



Sectoral Profile

Mining and Quarrying

Region of Western Canada and Territories

2015-2017



EXECUTIVE SUMMARY

- Western Canada and the Territories (W-T) account for the majority of Canada's mined copper, potash, coal, uranium, lead, diamond, silica, sand and gravel, and sulphur production.
- W-T's 2015 capital expenditures on mining development made up 60.2% of the total mining industry expenditures in Canada.¹
- The mining industry in the Western provinces directly employs approximately 36,000 people, almost 45% of Canada's mining workforce, and is the single largest private sector employer of Indigenous people.^{2,3}
- Declining world commodity prices beginning in 2011 have led to a decline in exploration, mining output, and new projects.
- Prices are expected to recover in 2018, at which time the industry will likely focus on strategies to replace aging workers.

In 2015, W-T's mining industry contributed \$8.9B/year or .54% to national gross domestic product (GDP).⁴ All told, W-T's 2015 capital expenditures on mining development were estimated at just over \$1B in W-T region or 60.2% of the total mining industry expenditures in Canada.⁵ Consequently, this industry has major economic and labour impacts for the many rural and remote communities that depend on mining activities, including exploration, drilling and associated construction activities and supply services.

Going forward, the mining industry's growth and employment outlook will depend on an upturn in commodity prices. Gold is on the road to recovery. Metallurgic coal prices are expected to rise in 2017. Base metals such as aluminum, copper, nickel and zinc are expected to rally in 2018. However, thermal coal, potash and uranium

markets are expected to remain weak past 2018.^{6,7} Even so, investment analyst sentiment is positive, in general, as a result of 2014/15 production cutbacks which reduced supply.⁸

KEY DRIVERS

- Global growth from industrialization, urbanization and population is the key driver for mining sector since mining resources (minerals and metals) are inputs for many production processes. Global growth performance puts upward pressure on commodity prices.
- On the supply side there is generally a lag between production and demand which may result in either an over-supply during low points in the cycle or an under-supply during super-cycles.
- Commodity prices a relatively good indicator on the mining sector's performance and employment prospects.
- China has long been the world's biggest consumer of iron ore, coal and copper and is a major trade partner for the W-T region's mining industry. China's 2015 economic slow-down, resulting in weakened demand for mined resources, has played a part in W-T's current mining downturn.
- W-T mines compete with China, Mexico, South Africa, Australia and the US to provide low cost production of minerals and metals which also impacts world prices and demand for W-T products.
- Mining companies rely heavily on foreign export and demand and are sensitive to the geopolitical landscape. Most commodity markets crave stability and W-T is considered a safe mining jurisdiction for investment

BACKGROUND

Western Canada and the Territories (W-T) are world leaders in the production of 19 minerals and metals. In fact, W-T produces 100% of Canada's cesium, lead, molybdenum, tungsten and uranium. Furthermore, the region has vast untouched reserves in coal, diamonds, platinum-group metals (PGM), rare earth elements (REE), titanium, vanadium, chromite, silica and potash.

Between 2002-08, W-T's performance in mining was strong. However, a drop in world commodity prices, particularly for potash, uranium, copper and coal, between 2008-09, and again beginning in 2011 has led to a decline in exploration investment and activity, mining production and new projects. This has resulted in job losses. Mining production slow-downs have also had repercussions for mining support and supply and mineral processing activity.

In Manitoba, the mining industry is primarily concentrated in the production of zinc, nickel, copper, silver and gold. The province is also Canada's sole producer of cesium, lithium and tantalum—used in electronics, batteries and jet engines. Furthermore, the province has untapped reserves of diamonds, PGM, REE, titanium, vanadium, chromite, silica and potash. The government of Manitoba lists 17 key mining players out of about 40 active companies in the province. Employers are supported through a number of provincial government

programs including the Mineral Exploration Assistance Program, a tax credit and preferred tax rates for the industry.⁹ In a survey of mining companies world-wide, Manitoba ranked in the top 10 out of 122 jurisdictions.¹⁰

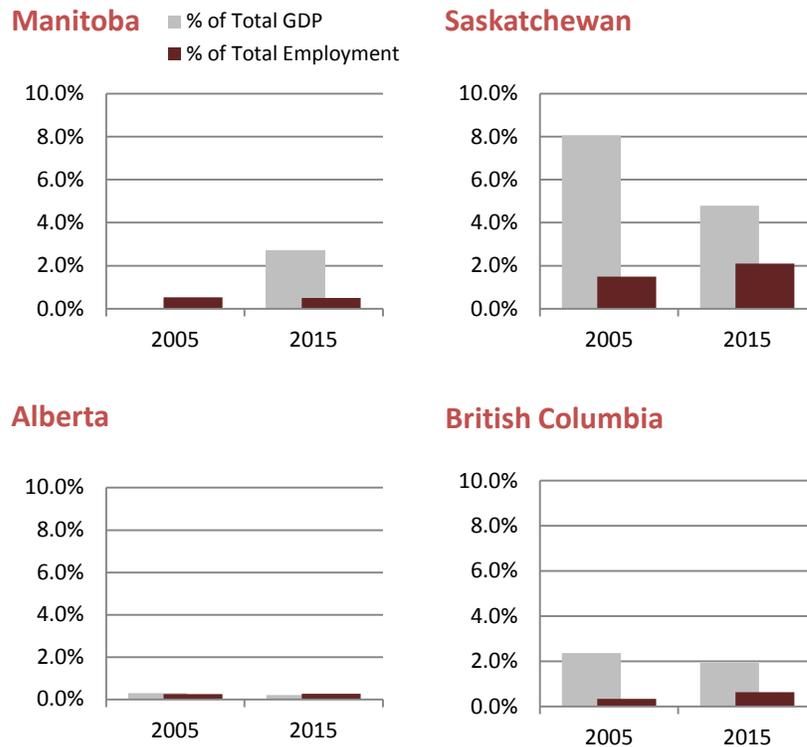
Saskatchewan has the largest uranium deposits in the world and is also the top global potash producer.¹¹ In fact, potash, after gold, was Canada's second leading mined product by value in 2014 at \$5.6B.¹² Province-wide, mines produce not only uranium and potash, but also thermal coal, gold, salt, silica sand, and clay. Saskatchewan has untapped reserves of uranium, potash, peat, diamonds, copper, zinc and REE. A 2015 survey of mining companies found that Saskatchewan ranked 2nd out of 122 world mining jurisdictions in terms of investment attractiveness.¹³ It is anticipated that the provincial government will make changes to the potash royalty and tax structure by the end of 2016.¹⁴

The primary mining commodity in Alberta is coal with 10 major mines either permitted or in operation.¹⁵ Three quarters of Alberta's coal mines produce thermal coal; the remaining mines produce metallurgical coal.¹⁶ In addition, Alberta has hundreds of sand and gravel pits (usually small and medium-sized employers).

In BC, mining is centered on metallurgical (coking) coal, used for making steel, and copper. The province also has robust mining activity for gold, zinc and silver. As an indication of the Government of BC's support for the struggling mining industry, the province will start a program in 2016 to allow electricity payment deferral for mining employers until mineral commodity prices increase.¹⁷

In the North, mining and exploration activities are critical to local economies. Diamond extraction in the North has made Canada a top-five diamond producer in the world.¹⁸ Currently there are four active mines in Northwest Territories (NWT) and Nunavut, representing the largest private sector contribution to their respective territorial economies. These mines produce diamonds, gold and iron. Yukon's Minto copper mine is the only active producing mine in this territory. The combined Territories hold a wealth of potential with reserves of iron, diamonds, gold, silver, uranium, REE, and base metals.

Mining and Quarrying Provincial % of GDP and % of Employment in 2005 and 2015



Sources: 1. Statistics Canada CANSIM Table 379-0030 - Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), provinces and territories, annual (dollars) 2. Statistics Canada Labour force estimates by detailed industry, age, sex, class of worker

Note: GDP and employment data specific to mining and quarrying (code 212 in the North American Industry Classification System) are not available for the Territories.

Employment

In 2015, mining employment in the Western provinces reached 36,000.¹⁹

- In Manitoba, mining employment contracted by 15.8% on a year-over-year basis in 2015
- In Saskatchewan, mining employment contracted by 4% on a year-over-year basis in 2015
- In Alberta, mining employment contracted by 19.2% on a year-over-year basis in 2015
- In BC, mining employment grew by 10.6% on a year-over-year basis in 2015

Current 2016 employment trends suggest further contractions for all provinces, except BC.

Mining employs a range of trades, processing and technical jobs. Occupations in the mining industry are primarily high-skilled requiring college education and/or apprenticeship training. Underground production and development miners (NOC 8231) make up the largest portion of high-skilled workers. This occupational group includes jobs such as drillers, blasters, and mining machine operators, and usually requires a combination of education and apprenticing, plus licensing or certification.

Occupations that produce diamond and industrial minerals are generally among the highest paid, while many comparable occupations in metal production have a lower wage rate. However, the wages of diamond and industrial mineral-producers tend to vary between different occupations. Some occupations (e.g., heavy equipment operators) are frequently the lowest-paid among the commodity categories. According to a survey of mining employees done by NWT Bureau of Statistics, 54% of the region's diamond mining workforce did not reside in the territory on a permanent basis in 2014.²⁰ Reliance on a non-local workforce means that if the labour market tightens and/or other opportunities become available elsewhere in Canada, current non-residents may return to jobs closer to home in the south.

Furthermore, a report on Indigenous Canadians who reside in rural/remote communities commissioned by PR Associates revealed that only 38% have a favourable perception of the mining and mineral exploration industry.²¹ But even so, 6-12% of the mining workforce is Indigenous.²²

So, the challenges for the industry are 1) recruiting workers to, and keeping workers in rural and remote communities, 2) improving the image and perception of the industry to local indigenous communities, as well as to non-traditional labour pools such as women, new Canadians, and people with disabilities and 3) replacing retiring workers by tapping into new labour pools and growing the Indigenous workforce.

In order to address these concerns, mining companies have used strategies to tap into the local population as a source of labour. Through Impact and Benefit Agreements (IBA), mining employers work with local communities to develop mutually beneficial outcomes. As an example, Baffinland Iron Mines Corporation, in the Baffin region of Nunavut, expects training to meet the goal of 25% Inuit employment at the Mary River mine by the end of 2016. Currently 17-18% of Baffinland's workforce is Inuit.²³

Mining technology and innovation impacts on employment for the future

Automated and remotely controlled equipment is in development. However, widespread adoption of new technology is not anticipated in the short and medium-term. When new technology is adopted, workers will require computer literacy, data management and information analysis skills. Driverless haul trucks will impact the need for heavy equipment operators.

The Conference Board of Canada suggests that wastewater recycling could provide an alternative source for industry revenue to offset challenges during slow commodity demand.²⁴

INDUSTRY TRENDS

The capital intensive nature and international competitive pressures in the mining industry has resulted in a greater concentration of the industry dominated by a small number of multi-national firms involved in large scale mining production. For example, Teck Resources produces 85% of Canada's coal output.²⁵ Vale, Rio Tinto and BHP Billiton account for the majority of world-wide iron ore trade.²⁶ Exploration, sand and gravel, and mining supply and support services, on the other hand, are dominated by small and medium-sized enterprises. Exploration companies depend on attracting financing for their projects.

While commodity prices can be volatile, depressed prices over the medium- to long-term can have a negative effect on mining operations and employment. Between 2002 and 2008, the price of energy and metals more than doubled before the commodity market severely corrected itself in late 2008 as a result of global economic slowdown. Following the 2009 recession and bottoming out of commodity markets, W-T's mining industry began its recovery. Mining operators diversified their markets targeting Asia as a major trading partner for W-T mining products. However, beginning with the economic debt crises in Europe (2009-2014) and a slowdown in China's economic growth (beginning December 2014) there has been a drop in demand and a world-wide oversupply for many of Canada's raw materials, particularly metals. And, even in 2016 uranium prices are still reeling from the 2011 Fukushima nuclear disaster in Japan (previously third in the world in nuclear production), with world stockpiles remaining high.²⁷

Coal operations in W-T have scaled back operations, shuttered non-productive mines and delayed new project investment due to low world prices and a weak medium-term outlook.

Potash production has been curtailed due to struggling markets in Eurasia. In 2015 Potash Corp cut production at three mines as a result of declining prices and a negative outlook. BHP Billiton announced recently that it will wait out the potash market before beginning production at its Jansen mine. Given a flat forecast for Potash the Saskatchewan government is approaching the royalty review process slowly.²⁸

The Alberta government announced in 2015 that it would accelerate the phase out of coal fired plants. Coal is used to generate over half the electricity in Alberta according to the Coal Association of Canada.

British Columbia is ranked second in Canada for mineral exploration expenditures, with almost 20% of all exploration spending taking place in this province in 2015. A BC's Ministry of Energy & Mines report showed that exploration has slowed since 2011, a trend that continued in 2015.

The outlook for mining prospects in Western Canada's provinces and the Territories is cautious in the short-term. Low commodity prices and a green energy push in Alberta suggest that the industry will likely scale back output, shutter less productive mines, and delay investment in new projects in anticipation of market recovery beginning in 2017-18.

EMPLOYMENT OUTLOOK

Among the Western provinces, Saskatchewan is expected to experience the most rapid growth in mining and quarrying between 2015 and 2017 with an estimated growth in employment of 2,000 workers. BC will also add 1,200 workers to the sector over the same period. However, Alberta and the Yukon will likely see job losses from 2015-17.

Regionally, Regina & Southern Saskatchewan (+5.2%) is expected to experience the strongest employment growth between 2015 and 2017. While Northern Alberta, Edmonton, Red Deer, Camrose, and Drumheller are expected to experience the strongest decline (between -0.5 and -0.6%). BC's Lower Mainland and Vancouver Island are also expected to see employment declines between -0.6% and -0.3%, respectively

Projected employment change for the mining and quarrying industry during the 2015-2017 forecast period

Economic Region	Projected Change in Employment	Projected Annual Growth
Manitoba	200	1.7%
Southern Manitoba		1.7%
Winnipeg		1.7%
Northern Manitoba		1.7%
Saskatchewan	2,000	5.2%
Regina & Southern Saskatchewan		4.7%
Saskatoon & Northern Saskatchewan		5.4%
Alberta	-100	-0.5%
Calgary & Southern Alberta		-0.6%
Edmonton, Red Deer, Camrose, & Drumheller		-0.3%
Northern Alberta and Banff		-0.6%
British Columbia	1,200	2.9%
Vancouver Island & Coast		1.3%
Lower Mainland - Southwest		3.3%
Okanagan - Kootenay		3.3%
Northern BC		2.1%
Yukon*	80	-3.3%
Northwest Territories*	660	12.1%
Nunavut*	-50	2.8%

Source: Service Canada Regional Occupational Outlooks in Canada, 2015-2017

*Due to data limitations, the territorial forecast represents employment for the entire Mining, Oil & Gas sector. (According to the 2011 National Household Survey, the share of employment in Mining and Quarrying within the larger sector represented about 38% in the Yukon, 80% in NWT, and 78% in Nunavut.)

REGIONAL OVERVIEW

Many rural and remote communities depend on mining for their livelihood, even if not involved in primary production. However, the high cost of exploration and mine development and infrastructure deficits are challenges for investment.

- **Northern Manitoba:** Hudbay Minerals launched two metal mining projects in northern Manitoba in 2014: the Reed copper mine and the Lalor Mine.²⁹ However in early 2016 Hudbay announced it would limit exploration to the Lalor mine in Snow Lake, but increase output. In the meantime, Hudbay suspended its miner training program in Flin Flon. Vale has shut down nickel smelting and refining activities in Thompson and indicated it would cease operations in Manitoba by 2018.³⁰

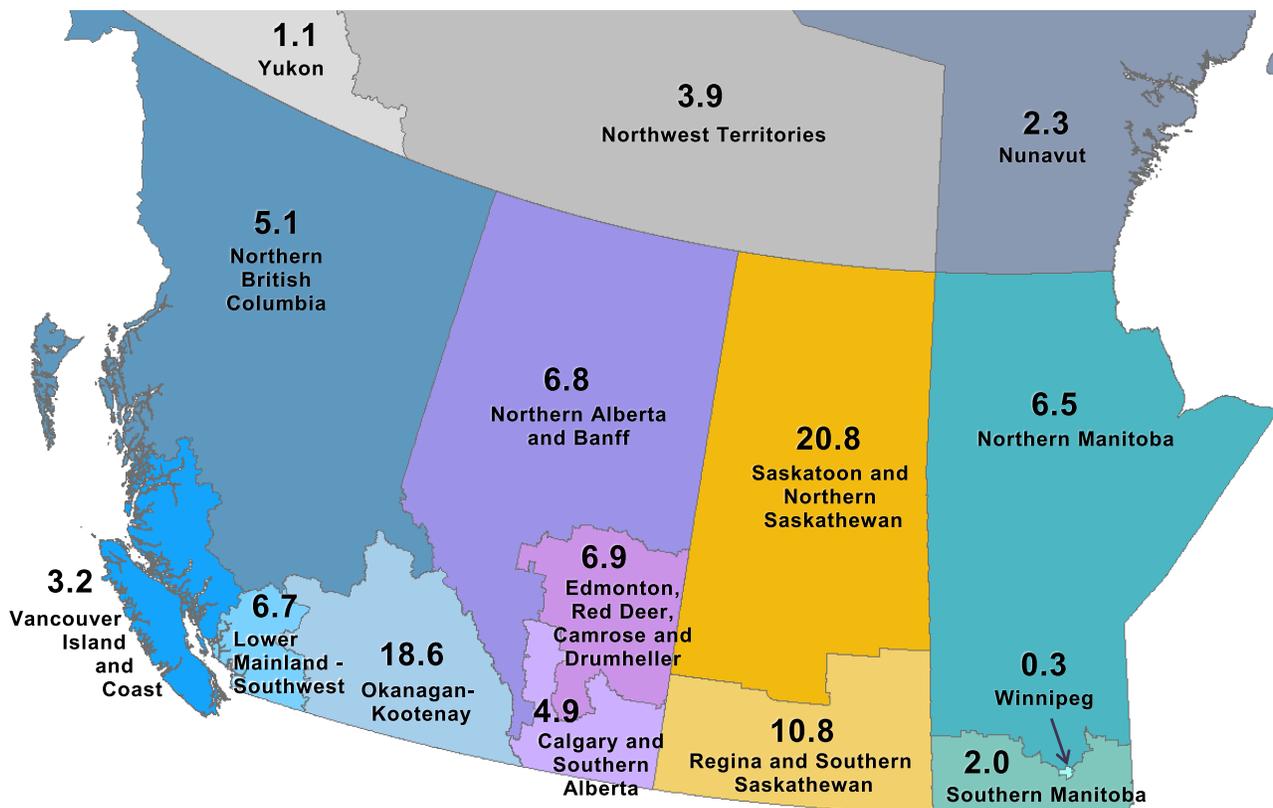
- **Saskatoon and Northern Saskatchewan:** In 2015 Cameco's Cigar Lake mine in the Athabasca Basin was launched employing workers mainly from the northern part of the province. Cigar Lake is the world's second largest known high grade uranium deposit.³¹ De Beers has staked a claim to the decommissioned Cluff Lake uranium mine in the Athabasca Basin for diamond exploration.³² In 2016 Cameco halted uranium production at Rabbit Lake Mine laying off of 500 workers as a result of persistently low uranium prices.³³ Cameco is also reviewing its corporate headquarters staffing in Saskatoon.³⁴ Agrium, Saskatchewan's third largest potash producer, increased potash production at its Vanscoy facility in 2015 as a result of expansion.³⁵ However, Mosaic laid employees at Colonsay potash mine in 2015/16 due to persistent low demand and market prices.³⁶
- **Regina and Southern Saskatchewan:** Vale suspended work on a potash mine at Kronau in late 2015 due to global price slumps.³⁷ However K+S Potash Legacy Mine is gearing up to hire workers at its new facility in Bethune, anticipating a rebound in Potash prices by the end of 2017.³⁸ Southern Saskatchewan holds nearly half of the world's potash reserves and accounts for over 90% of Canada's potash production.
- **Northern Alberta and Banff:** Grand Cache Coal laid off workers in 2015 due to the decline in metallurgical coal prices. Mine operations in Grande Cache are expected to be for up to two years. Retailers in the town reported lower sales.³⁹ Ironstone Resources has delayed opening an iron mine and production plant near Fairview until 2021 while commodity prices recover.⁴⁰
- **Edmonton, Red Deer, Camrose and Drumheller:** On the supply side, the Natural Sciences and Engineering Research Council granted \$1.65M over 6 years for a new Diamond Exploration Research and Training School at the University of Alberta in Edmonton towards specialized training for geoscientists.⁴¹
- **Calgary and Southern Alberta:** The town of Hanna is concerned about the government of Alberta hastening closure of a nearby coal mine and coal-fired plant.⁴²
- **Northern British Columbia (BC):** The northeast region of BC has been adversely affected by declining coal prices. In 2014, four coal mine operations were suspended: The Quintette and Wolverine mines (Tumbler Ridge) and Brule and Brazion mines (near Chetwynd).⁴³ In 2016, Walter Energy filed for bankruptcy and put three coal mines in Chetwynd and Tumbler Ridge up for sale.⁴⁴ Over 2015/16, Taseko's Gibraltar copper-molybdenum mine (near Williams Lake) reduced its workforce as a result of declining copper prices.^{45,46} After suspending production in 2014, Thompson Creek Metals placed its Endako molybdenum mine on care and maintenance in 2015.⁴⁷ Imperial Metals announced that the Huckleberry mine (near Houston) will shut down in 2016 as copper prices approach a seven-year low.⁴⁸ Imperial Metals laid off workers at Mount Polley copper-gold mine (near Likely) in 2015 as a result of a tailings pond breach in 2014.⁴⁹ However, in June 2016, the BC Ministry of Energy and Mines authorized the Mount Polley mine to return to full production.⁵⁰ The drop in coal production and shipment has also impacted Ridley Terminals, a crown corporation, in Prince Rupert where coal from Northeastern BC is shipped for export.⁵¹
- **Okanagan-Kootenay:** The Kootenay region is home to Teck Resources metallurgical coalfield Fording River operations, near Elkford. In 2015, Teck Resources laid off workers in its Highland Valley Copper mine (near Logan Lake) and is expected to close its Coal Mountain mine (near Sparwood) in 2017.^{52, 53} Two proposed

projects by other mining firms: Ajax Copper Gold (Kamloops) and Harper Creek Mine (near Chu Chua) will likely be on hold until commodity metal prices rise.⁵⁴

- **Vancouver Island and Coast:** Nystar's Myra Falls zinc and copper mine (near Campbell River) has been idling since 2015 as owners wait for commodity prices to go up.⁵⁵ Hillsborough Resources suspended operations at Quinsam mine due to low thermal coal prices.⁵⁶
- **Lower Mainland-Southwest:** The Lower-Mainland region is a global leader for mineral exploration expertise. There are approximately 1,200 exploration companies headquartered in BC, with the majority located in Vancouver.⁵⁷
- **Nunavut:** Most exploration investment targets precious metals in the region. Agnico Eagle's Meadowbank gold mine in the Kivalliq region was the company's largest gold producer in 2015. Many workers at this operation are on a fly-in, fly-out basis.⁵⁸ Anginco Eagle has a *Development Partnership Agreement* with the government of Nunavut for jobs and investment. However the life of the mine is expected to end in 2018.⁵⁹ Baffinland opened the Mary River mine on northern Baffin Island in 2014, but cut wages by 10% in response to low global iron ore prices in 2015.⁶⁰ TMAC Resources discovered three gold deposits at Hope Bay that could turn into a mining operation for the next 20 years starting in 2016. The Doris North gold mine will likely become Nunavut's second operating gold mine with benefits for the Kitikmeot Inuit Association and Inuit in the region by 2017.⁶¹ Mining companies in Nunavut increased their exploration spending by over 30% in 2015.⁶²
- **Yukon:** A 2015 survey of mining companies found that Yukon was the number one spot for mineral potential, but 9th in terms of investment attractiveness.⁶³ There are only two active metals mine sites in the Yukon: Strata Gold's (Victoria Gold) Eagle Gold mine near Mayo and Capstone's Minto copper mine (near Marsh Lake).⁶⁴ Capstone Mining has slowed production and indicated that it may temporarily close the Minto Mine in 2017 due to low copper prices.⁶⁵ In 2015, the Wolverine zinc mine (near Watson Lake) suspended operations due to a sharp decline in zinc prices.⁶⁶ Gold mining activity in the Yukon decreased noticeably in 2015. Veris Gold abandoned its Ketzka gold mine near Ross River in 2015 requiring the government of Yukon to take over the care and maintenance.⁶⁷
- **Northwest Territories:** Northwest Territories (NWT), renowned for diamonds, has felt the effect of declining diamond prices. China, a major consumer of diamonds as jewellery, has slowed its demand for the commodity. However, work at new and existing diamond mines has soldiered through 2015. NWT Minister of Industry, Tourism and Investment indicated that diamond production contributes to 18% of the Territories' gross domestic product (GDP), creating thousands of jobs.⁶⁸ In 2015, diamond production shrank to 14.7% of GDP in NWT.⁶⁹ A 2014 Northwest Territories government survey found that the number of non-territorial residents working in diamond mines has almost doubled since 2009, while resident worker numbers rose 20%.⁷⁰ However, in late 2015, De Beers closed Snap Lake mine (North-east Yellowknife) and laid off 434 workers. By 2016, 96 of the Snap Lake affected workers were hired at Gahcho Kué diamond mine which is expected to be in production for 12 years.⁷¹ North American Tungsten temporarily closed its Cantung Mine in Tungsten on the Yukon/ Northwest Territories border in 2015 due to low tungsten prices.⁷² Dominion Diamond temporarily laid off workers at Ekati diamond mine in 2016 as a result of a fire.⁷³ Almost half of the workers at Ekati mine site live outside the territory.⁷⁴ Prairie Creek

Mine (lead-zinc) temporarily closed in early 2016 as a result of low zinc prices.⁷⁵ Kennady Diamonds is planning to expand a camp northeast of Yellowknife by March 2017.⁷⁶ BHP Billiton has indicated that it will be investing \$40M in a copper-zinc project on Somerset Island over a 9 year period.⁷⁷ In 2015, the Government of Northwest Territories issued its first ever call for bids for oil & gas exploration licences in the Central Mackenzie Valley.⁷⁸ The Territorial government is also developing a new Mineral Resources Act to increase the competitiveness for the mining sector.⁷⁹

Distribution of employment in the mining and quarrying sector across Western Canada (%)



Source: Service Canada Regional Occupational Outlooks in Canada, 2015-2017

Note: Data for the Territories includes employment for the entire Mining, Oil & Gas sector. According to the 2011 National Household Survey, the share of employment in Mining and Quarrying within the larger sector represented about 38% in the Yukon, 80% in NWT, and 78% in Nunavut.

Note: In preparing this document, the authors have taken care to provide clients with labour market information that is timely and accurate at the time of publication. Since labour market conditions are dynamic, some of the information presented here may have changed since this document was published. Users are encouraged to also refer to other sources for additional information on the local economy and labour market. Information contained in this document does not necessarily reflect official policies of Employment and Social Development Canada.

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