market programs to the local ASETS agreement holders given that they meet broad HRSDC-defined objectives. Since ASETS programming differs by provider, it is impossible to give a detailed summary of the services provided by ASETS agreement holders. This feature ensures that Métis organizations have the authority to make decisions that will meet the unique needs of their communities. There are no specific eligibility restrictions for individuals to receive funding from ASETS, as each ASETS provider determines how the funding will be distributed. While most funding is directed to unemployed clients, skills upgrading can be provided to underemployed individuals, self-employed individuals, or fully employed individuals for the purpose of meeting local labour demands and improving the client's ability to retain employment. In addition, ASETS agreement holders are obligated to provide labour market programming to all Aboriginal Canadians, not just Métis.

Across Canada, 84 ASETS agreement holders deliver ASETS-funded labour market programs in hundreds of locations. These holders may be the “most direct access to trained and skilled workers within the local communities surrounding [many mining] projects.”⁹⁸ There are seven Métis providers of ASETS programming including:

- Métis Provincial Council of British Columbia, which delivers programming through Métis Nation British Columbia (MNBC);
- Métis Settlements General Council;
- Manitoba Métis Federation (MMF);
- Métis Nation of Ontario (MNO);
- Rupertsland Institute – a Métis Centre of Excellence (RLI), which is a branch of the Métis Nation of Alberta (MNA);
- Gabriel Dumont Institute of Native Studies and Applied Research (GDI), which is a branch of Métis Nation – Saskatchewan (MN-S); and
- Northwest Territory Métis Nation.⁹⁹

⁹⁷ Human Resources and Skills Development Canada, “ASETS Background,”

http://www.hrsdc.gc.ca/eng/employment/aboriginal_employment/strategy/index.shtml

⁹⁸ Mining Industry Human Resources Council, “Planning Guide to Federal Government Programming,”

<http://www.mihrc.ca/en/publications/resources/FinalPlanningGuide.pdf>

⁹⁹ For a comprehensive list of the ASETS Agreement Holders, visit <http://www8.hrsdc.gc.ca/sfcea-aset/Ententes->.

The Métis National Council (MNC) is an umbrella organization that has represented the Métis Nation nationally and internationally since 1983. Its central goal is “to secure a healthy space for the Métis Nation’s on-going existence within the Canadian federation.”¹⁰⁰ The MNC’s mandate and authority comes from the elected leaders of the Métis Nation’s governments from Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. More specifically, the MNC represents the MNO, the MMF, MN–S, the MNA, and MNBC. Therefore, the Métis Nation – defined as the Métis under the MNC’s umbrella – has five ASETS providers. Together, these ASETS providers manage approximately \$55 million annually. These Métis organizations have annual budgets ranging from \$6 million to \$13 million, and operate province-wide with many regional offices as well as a central office. Métis ASETS providers each offer a unique set of programs, but certain labour market programs are common, including:

- **Single Seat Purchase:** providing financial support to eligible clients interested in pursuing a course of study at a recognized educational institution;
- **Project-Based Funding:** funding specific and sometimes customized training for a group of eligible clients in collaboration with a third party service provider;
- **Targeted Wage Subsidy:** providing a wage subsidy to employers who provide on-the-job training and/or job experience to an eligible client for a specific period of time; and
- **Bursaries:** the establishment of endowments at post-secondary institutions for the purpose of providing bursaries to Métis students.

Unfortunately, the Métis ASETS providers do not receive the same federal funding for child care as other Aboriginal groups, which makes it harder for Métis with children to participate in employment and training programs. The \$50 million childcare program under ASETS, called the First Nations and Inuit Child Care Initiative (FNICCI), only provides access to childcare services to “First Nations and Inuit children whose parents are starting a new job or participating in a training program.”¹⁰¹ ASETS agreement holders design their own programs based on the broad objectives determined by the Government of Canada. The Métis are excluded from these services because the federal government has long denied that off-reserve Aboriginals and Métis were under their jurisdiction; however, the recent Federal Court’s ruling that “Métis and non-status Indians qualify as “Indians” under the Constitution Act of 1867 and therefore fall under the jurisdiction of the federal government” may bring about Métis inclusion in FNICCI.¹⁰²

For the same reason that Métis are not provided FNICCI services, Métis do not receive federal funding specifically for post-secondary education. Nonetheless, post-secondary education can be partially funded for Métis through ASETS. Under ASETS, a 3-4 year undergraduate post-secondary education program is not eligible for funding, but the final year may be funded if the

¹⁰⁰ For more information concerning the MNC visit <http://www.metisnation.ca>.

¹⁰¹ Human Resources and Skills Development Canada, “First Nations and Inuit Child Care Initiative,” http://www.hrsdc.gc.ca/eng/employment/aboriginal_employment/childcare/index.shtml

¹⁰² CTV News, “Court rules Métis, off-reserve aboriginals qualify as ‘Indians’,” <http://www.ctvnews.ca/canada/court-rules-metis-off-reserve-aboriginals-qualify-as-indians-1.1105186#ixzz2NX6xAhRv>

client is entering the labour market upon completion. Post-graduate programs also cannot be funded through ASETS. Two-year diploma programs are eligible for funding, but that funding can only be committed one year at a time and the second year funding is not guaranteed.¹⁰³

2. The Métis Nation's Provision of ASETS Programming

Métis Nation British Columbia (MNBC), the Manitoba Métis Federation (MMF), the Métis Nation of Alberta (MNA), Métis Nation – Saskatchewan (MN–S), and the Métis Nation of Ontario (MNO) all provide ASETS labour market programming. An overview of how they provide ASETS is provided in Table 19.

Table 19: Overview of the ASETS Labour Market Programming Provided by the Métis Nation

<i>Métis Organization</i>	<i>Program Description</i>
MNBC	<ul style="list-style-type: none"> - Program name: Métis Employment and Training Program (METP) - Headquartered in Abbotsford - Services provided through a network of seven regional offices across the province
MMF	<ul style="list-style-type: none"> - Administers ASETS programs through its Employment and Training Department - Services provided by a network of seven community-based Local Advisory Committees, one for each MMF region
MNA	<ul style="list-style-type: none"> - RLI has administered ASETS labour market programming for the MNA since 2010 - RLI is a not-for-profit company with a board of directors representing the business community, academia, government, industry and the Métis community - RLI offers training and employment services to the Métis through a network of nine regional offices as well as a mobile unit that travels the entirety of Alberta - In 2010, RLI worked with 1,000 clients to improve labour market outcomes with a success rate of 79 per cent
MN–S	<ul style="list-style-type: none"> - Gabriel Dumont Institute Training & Employment Inc. (GDIT&E) was created in 2006 to manage employment and training programs for the MN–S - GDIT&E administers training and employment programs through ten local offices located throughout northern and central Saskatchewan
MNO	<ul style="list-style-type: none"> - Employment and training is one of the several departments within the MNO - It provides programs and services through twelve regional offices in the province, with central offices in Ottawa

Source: Métis Works – Partnerships, March 2013

3. Project-Based Partnership Initiatives

Project-based partnership initiatives can take many forms; they involve a third party coming together with a Métis organization to provide employment and/or training programs to Métis. These projects are funded through the following HRSDC programs: ASETS, the Strategic Partnership Fund (SPF), the Aboriginal Skills and Training Strategic Investment Fund (ASTSIF), and Aboriginal Skills and Employment Partnership (ASEP).

The SPF, which was launched in the 2010-11 fiscal year, is detached from but complementary to ASETS. The SPF is available to all Aboriginal organizations, not just

¹⁰³ Métis Nation of Ontario, “Métis Nation of Ontario Education & Training Branch Program Policies,” <http://www.metisnation.org/media/147486/policiesapprovedec152010.pdf>

Aboriginal agreement holders. In general, through the SPF Aboriginal organizations can receive funds to create labour market programs in partnership with other organizations (e.g., schools or firms). According to the HRSDC, the SPF has three functions:

“driving innovation in service delivery and systems through partnership (**system improvement**); responding to economic partnership opportunities with targeted labour force development initiatives (**training-to-employment**); and addressing program delivery weaknesses and/or gaps in Canada's network of Aboriginal organizations that provide labour market services (**service delivery gaps**).”¹⁰⁴

The *Aboriginal Apprenticeship Initiative* is an example of a project-based partnership brought to life by the SPF. With SPF funding, GDIT&E launched the *Aboriginal Apprenticeship Initiative* in 2011 in partnership between GDIT&E, the Saskatchewan Ministry of Highways and Infrastructure (MHI), the Saskatchewan Apprenticeship Trades Certification Commission (SATCC) and HRSDC. By 2014, the Initiative is expected to have 120 apprentices registered in the program at a minimum. GDIT&E offers job coaching, follow-up support to participants, wage subsidies and employer access to the Métis labour pool as a part of this project. Cameco, a major uranium firm with mines in northern Saskatchewan, has suggested that it is interested in employing more apprentices through the Initiative.

The *Aboriginal Minerals Training Program* (AMTP) is another example of a project-based partnership started with help from the SPF. AMTP is a program created by a partnership of public and private organizations including: the Mining Technology Program at the British Columbia Institute of Technology, the Association for Mineral Exploration British Columbia, the Mining Association of British Columbia, and the British Columbia Ministry of Exploration Mines and Petroleum Resources.¹⁰⁵ AMTP's goal is “to increase the participation of Aboriginal people through a multi-year integrated training and employment program.”¹⁰⁶ Through AMTP, Aboriginals can acquire training ranging from the basic fifteen-week Associate Certificate in Minerals Discovery to trades training customized “to meet the specific requirements of employers and different Aboriginal groups” and the Mining Technology Diploma Program, “a nationally accredited, intensive two-year program that prepares students for registration as a professional technologist.”¹⁰⁷ There are many other examples of successful project-based partnerships funded by the SPF involving the Métis Aboriginal agreement holders.

Aboriginal Skills and Training Strategic Investment Fund (ASTSIF) was a two year, \$75 million, initiative under Canada's Economic Action Plan that was designed to help Aboriginal people obtain the specific skills they required to benefit from economic opportunities.¹⁰⁸ The Fund

¹⁰⁴ Human Resources and Skills Development Canada, “Aboriginal Labour Market Programs,” <http://www.hrsdc.gc.ca/eng/employment/almp/index.shtml>

¹⁰⁵ Mining Industry Human Resources Council, “Education & Training Showcases,” <http://www.aboriginalmining.ca/en/education/EducationTrainingShowcases.asp>

¹⁰⁶ Mining Industry Human Resources Council, “Education & Training Showcases,” <http://www.aboriginalmining.ca/en/education/EducationTrainingShowcases.asp>

¹⁰⁷ BCIT, “Training Pathways,” <http://commons.bcit.ca/mining/minex/amte/training.html>

¹⁰⁸ Canada News Centre, “The Government of Canada announces the Aboriginal Skills and Employment Training Strategy,” <http://news.gc.ca/web/article-eng.do?nid=479629>

was designed to establish partnerships between Aboriginal employment service organizations and employers through training-to-employment projects leading to job opportunities; support projects to assist Aboriginal people facing skills based barriers to employment, such as low literacy; and support projects to test innovative approaches to Aboriginal labour market programming. There were two components of ASTSIF: 90 per cent of the funding was allocated to 74 regional projects, and the remaining 10 per cent of funding was allocated to 12 national projects. These projects started in April 1, 2009 and were completed by March 31, 2011.

Mining Essentials – a project-based partnership initiative funded by ASTSIF – is a three-month training program for Aboriginals that teaches the skills required for an entry-level position in the mining industry which started operating in 2010/2011. “*Mining Essentials* was created through a partnership between MiHR and the Assembly of First Nations, with Aboriginal groups, educators and industry members overseeing its development.”¹⁰⁹ This program is intended to help the mining industry meet its labour requirements and to help Aboriginals attain careers in that industry. *Mining Essentials* has two parts: first, participants will have classroom training “on essential and work readiness (non-technical) skills which industry has validated as necessary to be considered for entry-level hires”; and second, participants will partake in “enrichment activities that bring industry to life through site visits, hands-on activities, guest speakers, and/or certifications, etc. as defined by the training site and their partners.”¹¹⁰

Another major HRSDC program, Aboriginal Skills and Employment Partnership (ASEP), ended in the 2011-12 fiscal year, making ASETS and SPF the HRSDC’s only Aboriginal labour market programs. ASEP was an opportunity-driven, project-based program that promoted increased participation of Aboriginal people in large-scale economic opportunities and supported training strategies developed by Aboriginal organizations and industry employers. Each ASEP project provided skills training so that Aboriginal people can participate in mining, construction, fisheries, tourism, hydro development, and public infrastructure projects across Canada (for an example of an ASEP project, see the MTS below). According to the HRSDC, ASEP “supported 45 projects in total from 2003 to 2012, bringing together more than 500 partners, providing training for more than 30,000 individuals and placing almost 11,000 Aboriginal people in long-term jobs.”¹¹¹ The HRSDC, however, highlights the fact that “the successful elements of ASEP have been built into the ASETS and SPF” according the HRSDC.¹¹²

The Mine Training Society (MTS) is “a non-profit society comprised of Aboriginal, industry, and government partners” that was launched under ASEP to prepare Aboriginals in the

¹⁰⁹ Mining Industry Human Resources Council, “Mining Industry Human Resources Guide for Aboriginal Communities,” <http://www.mihhr.ca/en/resourcesGeneral/ResourceGuide.pdf>

¹¹⁰ Mining Industry Human Resources Council, “Mining Industry Human Resources Guide for Aboriginal Communities,” <http://www.mihhr.ca/en/resourcesGeneral/ResourceGuide.pdf>

¹¹¹ Human Resources and Skills Development Canada, “Human Resources and Skills Development Canada - Departmental Performance Report - 2011-12 Estimates,

”http://www.hrsdc.gc.ca/eng/publications_resources/dpr/dpr/dpr_2011_2012/page02.shtml#s_2.1.1.1

¹¹² Human Resources and Skills Development Canada, “Aboriginal Labour Market Programs,” <http://www.hrsdc.gc.ca/eng/employment/alm/index.shtml>

Northwest Territories for a career in the mining industry by providing them with relevant training and job opportunities.¹¹³ A similar institute exists for the Yukon called the Yukon Mine Training Association. Table 20 provides an overview of the actual and expected outcomes as well as the expenses of ASETS, SPF, and ASEP.

Table 20: Overview of HRSDC Aboriginal Program Outcomes and Expenses, 2011-12

	<i>ASETS</i>	<i>SPF</i>	<i>ASEP</i>
Program End Date	March 31, 2015	March 31, 2015	March 31, 2012
Total Cost (millions)	\$258.6	\$14.6	\$67.6
Expected Outcomes	<ul style="list-style-type: none"> • 14,000 to 16,000 jobs and 8,500 childcare spaces per annum over the program's lifespan 	<ul style="list-style-type: none"> • 8,000 to 10,000 jobs by the end of the program • Skills development opportunities (e.g., training for multi-barriered clients, training for youth, and work experience opportunities) • Improving the delivery of labour market services 	<ul style="list-style-type: none"> • Provide training to over 14,000 individuals over the life of the program • 8,000 Aboriginal people securing long term jobs by the end of the project
Actual Outcomes¹¹⁴	<ul style="list-style-type: none"> • 49,000 clients participated • 7,175 of these clients returned to school and 14,324 found jobs • 8,500 childcare spaces (under FNICCI) 	<ul style="list-style-type: none"> • Results are not yet available as many projects are in the early stages of development 	<ul style="list-style-type: none"> • 24,416 individuals were trained and that 8,887 were placed in long-term jobs • 36 projects funded

Source: Human Resources and Skills Development Canada, 2011-12 Departmental Performance Report

4. Métis Mining Strategy

A program that is particularly relevant to this report is the MNO's *Métis Mining Strategy*, which started operating in 2012 with SPF funding. The Strategy offers support for education, training and CO-OP placements to Aboriginal students who want to pursue a career in the mining industry. Under this program, support is provided for tuition, books and supplies, safety equipment, travel, living allowance, and relocation costs. The Strategy is serving 52 clients across Ontario this year. Currently, there are three offices – in Thunder Bay, Sudbury, and Toronto – that run the Strategy; however, MNO employees at all local offices direct appropriate client towards and provide information about the *Métis Mining Strategy*.

The *Métis Mining Strategy* is based on partnerships with educational institutions and the mining industry (including companies, subsidiaries and contractors). Educational institutions partnering with the MNO – including the University of Sudbury, Laurentian University, Collège Boréal, and Lakehead University – are expected to support the initiative and “provide a Métis

¹¹³ Mining Industry Human Resources Council, “Education & Training Showcases,” <http://www.aboriginalmining.ca/en/education/EducationTrainingShowcases.asp>

¹¹⁴ Actual outcomes for ASETS are for the 2010-11 fiscal year, while those for ASEP are from the beginning of the program on June 7, 2007 to July 10, 2012.

cultural awareness component in the classroom or school.”¹¹⁵ In addition, the MNO’s mining industry partners – including Detour Gold, Osisko, and AuRico Gold – are required to provide paid work experience to program participants, which will be partially subsidized by the MNO.¹¹⁶ The MNO, as part of the partnership agreements, is obligated to spread awareness in the Métis community of the educational programs at partnering educational institutions and their industry partners’ projects and employment opportunities. The MNO is currently working to provide job matching services to Métis who have already have mining-related accreditation and are looking for a career in the mining industry.

Under the Strategy, Métis receiving post-secondary degrees at any accredited educational institution that may lead to mining career can receive support from the MNO. In addition, the MNO will connect program participants with any employer in the mining industry – be that at the head office of a mining firm or an operating mine – that approaches the MNO offering to provide work experience to program participants.

The *Métis Mining Strategy* is the clearest example of an ASETS holder working to enhance Métis participation in the mining industry. However, the Strategy is just one of the employment and training programs offered by the MNO, as they also provide more general labour market services to Aboriginals as part of the ASETS framework.

All Métis ASETS providers offer labour market development services to the Métis – including labour market guidance and access to skills training (which involves the funding of and develop of partnerships with schools, firms and other organizations to provide co-operative education opportunities, occupational and/or skills trainings, and apprenticeship training) – with the intention of helping Métis achieve self-sufficiency through lifelong careers. Nonetheless, only the MNO has a program specifically devoted to increasing Métis participation in mining. As a representative of five ASETS providers, the MNC can play a significant role in promoting and developing policies that ASETS deliverers should implement in order to increase Métis participation in the mining industry.

XII. Key Strategies for Enhancing Métis Participation in Mining

The Métis have unique demographic characteristics, which create competitive advantages for employment in the mining industry and allow them to benefit from the high level of forthcoming job openings; however, the Métis may be unable to gain from the upcoming wave of job openings due to their relatively low level of educational attainment and other impediments. In this section, specific actions and strategies that the Métis National Council (MNC) and Métis ASETS agreement holders should adopt in order to take advantage of and overcome obstacles to employment opportunities in the mining industry are recommended. To accomplish these things,

¹¹⁵ Métis Nation of Ontario, “Métis Mining Strategy,” <http://www.metisnation.org/programs/education--training/labour-market-projects/metis-mining-strategy>

¹¹⁶ The MNO provides a wage subsidy of up to \$12.50 per hour for 30 hours per week for 12 weeks.

Métis ASETS providers must, among other things, develop partnerships with schools, mining firms and other institutions that involve the provision of the education, training, work experience, and employment opportunities to Métis. The Métis ASETS agreement holders have already developed relations with many organizations in the public and private industries, and are the most important providers of employment and training services to the Métis.

ASETS agreement holders may be the “most direct access to trained and skilled workers within the local communities surrounding [many mining] projects.”¹¹⁷ Therefore, ensuring that the Métis labour force has the right skills, accreditations, practical experience and connections to participate in the mining industry should be the top priority of Métis ASETS providers. The key strategies that the MNC and Métis ASETS agreement holders should adopt in order to guarantee that the Métis can seize the upcoming opportunity for employment in the high-wage mining industry are as follows:

1. Assisting Métis without a high school diploma (or equivalent) to receive

Assisting those without high school diplomas (or equivalent) to receive one is necessary, as 45.1 per cent of job openings in the mining industry in the next decade will require the completion of secondary education at a minimum and the remaining jobs will require higher levels of education. The ASETS framework already includes providing basic skills training to Aboriginals clients. The mining industry is more likely than others to hire individuals with only a high school education, as they provide rigorous on-the-job training for a significant number of entry-level jobs; however, the fact that many Métis do not have this minimum level of education compared to the non-Aboriginal population is a major barrier to employment in this industry (and all industries). After ensuring that Métis can qualify for an entry-level position at a mining firm, then they will be able to develop the necessary skills to work their way up in mining companies, as firms often provide financial support to workers interested in increasing their level of education. Unfortunately, some Métis will not be able to afford to commute to or relocate near a mine in order to enter the mining industry through an entry-level position; this will be an additional barrier to mining employment for some Métis.

2. Increasing Métis post-secondary completion rates for programs relevant to mining (with an emphasis on apprenticeships) by developing information-sharing partnerships with schools and mining firms

Apprenticeships and trades certificates will be the most important qualification for individuals seeking a career in the mining industry, as 31 per cent of the job openings in the 30 top-hiring mining occupations will require this level of education by 2021. Other forms of post-secondary education will also be important, albeit to a much smaller degree.

¹¹⁷ Mining Industry Human Resources Council, “Planning Guide to Federal Government Programming,” <http://www.mihrc.ca/en/publications/resources/FinalPlanningGuide.pdf>

In order to ensure that the Métis have the post-secondary education required by mining firms, information-sharing partnerships with the mining community and educational institutions must be built. Ideally, partnerships will develop in which mining firms communicate to Métis ASETS providers what jobs they expect to become available and what qualifications are required for these jobs. Mining occupations requiring either apprenticeships or trades certificates are extremely specialized, and therefore have very specific requirements. This is also the case for other occupations in the mining industry that require either a college degree (e.g., geological and mineral technologists and technicians) or a university degree (e.g., mining engineers). Therefore, communication between the mining industry and Métis ASETS agreement holders is needed to determine where ASETS agreement holders should focus their efforts. This information can help the Métis ASETS agreement holders give their clients first-class advice on what mining careers they should pursue. In addition, information sharing with educational institutions ensures that Métis ASETS providers know what qualifications are necessary for each mining career and how/where their clients can obtain those qualifications. If Métis ASETS providers do not know what mining industry jobs are forthcoming, what the requirements for these jobs are and how/where to fulfill these requirements, they will not be able to provide adequate advice to Métis interested in pursuing a career in mining.

Before developing partnerships with mining firms, Métis ASETS agreement holders must be aware of the mining establishments located near Métis communities or communities with large Métis populations; this information is available from Natural Resources Canada as well as through the provincial natural resources departments.¹¹⁸ After determining which mining establishments are most relevant, Métis ASETS providers can reach out to these organizations and actively pursue mutually beneficial relationships. According to Martha Roberts, Director of Research at Mining Industry Human Resources Council (MiHR), and Melanie Sturk, Director of Attraction, Retention and Transition at MiHR, mining firms may not even be aware of the presence of Métis communities, populations or ASETS providers close to their operations. In general, the mining industry is extremely interested in engaging with all of Canada's Aboriginal groups. Therefore, it is important for Métis ASETS providers to be proactive by reaching out to the mining community and developing links with it; it is likely that such communication will lead to mutually beneficial and productive working relationships.

3. Ensuring Métis access to co-operative education, apprenticeships, and other employment opportunities

Métis ASETS providers must ensure that Métis have access to co-operative education, apprenticeships and other employment opportunities in order to increase Métis participation in mining. For Métis enrolled in mining-related programs at school having previous work experience

¹¹⁸ For a variety of maps illustrating the proximity of Canada's principal producing mines and top 100 exploration sites to Métis communities, visit <http://www.metisportals.ca/healthportal/pages/programs/img.jpg>, <http://www.nrcan.gc.ca/minerals-metals/4437#en4>, and http://apps1.gdr.nrcan.gc.ca/mirage/show_image_e.php?client=jp2&id=292216&image=gscmap-a_900A_e_2013_mm01.sid.

and contacts in the mining industry is a major asset. Crossing the school-to-employment threshold is a daunting challenge for graduates without previous work experience in the industry or profession they are interested in. Métis who have worked for a mining firm as part of a co-op program will probably have an easier time finding a job. Therefore, it is imperative that Métis ASETS providers build relationships with mining firms and schools that involve the provision of co-operative education to Métis students.

For Métis interested in pursuing a career in mining that involves an apprenticeship, it is often difficult to find an employer willing to take on an apprentice. Apprenticeships and trades certificates will be the most important qualifications for those interested in entering the mining industry. Therefore, Métis ASETS providers should devote a great deal of resources to matching would-be apprentices with employers. It is important to note that there are many different careers included under the umbrella term “apprenticeships and trades certificates”.

For Métis who already have a mining-related degree, it can be challenging to find a job. Métis ASETS providers should help these individuals find employment in the mining industry, which requires having information-sharing relationships with mining firms. The Métis Nation of Ontario (MNO) has expressed interest in providing this job matching service as part of the *Métis Mining Strategy*, which would help Métis who already have a mining-related degree cross the school-to-employment threshold.

A job-matching service is also needed for Métis who want to find an entry-level position in mining that does not require post-secondary education. Many entry-level mining jobs only require a high school education (or an equivalent), as specialized in-class and on-the-job training is provided by mining firms. Almost half of the job openings in the mining industry are expected to only require a high school education, but most these jobs will involve intensive on-the-job training. Consequently, a relationship between the mining industry and Métis ASETS agreement holders is needed in order to provide Métis with opportunities to be trained by and receive work experience from mining firms as a path to long-term employment.

4. Developing project-based partnerships with schools and mining firms to create programs through which Métis receive mining-related training and work experience

In order to ensure Métis access to co-op jobs and apprenticeships, Métis ASETS agreement holders should develop project-based partnerships with mining firms, schools, and other appropriate organizations. Funds to develop project-based partnerships can be acquired through the Strategic Partnership Fund (SPF). These partnerships are based on the creation of programs through which Métis receive mining-related training and work experience.

To assist Métis pursue mining careers, ASETS agreement holders should develop project-based partnerships with: 1) mining firms, to ensure access to co-op jobs for Métis students and employment opportunities for Métis would-be apprentices; 2) schools, to guarantee Métis access

to existing educational programs or to create customized training programs. It may make sense for other organizations to be involved in the project, depending on the kind of education and training that the project emphasizes. For example, an important partner of the Gabriel Dumont Institute's (GDI) *Aboriginal Apprenticeship Initiative* is the Saskatchewan Apprenticeship Trades Certification Commission as this organization is a key part of the apprenticeship system in that province.

There are two key examples of Métis ASETS providers involved in project-based partnerships that have the potential to increase Métis participation in mining: the MNO's *Métis Mining Strategy* and the GDI's *Aboriginal Apprenticeship Initiative*.

The MNO's *Métis Mining Strategy* is a model of how Métis ASETS agreement holders can promote Métis participation in the mining industry. The MNO offers support for education, training and co-op placements – which includes wage subsidies and support for tuition, books and supplies, safety equipment, travel, living allowance, and relocation costs – to Aboriginal students who want to pursue a career in the mining industry. The financial support provided to participants is of vital importance, as the cost associated with attending school can be a major barrier to Métis as they do not receive the same support for post-secondary education as other Aboriginal groups.

Unlike other ASETS agreement holders, the MNO provides industry-specific labour market services to Métis. Métis receiving post-secondary degrees at any accredited educational institution that may lead to a career in mining can receive support from the MNO through the Strategy. In addition, the MNO will connect program participants with any employer in the mining industry – be that at the head office of a mining firm or an operating mine – that approaches the MNO offering to provide co-op jobs to program participants. Therefore, the Strategy ensures highly individualized assistance to participants. The MNO's use of wage subsidies creates an incentive for mining firms to hire Métis co-op students that participate in the Strategy over others, thereby helping participants acquire on-the-job experience in mining. Other Métis ASETS providers put a great deal of money into endowment funds at post-secondary institutions and into wage subsidy programs in partnership with various employers; however, other Métis ASETS agreement holders do not use these wage subsidies to increase Métis opportunities in any specific industry of the economy.

The *Aboriginal Apprenticeship Initiative* is a project-based partnership launched by the GDI in 2011. By 2014, the Initiative is expected to have at least 120 apprentices registered in the program. GDI offers job coaching, follow-up support to participants, wage subsidies and employer access to the Métis labour pool as a part of this project. Cameco, a major uranium mining firm, has already employed apprentices through this Initiative, and has suggested that it is interested in employing more.

The *Aboriginal Apprenticeship Initiative*, however, is not specifically directed at mining careers. Many types of trades workers are employed by the mining industry, so it is important that ASETS agreement holders create project-based partnerships like the *Aboriginal Apprenticeship Initiative* but with more emphasis on mining-related trades and apprenticeships. Mining firms are very willing to take on apprentices. For example, “170 apprentices are employed at Teck’s Canadian operations [...] in a variety of trades training programs, including heavy duty mechanic, millwright and electrician.”¹¹⁹ Unfortunately, some Métis are unable to commute to or relocate near mines in order to acquire on-the-job experience, according to the *Métis Mining Strategy* team at the MNO.

5. Promoting mining careers more actively to ASETS clients and within the Métis community

Even if ASETS agreement holders develop programs to enhance Métis participation in mining, barriers to Métis participation in mining still exist. A major impediment to mining employment can be a general lack of awareness of the career opportunities in that industry. Employees at MNO branches all over Ontario recommend the Strategy to their clients and Métis in their communities in order to ensure that Métis are aware of the employment opportunities in the mining industry. Métis ASETS agreement holders must make an effort to promote mining careers to their clients, especially those in mining-intensive regions.

Métis ASETS providers should be more active in their promotion of careers in mining; they should promote mining careers to their members and in their local communities through advertising campaigns, informing individuals interested in mining careers on what are the necessary qualifications and where to get them. A great deal of information concerned with educational requirements for specific mining industry occupations is already accessible through MiHR’s website.¹²⁰ In addition, the MiHR has many modules related to increasing the participation of Aboriginal peoples in the mining industry as well as a great wealth of documents and videos that promote and describe a diverse array of careers in the mining industry.

¹¹⁹ Teck, “Apprenticeship,”

<http://www.teck.com/Generic.aspx?PAGE=Teck+Site%2fCareers+Pages%2fCareer+Development+Pages%2fApprenticeship&portalName=tc>

¹²⁰ The following MiHR document provides a great deal of information concerning mining careers:

<http://www.aboriginalmining.ca/en/resourcesGeneral/OccupationsinMiningBooklet.pdf> .

XIII. Conclusion

The Métis have a great opportunity to increase their participation in the mining industry in the coming decade. The concentration of the Métis population in non-urban areas; the proximity of Métis to primary mining establishments; the youthfulness of the Métis population relative to the non-Aboriginal population; the looming retirement of the baby boomer generation of workers; and the high proportion of Métis with trades certificates relative are all factors that favour larger Métis employment in the mining industry.

Nonetheless, Métis prospects for mining employment are hindered by a number of barriers, such as: the Métis population's overall low level of educational attainment, especially in terms of high school completion; the lack of access to educational, training, apprenticeship and co-op programs relevant to mining industry occupations; and underdeveloped partnerships between Métis ASETS agreement holders and the mining industry.

In order to overcome these hindrances, the MNC and Métis ASETS agreement holders should work towards redirecting existing human resources infrastructure in order to promote mining careers to Métis and advise Métis interested in a mining career. Additionally, they should develop information-sharing and project-based partnerships with mining firms, schools and other organizations to ensure Métis access to mining-related school programs, apprenticeships, on-the-job training and co-op jobs.

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Appendix

Appendix Table 1: MiHR's Cumulative Hiring Projection by NOC-S Occupational Category

2006 National Occupational Classification for Statistics (NOC-S)	2013	2016	2021
Trades and undesignated occupations	15,245	23,025	40,100
<i>Heavy-equipment operators (except crane)</i>	2,210	3,415	5,795
<i>Truck drivers</i>	1,820	2,940	4,955
<i>Underground production and development miners</i>	1,605	2,485	4,475
<i>Construction millwrights and industrial mechanics (except textile)</i>	1,680	2,465	4,335
<i>Welders and related machine operators</i>	1,055	1,620	2,755
<i>Labourers in mineral and metal processing</i>	980	1,365	2,545
<i>Heavy-duty equipment mechanics</i>	950	1,425	2,465
<i>Machine operators, mineral and metal processing</i>	1,040	1,330	2,330
<i>Industrial electricians</i>	705	1,070	1,915
<i>Central control and process operators, mineral and metal processing</i>	610	915	1,615
<i>Construction trades helpers and labourers</i>	435	680	1,160
<i>Mine labourers</i>	450	665	1,140
<i>Steamfitters, pipefitters and sprinkler system installers</i>	395	660	1,125
<i>Material handlers</i>	380	575	1,065
<i>Underground mine service and support workers</i>	380	575	1,010
<i>Drillers and blasters — Surface mining, quarrying and construction</i>	185	275	465
<i>Crane operators</i>	135	215	365
<i>Carpenters</i>	100	155	260
<i>Other trades helpers and labourers</i>	70	110	180
<i>Plumbers</i>	60	85	145
Professional and physical science occupations	1,465	2,255	3,980
<i>Geologists, geochemists and geophysicists</i>	500	790	1,370
<i>Mining engineers</i>	235	370	665
<i>Industrial and manufacturing engineers</i>	155	230	415
<i>Mechanical engineers</i>	135	220	385
<i>Electrical and electronics engineers</i>	85	130	225
<i>Metallurgical and materials engineers</i>	85	120	220
<i>Other professional occupations in physical sciences</i>	65	100	190
<i>Chemical engineers</i>	80	110	185
<i>Chemists</i>	45	70	125
<i>Civil engineers</i>	50	70	120
<i>Geological engineers</i>	20	35	60
<i>Biologists and related scientists</i>	10	10	20
Human resources and financial occupations	875	1,365	2,370
<i>Financial auditors and accountants</i>	415	655	1,135
<i>Human resources managers</i>	135	215	375
<i>Financial managers</i>	135	215	375
<i>Specialists in human resources</i>	145	215	365
<i>Financial and investment analysts</i>	45	65	120

Support workers	4,065	6,325	11,170
<i>Production clerks</i>	2,540	3,905	6,960
<i>Secretaries (except legal and medical)</i>	540	870	1,465
<i>Inspectors and testers, mineral and metal processing</i>	385	600	1,110
<i>Dispatchers and radio operators</i>	195	300	530
<i>Transportation route and crew schedulers</i>	150	245	430
<i>Administrative clerks</i>	140	230	390
<i>Cooks</i>	105	155	250
<i>Construction estimators</i>	10	20	35
Technical occupations	1,395	2,095	3,635
<i>Geological and mineral technologists and technicians</i>	565	845	1,470
<i>Chemical technologists and technicians</i>	210	320	560
<i>Electrical and electronics engineering technologists and technicians</i>	205	285	485
<i>Drafting technologists and technicians</i>	105	155	265
<i>Industrial engineering and manufacturing technologists and technicians</i>	95	145	260
<i>Mechanical engineering technologists and technicians</i>	90	140	250
<i>Land surveyors</i>	70	115	195
<i>Land survey technologists and technicians</i>	20	30	50
<i>Mapping and related technologists and technicians</i>	10	20	35
<i>Biological technologists and technicians</i>	15	25	35
<i>Civil engineering technologists and technicians</i>	10	15	30
Supervisors, coordinators, and foremen	3,050	4,715	8,180
<i>Primary production managers (except agriculture)</i>	1,170	1,930	3,265
<i>Supervisors, mining and quarrying</i>	770	1,140	2,000
<i>Supervisors, mineral and metal processing</i>	600	820	1,515
<i>Contractors and supervisors, pipefitting trades</i>	310	490	845
<i>Engineering managers</i>	75	120	205
<i>Construction managers</i>	70	120	200
<i>Contractors and supervisors, mechanic trades</i>	55	95	150

Source: Mining Industry Human Resources Council (2011), "Canadian Mining Employment and Hiring Forecasts," http://www.mihrc.ca/en/publications/resources/Employment_HiringForecasts2011_FINALAug4_ENG.pdf

Appendix Table 2: Employment Requirements for the 30 Top Hiring NOC-S Occupations

2006 National Occupational Classification for Statistics (NOC-S)	Employment Requirements
<i>Production clerks</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required and college may be required. • Previous clerical experience or experience as a production worker may be required • Progression to supervisory positions is possible with experience.
<i>Heavy-equipment operators (except crane)</i>	<ul style="list-style-type: none"> • Some secondary school education is required. • Completion of a one- to two-year apprenticeship program <i>or</i> some high school, college or industry courses in heavy equipment operating combined with on-the-job training are required. • Trade certification is compulsory in Quebec and available, but voluntary, in Newfoundland and Labrador, Nunavut and the Northwest Territories. • Internal company certification may be required by some employers.
<i>Truck drivers</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • On-the-job training is provided. • A Class D license is required to drive straight trucks. • A Class A license is required to drive articulated trucks. • Air brake endorsement (Z) is required for drivers who operate vehicles equipped with air brakes. • Transportation of dangerous goods (TDG) certification is required for drivers who transport hazardous products or dangerous goods.
<i>Underground production and development miners</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Formal training of up to six weeks followed by extended periods of specialized training as a helper or in support occupations is usually provided. • Previous experience as a mine labourer or in other mine occupations is usually required. • Provincial blasting license may be required. • May be certified in the basic common core program or as an underground hard rock miner in Ontario. • Trade certification for miners is available, but voluntary, in Quebec and Manitoba. • Company licensing or certification is often required for occupations in this unit group. • Certificate in first aid may be required. • Progression to mining supervisor is possible with experience.
<i>Construction millwrights and industrial mechanics (except textile)</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Completion of a three- to four-year apprenticeship program <i>or</i> a combination of over five years of work experience in the trade and some high

	<p>school, college or industry courses in industrial machinery repair or millwrighting is usually required to be eligible for trade certification.</p> <ul style="list-style-type: none"> • Industrial mechanic trade certification is compulsory in Quebec and available, but voluntary, in all other provinces and territories. • Construction millwright trade certification is available, but voluntary, in Ontario. • Interprovincial trade certification (Red Seal) is also available to qualified industrial mechanics or millwrights.
<i>Primary production managers (except agriculture)</i>	<ul style="list-style-type: none"> • Mining and quarrying managers usually require a bachelor's degree in mining engineering or earth sciences. • Several years of experience in a supervisory occupation in the particular industry are usually required and may substitute for formal education requirements.
<i>Welders and related machine operators</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Completion of a three-year apprenticeship program <i>or</i> a combination of over three years of work experience in the trade and some college or industry courses in welding is usually required to be eligible for trade certification. • Trade certification is compulsory in Alberta and available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Manitoba, Saskatchewan, British Columbia, Nunavut, the Northwest Territories and the Yukon. • Interprovincial trade certification (Red Seal) is also available to qualified welders.
<i>Labourers in mineral and metal processing</i>	<ul style="list-style-type: none"> • Completion of secondary school may be required for some positions in this group. • Progression to machine and process operator positions is possible with experience.
<i>Heavy-duty equipment mechanics</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Completion of a three- to five-year apprenticeship program <i>or</i> a combination of over four years of work experience in the trade and some high school, college or industry courses in heavy equipment repair is usually required to be eligible for trade certification. • Heavy-duty equipment mechanic trade certification is compulsory in Quebec and Alberta and available, but voluntary, in all other provinces and the territories. • Farm equipment mechanic trade certification is available, but voluntary, in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. • Interprovincial trade certification (Red Seal) is

	<p>also available to qualified heavy-duty equipment technicians and farm equipment mechanics.</p>
<i>Machine operators, mineral and metal processing</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • On-the-job training is provided. • Experience as a labourer in mineral and metal processing is usually required for machine operators. • With experience, machine operators may progress to central control and process operators in mineral and metal processing.
<i>Supervisors, mining and quarrying</i>	<ul style="list-style-type: none"> • Completion of secondary school is required. • Completion of a college or university program in mining technology or engineering may be required for some positions in this group. • Several years of experience in the occupations supervised are usually required. • Provincial certification as an underground mine supervisor, shift boss, or coal mining supervisor may be required. • There is mobility between employers especially for supervisors with post-secondary diplomas or degrees.
<i>Industrial electricians</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Completion of a four- or five-year industrial electrician apprenticeship program <i>or</i> a combination of over five years of work experience in the trade and some high school, college or industry courses in industrial electrical equipment is usually required to be eligible for trade certification. • Trade certification for industrial electricians is compulsory in Prince Edward Island, Quebec and the Yukon, and available, but voluntary, in Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario and Manitoba. • Interprovincial trade certification (Red Seal) is also available to qualified industrial electricians. • Trade certification for marine electricians is available, but voluntary, in New Brunswick. • Trade certification for mine electricians is available, but voluntary, in Nova Scotia.
<i>Central control and process operators, mineral and metal processing</i>	<ul style="list-style-type: none"> • Completion of secondary school is required. • A college diploma may be required for some positions in this group. • On-the-job training is provided. • Several years of experience as a machine or process operator, usually in the same company or production department, are required. • With experience, central control and process operators may progress to supervisory positions in mineral and metal processing.
<i>Supervisors, mineral and metal processing</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Post-secondary education in metallurgy, sciences

	<p>or a related field may be required for some occupations in this unit group.</p> <ul style="list-style-type: none"> • Several years of experience as a worker in the unit or department being supervised are usually required.
<i>Geological and mineral technologists and technicians</i>	<ul style="list-style-type: none"> • Geological and mineral technologists usually require completion of a two- to three-year college program in geological technology, petroleum technology, petroleum engineering technology, hydrogeology or groundwater technology, mining technology, mining engineering technology, mineralogy, metallurgical technology, or welding technology. • Geophysics technologists usually require completion of a two- to three-year college program in electronics technology. • Geological and mineral technicians usually require completion of a one- to two-year college program in a related field. • Certification in geological and mineral technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required by employers. • In Quebec, membership in the regulatory body is required to use the title of Professional Technologist. • A period of supervised work experience, usually two years, is required before certification.
<i>Secretaries (except legal and medical)</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Completion of a one- or two-year college or other program for secretaries <i>or</i> previous clerical experience is required.
<i>Geologists, geochemists and geophysicists</i>	<ul style="list-style-type: none"> • A university degree in geology, geochemistry, geophysics or a related discipline is required. • A master's or doctoral degree in geophysics, physics, mathematics or engineering may be required for employment as a geophysicist. • Registration as a professional geologist or professional geophysicist by a provincial or territorial association of professional engineers or geologists and geophysicists is often required for employment and to practice in Newfoundland and Labrador, Alberta, British Columbia, Nunavut and the Northwest Territories. • Geologists and geophysicists are eligible for registration following graduation from an accredited educational program and after several years of supervised work experience and, in some provinces, after passing a professional practice examination. • In some provinces or territories those who are not graduates of an accredited educational program are eligible for registration after completing a six- to eight-year term of supervised employment and

	<p>successfully passing examinations.</p> <ul style="list-style-type: none"> • Supervisory and senior positions in this unit group require experience.
<i>Construction trades helpers and labourers</i>	<ul style="list-style-type: none"> • Some experience as a general construction labourer may be required for construction trade helpers. • Some pipeline workers, such as stabbers, mandrel operators and pre-heater tenders, usually require one season of experience in oil and gas pipeline construction. • Flagmen/women may require a traffic control certificate.
<i>Mine labourers</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • A short period of introductory training is provided. • Mine labourers are registered in the basic common core program in Ontario. • There is mobility among jobs in this group. • Progression to underground production and development miner or underground mine service and support worker is possible with experience and training.
<i>Financial auditors and accountants</i>	<ul style="list-style-type: none"> • Chartered accountants require a university degree <i>and</i> completion of a professional training program approved by a provincial institute of chartered accountants and, depending on the province, either two years or 30 months of on-the-job training <i>and</i> membership in a provincial Institute of Chartered Accountants upon successful completion of the Uniform Evaluation (UFE). • Certified general accountants and certified management accountants require a university degree <i>and</i> completion of a training program approved by the Society of Certified General Accountants or Society of Management Accountants and several years of on-the-job training <i>and</i> certification by the Certified General Accountants Association or the Society of Management Accountants. • Auditors require education, training and recognition as indicated for chartered accountants, certified general accountants or certified management accountants <i>and</i> some experience as an accountant. • Auditors may require recognition by the Institute of Internal Auditors. • Licensing by the provincial or territorial governing body is usually required for accountants and auditors practicing public accounting.
<i>Steamfitters, pipefitters and sprinkler system installers</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Completion of a four- to five-year apprenticeship program <i>or</i> a combination of over five years of work experience in the trade and some high school, college or industry courses in steamfitting, pipefitting or sprinkler system installation is

	<p>usually required to be eligible for trade certification.</p> <ul style="list-style-type: none"> • Steamfitter-pipefitter trade certification is compulsory in Quebec, Ontario, Alberta and British Columbia and available, but voluntary, in all other provinces and the territories. • Interprovincial trade certification (Red Seal) is also available to qualified steamfitters-pipefitters and sprinkler system installers.
<i>Inspectors and testers, mineral and metal processing</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Experience as a machine or process operator in mineral and metal processing is usually required.
<i>Material handlers</i>	<ul style="list-style-type: none"> • Some secondary school education may be required. • Physical strength is required for manual material handlers who work with heavy materials.
<i>Underground mine service and support workers</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Previous formal training of up to six weeks followed by periods of on-the-job training as a helper or in support occupations is usually required. • Previous experience as a mine labourer is usually required. • May be certified in the basic common core program in Ontario. • Company licensing or certification is often required for occupations in this unit group.
<i>Contractors and supervisors, pipefitting trades</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • Several years of experience as a qualified tradesperson in a relevant trade are required. • Journeyman/woman trade certification in a relevant trade is required.
<i>Mining engineers</i>	<ul style="list-style-type: none"> • A bachelor's degree in mining engineering or in a related engineering discipline is required. • A master's degree or doctorate in a related engineering discipline may be required. • Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practice as a Professional Engineer (P.Eng.). • Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
<i>Chemical technologists and technicians</i>	<ul style="list-style-type: none"> • Chemical technologists usually require completion of a two- or three-year college program in chemical, biochemical or chemical engineering technology or a closely related discipline. • Chemical technicians usually require completion of a one- or two-year college program in chemical, biochemical or chemical engineering technology. • National certification for chemical technologists

	<p>and technicians is available through the Canadian Society for Chemical Technology.</p> <ul style="list-style-type: none"> • Certification in chemical engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required by employers. • In Quebec, membership in the regulatory body is required to use the title of Professional Technologist. • A period of supervised work experience, usually two years, is required before certification.
<i>Dispatchers and radio operators</i>	<ul style="list-style-type: none"> • Completion of secondary school is required. • Police and emergency dispatchers are required to complete formal on-the-job training. Other dispatchers usually undergo some informal on-the-job training. • Radio operators and police and emergency dispatchers usually require provincial radio operator's certificates.
<i>Electrical and electronics engineering technologists and technicians</i>	<ul style="list-style-type: none"> • Completion of a two- or three-year college program in electrical or electronics engineering technology, computer engineering technology, telecommunications technology or an equivalent is usually required for electrical or electronics engineering technologists. • Completion of a one- or two-year college program in electrical or electronics engineering technology is usually required for electrical or electronics engineering technicians. • Certification in electrical or electronics engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions. • A period of supervised work experience, usually two years, is required before certification. • In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.
<i>Drillers and blasters — Surface mining, quarrying and construction</i>	<ul style="list-style-type: none"> • Completion of secondary school is usually required. • On-the-job training is provided. • Experience as a heavy equipment operator may be required for drillers. • Experience as a blaster helper in surface mining and quarrying or construction may be required for blasters. • Provincial blasting license is usually required for blasters. • Trade certification for blasters is available, but voluntary, in New Brunswick.