

# Lynn Lake Project

Economic impact  
assessment

May 2021

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# Executive summary

Alamos Gold is advancing an open-pit gold mining project near Lynn Lake, Manitoba (“Lynn Lake Project”). In this context, Alamos Gold has retained PricewaterhouseCoopers, LLP (“PwC” or “we”) to provide a review of the state of the mining industry in Manitoba and assess the potential economic impacts of the Lynn Lake Project for Canada, Manitoba and the Northern Region of Manitoba.

The Lynn Lake Project is a prospective gold camp consisting of four near surface deposits with some existing infrastructure and a history of past production. The Lynn Lake Project consists of two primary deposits: the MacLellan Mine and the Gordon Mine, which were the subject of a Feasibility Study published in December 2017.

## Economic impact of the Lynn Lake Project

Based on the results of the 2017 feasibility study, PwC assessed the economic impact of the Lynn Lake Project for both the mine development phase and ongoing mine operations. The following table shows the total economic impacts that would be created in Manitoba over the life of the mine, including two years of development and ten years of ongoing operations. A discount rate of 5% was applied to calculate the total present value of the economic impacts below, except for person years of employment. Including indirect (supply chain) and induced (employee spending) impacts, the total economic impact of the project is \$965 million in GDP, \$684 million in labour income, 11,030 person year jobs and \$416 million in total taxes, of which \$163 million are provincial taxes.

**Table 1: Economic impacts in Manitoba**

Impact types	GDP (\$ thousands)	Labour income (\$ thousands)	Employment in person years	Total tax revenue (\$ thousands)
Direct	636,627	534,035	6,258	
Indirect	75,994	41,788	1,001	
Induced	252,409	108,196	3,772	
<b>Total</b>	<b>965,030</b>	<b>684,020</b>	<b>11,030</b>	<b>415,551</b>

Further exploration at the Lynn Lake site may identify additional deposits that would allow Alamos to extend the planned mine life, thereby increasing the economic impact of the mine.

## Economic impacts in the North

The Northern region of Manitoba represents 4.8% of overall employment in the province and 41.6% of employment in forestry, fishing, mining, quarrying, oil and gas. The Lynn Lake Project would generate economic activity in Manitoba’s Northern region through direct employment, purchases of inputs such as machinery, and spending by employees in the region. Of the GDP impact generated by the Lynn Lake Project in Manitoba, 69% would occur in the Northern region, equivalent to \$664 million.

## The mining industry in Manitoba

The mining industry directly contributed \$35.0 billion to the Canadian gross domestic product (GDP) in 2019. In that year, mining activity in Manitoba accounted for 2% of Canada’s mining GDP. Over the past 20 years, Manitoba’s mining GDP has been on a downward trend, decreasing from \$1.2 billion at its peak in 2000 to \$622 million in 2020. Development of the Lynn Lake project would represent a significant boost to the Manitoba mining industry as a share of total mining activity in the province.

# Introduction

Alamos Gold is advancing an open pit gold mining project at Lynn Lake, Manitoba (“the Lynn Lake Project”). Alamos consolidated full ownership of Lynn Lake through its acquisition of Carlisle Goldfields in January 2016. The Lynn Lake Project is one of the highest-grade open pit gold deposits in Canada with significant exploration potential. Moreover, some infrastructure in Lynn Lake is already in place. Alamos expects to develop the site over two years, and operate it for over ten years. Annual production levels are expected to average 170,000 ounces for the first six years of mine life and an average of 143,000 ounces annually over years one through ten.

The map below shows the anticipated site location<sup>1</sup>



<sup>1</sup> Source: Canadian Environmental Assessment Agency <https://www.acee-ceaa.gc.ca/050/evaluations/proj/80140?culture=en-CA>

Alamos Gold engaged PricewaterhouseCoopers LLP (“PwC,” “we,” or “us”) to assess the economic impact of the Lynn Lake project on Manitoba’s economy. In assessing the economic impact of the Lynn Lake Project, we have estimated the contribution of the project on GDP, employment, labour income, and taxes during development and on an annual basis for steady state ongoing operations. The results of our analysis are measures of commonly considered economic variables and the total contribution to each variable of the industry’s activities.

Unless otherwise specified, the figures in this report are expressed in 2017 Canadian dollars.

The following PwC staff contributed to this study:

- Michael Dobner – Partner, Leader of PwC Canada’s Economics Practice
- Gemma Stanton-Hagan – Manager, Economics Practice

## Scope of review

To prepare this assessment, we have reviewed and, where appropriate, relied upon various documents and sources of information. By general classification, these sources include the following:

- Data provided by Alamos Gold on planned expenditures during development and ongoing operations
- Manitoba Bureau of Statistics Economic Impact Assessment Model and Tax Revenue Impact Assessment Model
- Secondary sources including Statistics Canada and Natural Resources Canada

A complete list of the documents and sources we reviewed is available in Appendix B.

# Overview of the mining industry in Canada

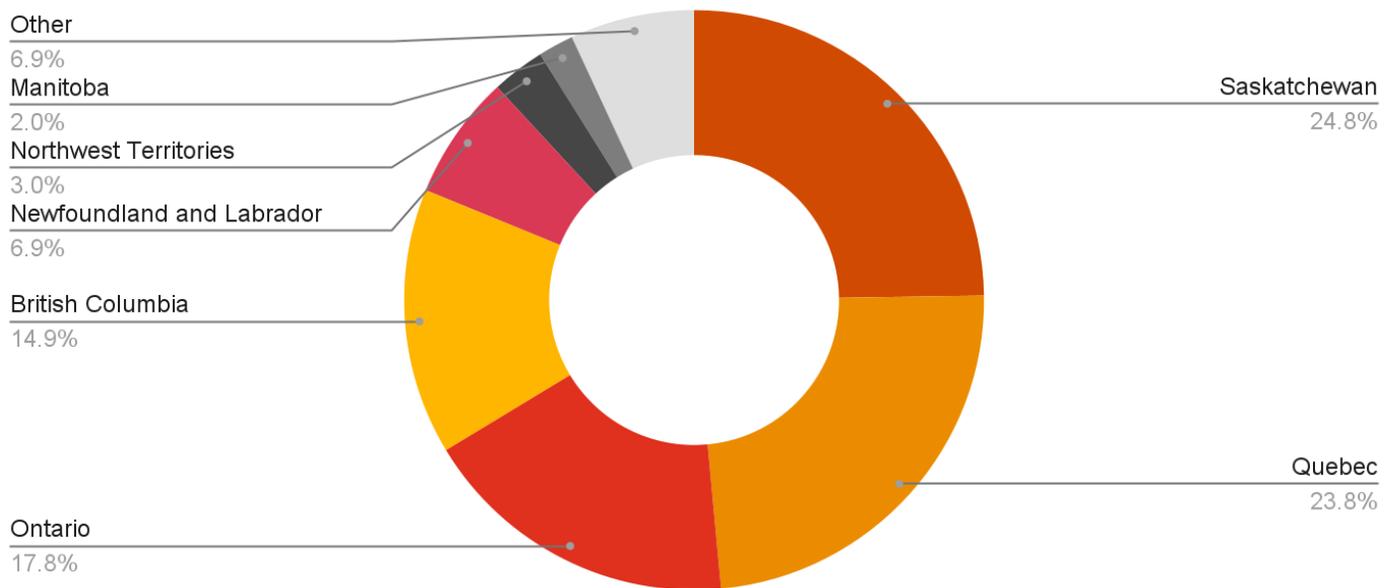
This section provides an overview of mining industries across Canada and presents general trends of the industry regarding GDP, employment, and investment, comparing Manitoba with other provinces.

## Mining GDP

Mining activity in Canada generates significant economic activity at the local, provincial, and national level. It provides economic and social benefits through job creation, local purchases, and tax revenue. Mining is particularly important to Northern and remote regions in Canada.

In 2019, direct mining GDP in Canada was \$35.0 billion in chained 2012 dollars, or 2% of Canada's total GDP. As shown in [Figure 1](#), the provinces that accounted for the largest shares of Canada's mining GDP in 2019 were Saskatchewan (25%), Quebec (24%), Ontario (18%), and British Columbia (15%). Manitoba accounted for 2% of Canada's mining GDP. For the purposes of this report, 2019 has been used as a base year to control for the economic challenges presented by COVID-19 in 2020.

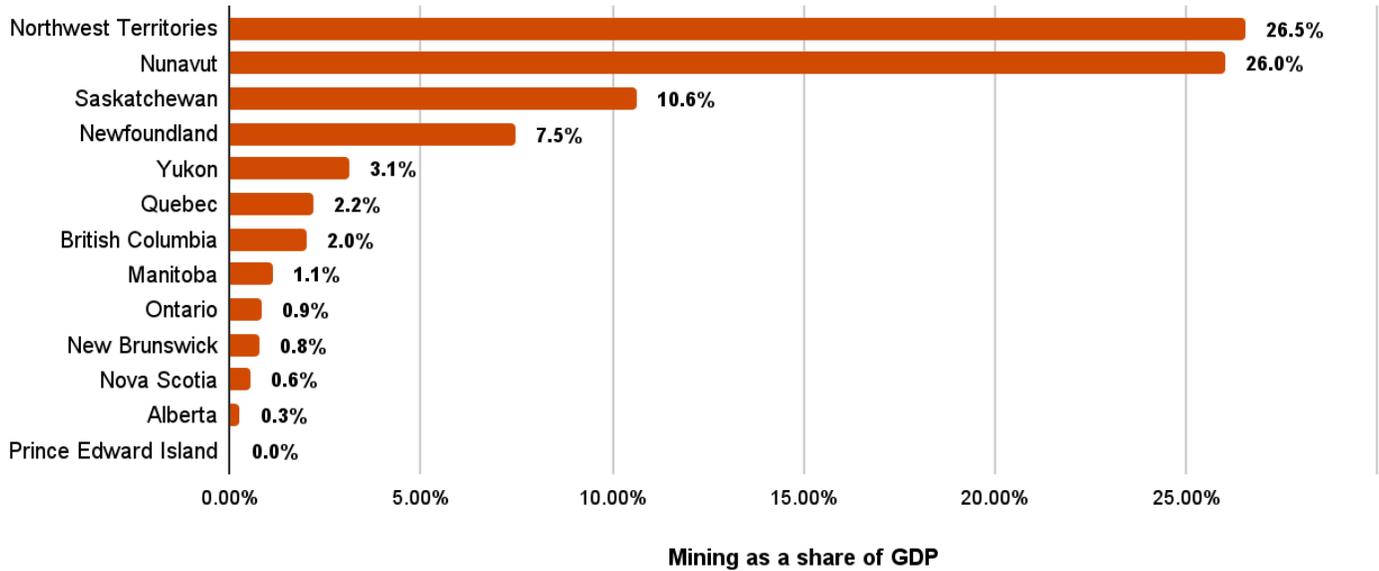
**Figure 1: Provincial Share of Canadian mining GDP, 2019<sup>2</sup>**



Within Manitoba, mining accounted for 1.1% of provincial GDP in 2019. The jurisdictions with the highest mining shares of GDP were the Northwest Territories, Nunavut and Saskatchewan, while Manitoba's share was also below that of the major mining provinces of Quebec and British Columbia.

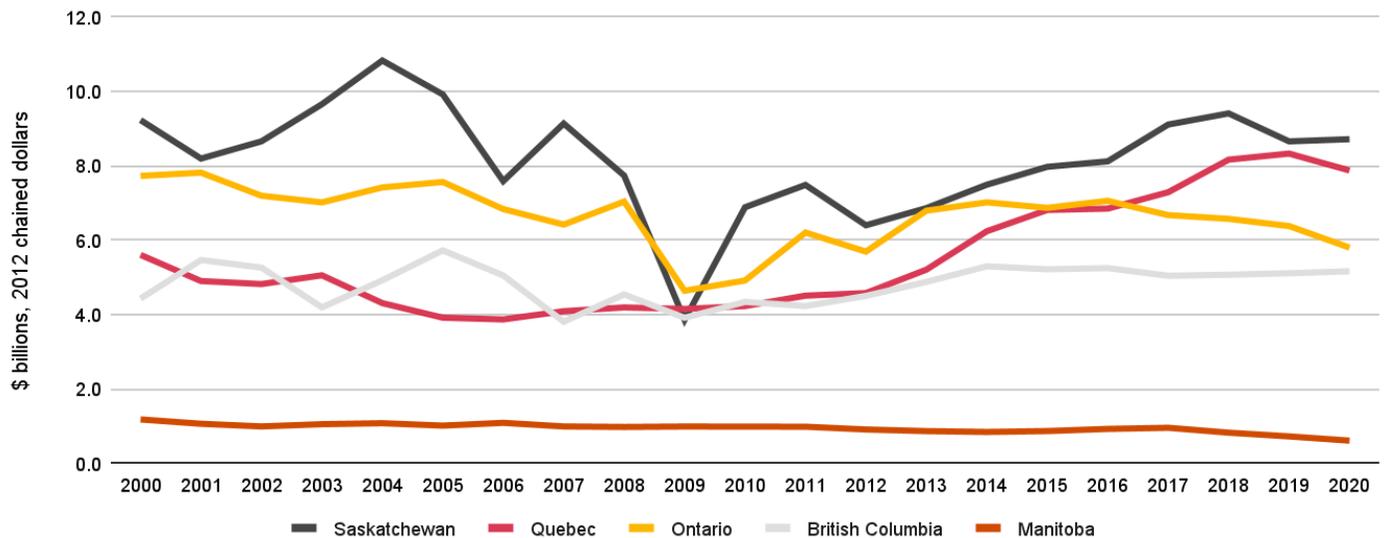
<sup>2</sup> Statistics Canada CANSIM Table 36-10-0402-01, Gross domestic product (GDP) at basic prices, by sector and industry, provincial and territorial (x 1,000,000)

**Figure 2: Mining Industry Share of Provincial GDP by Province, 2019<sup>3</sup>**



Over the decade leading up to 2017, mining GDP in Manitoba held steady between \$900 million and \$1 billion in chained 2012 dollars. In 2018 it dropped slightly to \$822 million, and again to \$722 million in 2019. A likely contributor is that two Manitoba mines closed in 2017 (Vale’s Birchtree mine in Thompson and Hudbay’s Reed Mine near Flin Flon). In 2020 it dropped to \$608 million (or about 16%), likely impacted by the pandemic. This compares to a decrease of 4% in Canada as a whole. With the exception of 2020, mining GDP in Saskatchewan and Quebec, Canada’s largest mining jurisdictions, was growing. The Lynn Lake project would make a significant contribution to mining GDP in Manitoba: annual direct GDP contribution during operation would be approximately \$63 million, or 9% of Manitoba’s 2019 mining GDP.

**Figure 3: Mining GDP by province, chained 2012 dollars<sup>4</sup>**

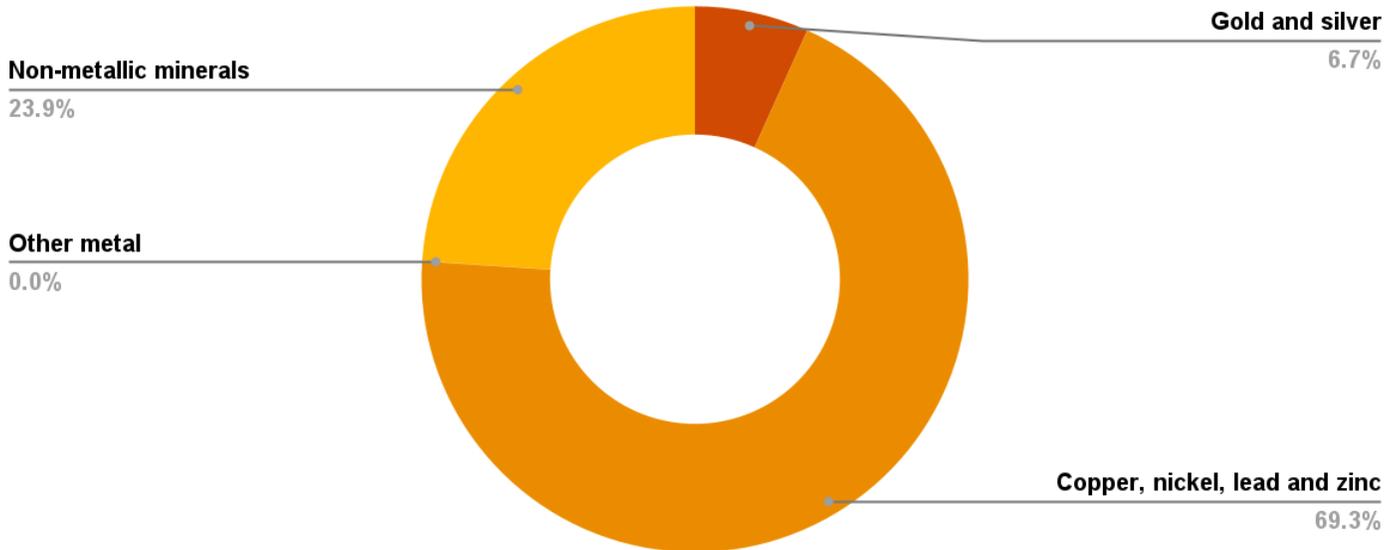


<sup>3</sup> Ibid

<sup>4</sup> Ibid

The majority of mining activity in Manitoba is for copper, nickel, lead and zinc ore. In 2019, gold and silver ore mining accounted for 7% of Manitoba's mining GDP. As noted above, the Lynn Lake project would account for approximately 9% of Manitoba's 2019 mining GDP, thus significantly increasing the contribution of gold and silver to total mining GDP in Manitoba.

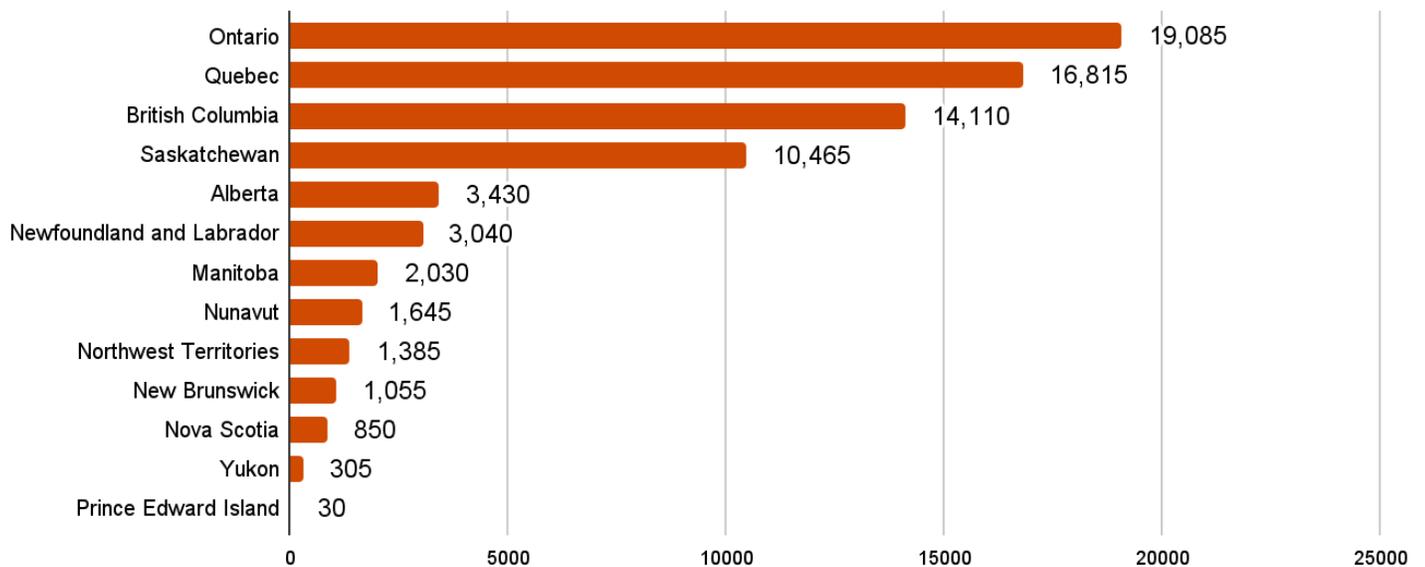
**Figure 4: Manitoba mining GDP by commodity, 2019<sup>5</sup>**



## Mining employment

In 2019, mining accounted for 73,360 direct jobs in Canada, of which about half were in Ontario (26%) and Quebec (23%) combined. In Manitoba, there were just over 2,000 jobs in the mining industry.

**Figure 5: Mining employment by province, 2019<sup>6</sup>**

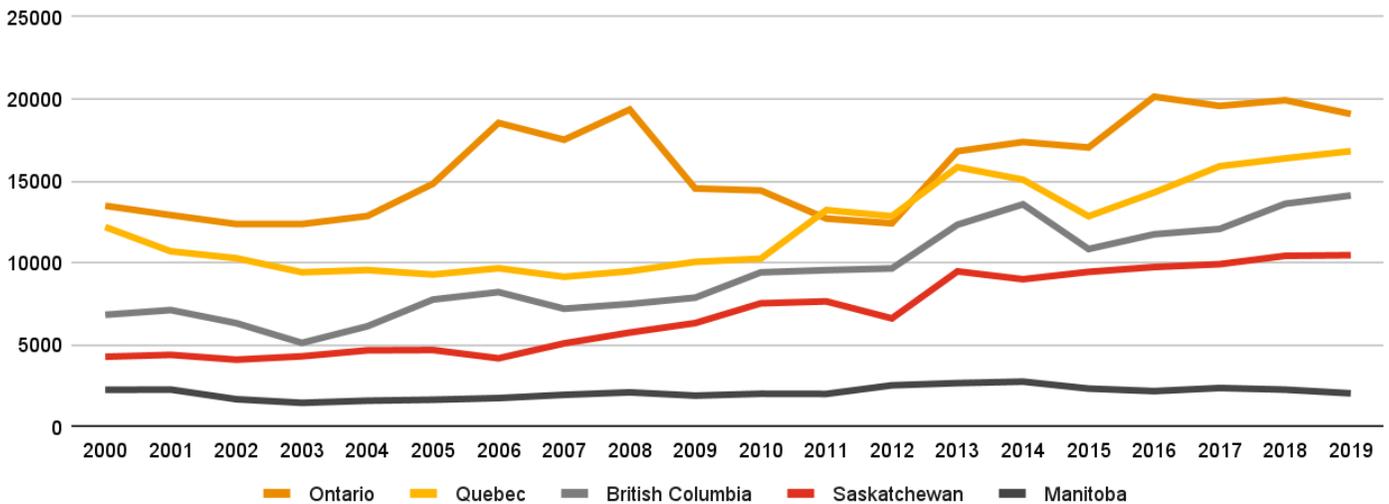


<sup>5</sup> Ibid

<sup>6</sup> Statistics Canada Table 36-10-0489-01, Labour statistics consistent with the System of National Accounts (SNA), by job category and industry

Among the provinces with the highest mining employment (Ontario, Quebec, British Columbia, and Saskatchewan), employment has been on an upward trend since 2015. In Manitoba, however, employment has been steady at just over 2,000 jobs. The Lynn Lake project would directly employ approximately 400 people on an annual basis over the life of the mine, which would represent a significant share of Manitoba’s mining employment (20% of 2019 employment, for example).

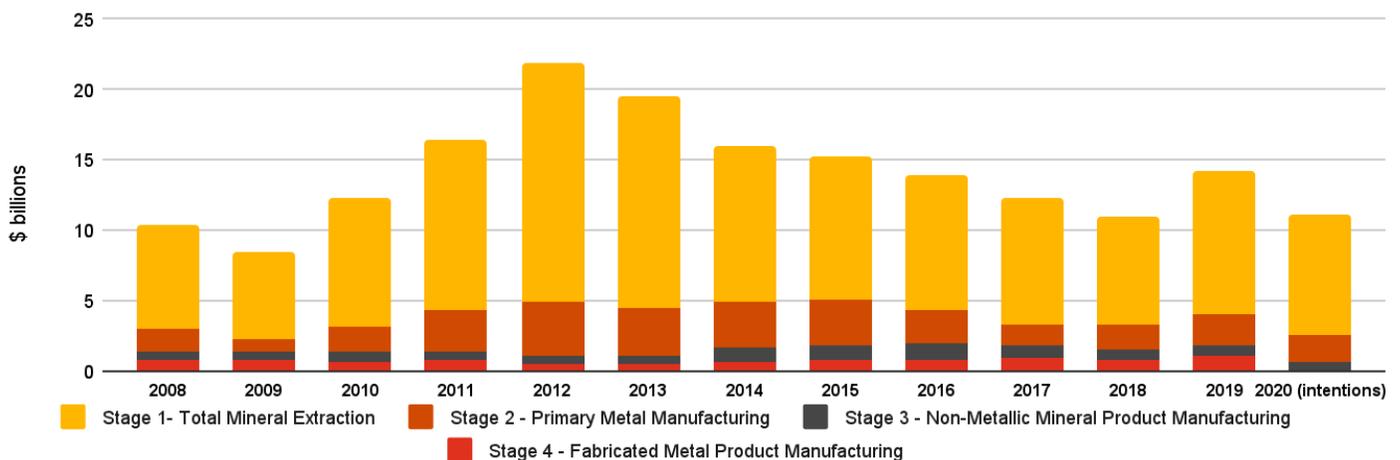
**Figure 6: Mining employment by province<sup>7</sup>**



## Investment in the mining industry

Capital spending enables new mine construction, increases existing mine capacity, sustains mine operations, and improves efficiency. It is an indicator of investors’ confidence in future market conditions and the business environment in a particular jurisdiction. In 2019, the mining industry accounted for 4% of total capital spending in Canada of \$224 billion in current dollars.<sup>8</sup> As shown in [Figure 7](#), most mining-related capital expenditure is spent on extraction.

**Figure 7: Mining related capital expenditures in Canada, current dollars<sup>9</sup>**



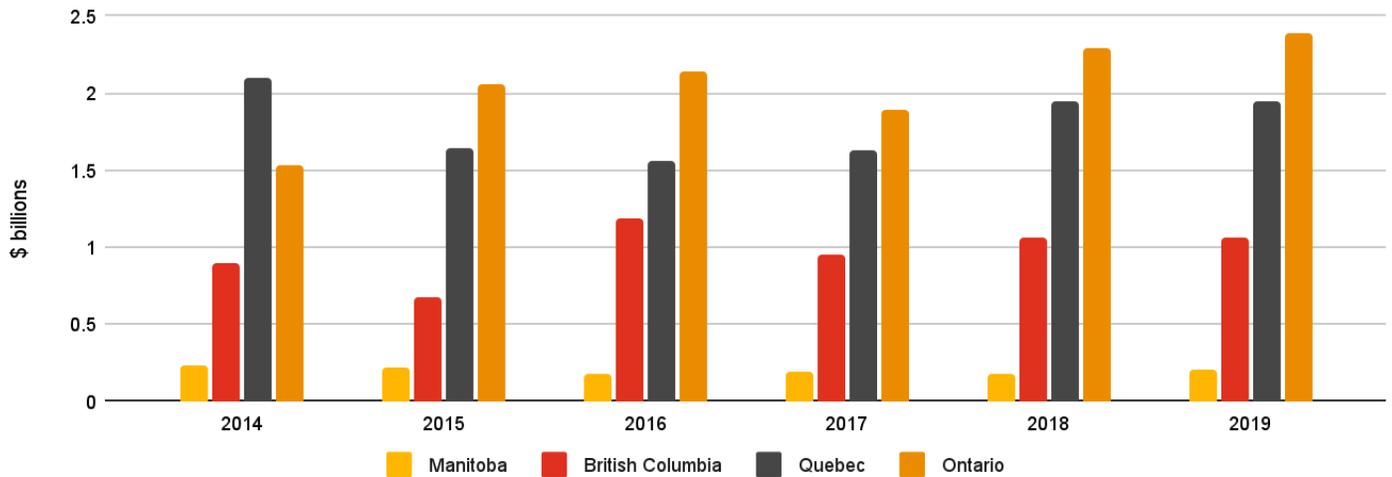
<sup>7</sup> Statistics Canada Table 36-10-0489-01, Labour statistics consistent with the System of National Accounts (SNA), by job category and industry

<sup>8</sup> Statistics Canada. Table 34-10-0035-01 Capital and repair expenditures, non-residential tangible assets, by industry and geography (x 1,000,000)

<sup>9</sup> Mining Association of Canada Facts and Figures

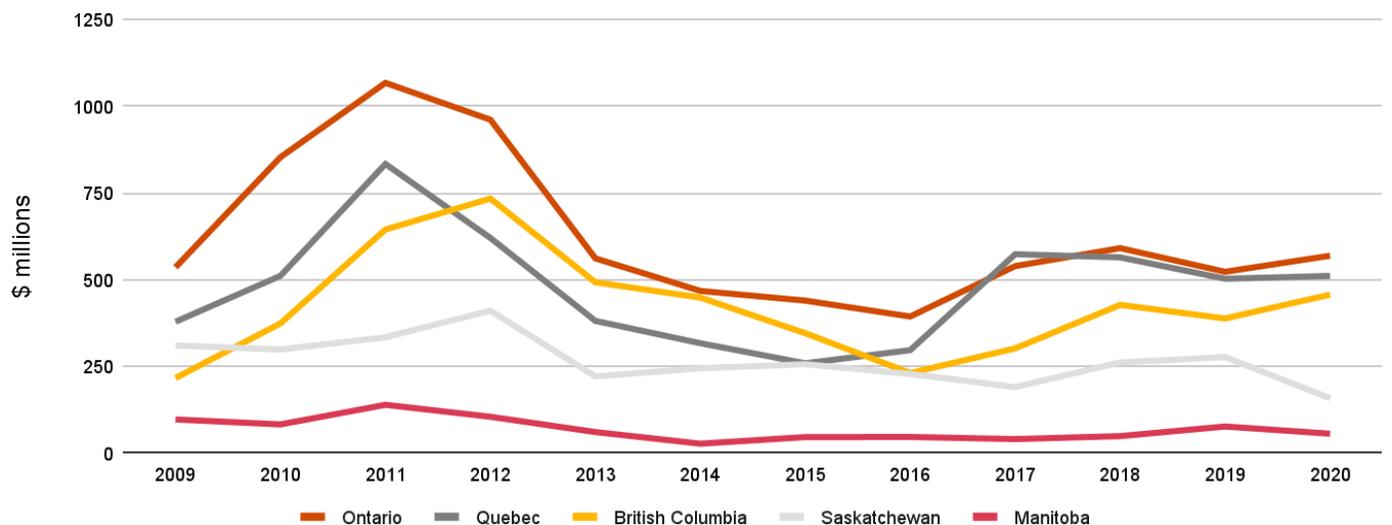
As illustrated by [Figure 8](#), capital expenditures in the mining industry vary by province. Since 2016, mining capital expenditure has been increasing in Quebec and largely increasing in Ontario, while the trend for Canada overall has been decreasing. Mining capital expenditure in Manitoba in 2019 is estimated at \$199.9 million, a decrease from the 2014 value of \$233.8 million, in current dollars. Alamos' spending on the Lynn Lake mine would significantly boost Manitoba's capital investment figures: planned pre-production capex is \$450.6 million in 2017 dollars over two years.

**Figure 8: Mining related capital expenditures by province, current dollars<sup>10</sup>**



Exploration spending is another indicator of upcoming investment. It represents the geological potential in a jurisdiction, as well as perceptions about commodity prices and the policy and regulatory environment. As shown in [Figure 9](#), overall trends are similar to capital spending, with increases in Ontario, Quebec, and British Columbia. Exploration spending in Manitoba was increasing over the last few years, growing from \$41 million in 2017 to \$77 million in 2019.

**Figure 9: Mining exploration and deposit appraisal spending by province, current dollars<sup>11</sup>**



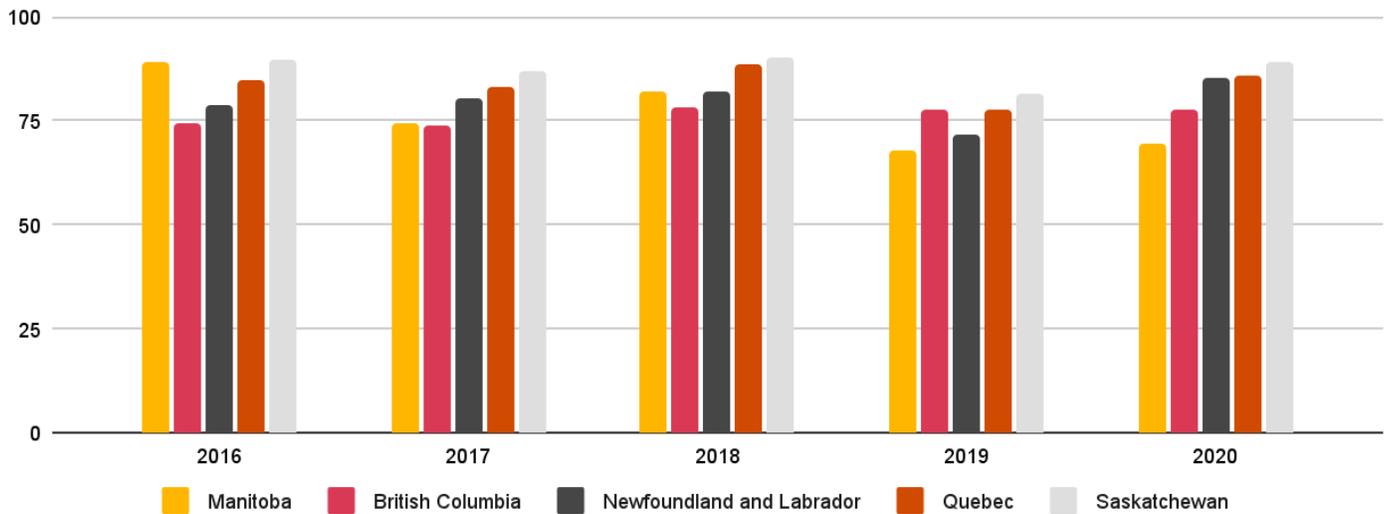
<sup>10</sup> How to cite: Statistics Canada. Table 34-10-0035-01 Capital and repair expenditures, non-residential tangible assets, by industry and geography (x 1,000,000)

<sup>11</sup> Natural Resources Canada, 2019

## Attractiveness to mining investment

The Fraser Institute annually assesses the investment attractiveness of mining jurisdictions around the world through its Annual Survey of Mining Companies. Although this study may be subject to response bias, it is valuable as a measure of investor sentiment. The Survey's Investment Attractiveness Index takes into account both policy perception and investor confidence. [Figure 10](#) shows the attractiveness index for the top provinces between 2016 and 2020. The three most attractive jurisdictions in Canada were Saskatchewan, Quebec, and Newfoundland and Labrador. Manitoba's Investment Attractiveness Index decreased from 80.05 in 2016 to 69.61 in 2020, when it was ranked as the ninth-most attractive jurisdiction in Canada. Uncertainty around disputed land claims, protected areas, and socioeconomic agreements are cited as reasons for the relatively low rating.

**Figure 10: Fraser Institute Investment Attractiveness Index for top rated Canadian provinces**



# Lynn Lake Project economic impact assessment

We have estimated the economic impact of the proposed Lynn Lake Project over the life of the mine, which includes an anticipated two years of construction, more than ten years of operation, and a closure period. Over the mine life, Alamos anticipates \$647.5 million in capital expenditure, including initial capital, sustaining capital and closure, and \$1.3 billion in operational spending, in 2017 dollars.<sup>12</sup>

Additional exploration at the site has the potential to further increase the operating life, along with associated spending and employment.

## Provincial impacts

The following table shows the net present value of the economic impacts in Manitoba over the life of mine i.e. the number of years for mine development and operation<sup>13</sup>. We have applied a discount rate of 5% to estimate the net present value of the project. Employment is expressed in full-time equivalent person years. In total over the life of mine, the economic impact of the project would be \$965 million in GDP, \$684 million in labour income, 11,030 person year jobs and \$415 million in total taxes, of which \$163 million are provincial taxes.

**Table 2: Economic impacts in Manitoba**

Impact types	GDP (\$ thousands)	Labour income (\$ thousands)	Employment in person years
Direct	636,627	534,035	6,258
Indirect	75,994	41,788	1,001
Induced	252,409	108,196	3,772
<b>Total</b>	<b>965,030</b>	<b>684,020</b>	<b>11,030</b>

**Table 3: Total tax impact, thousands of dollars**

Type of taxes	Total impact
Provincial taxes	162,691
Personal income tax	65,128
Corporate income tax and mining tax	7,498
Other direct taxes	82,962
Indirect taxes	18,329
Carbon tax	7,337
Local taxes	34,434
Federal taxes	160,796
<b>Total taxes</b>	<b>415,551</b>

<sup>12</sup> Alamos Gold, Lynn Lake 2018 43-101 Feasibility Study

<sup>13</sup> For the purpose of our analysis, reclamation and closure activity was included in the last year of operating life.

## Regional impacts

The following table shows the net present value of the economic impacts in the Northern region of Manitoba over the life of the mine. Overall, 69% of the total GDP impact takes place in the Northern region. Note that tax impacts were not estimated for the Northern region specifically, because of the uncertainty around the types and value of taxes collected at the regional level.

**Table 4: Economic impacts in Manitoba's Northern region, thousands of dollars**

Impact types	GDP
Direct	636,627
Indirect	6,286
Induced	20,877
<b>Total</b>	<b>663,789</b>

# Appendices

# Appendix A: Methodology

## Input-output

The fundamental philosophy behind economic impact analysis is that spending on goods and services has attendant impacts throughout the economy. For instance, mining will generate demand for the inputs to this process (such as tools and labour) that in turn generates additional demand that extends beyond the initial spending. Our analysis permits the estimation of this cascading effect by using the input-output model of the Manitoba economy.

The input-output model used for the purpose of this report estimates the relationship between economic activity for a given good or service and the resulting impacts throughout the economy (including demand for other goods and services and tax revenues). For the purpose of this report, economic impacts were estimated for the following measures of economic activity:

- **Value added or GDP** – the value added to the economy, or the output valued at basic prices less intermediate consumption<sup>14</sup> valued at purchasers' prices. GDP includes only final goods to avoid double counting of products sold during a certain accounting period.
- **Employment** – the number of FTE jobs created or supported.
- **Labour income** – the amount earned by the employment expected to be generated from existing operations.
- **Government revenue** – the amount of revenue collected by the provincial, local and federal government. It includes personal and corporate income taxes collected on a provincial level and territorial, as well as other direct and indirect taxes.

Economic impacts are typically estimated at the direct, indirect and induced levels:

- **Direct impacts** are those that result directly from the company's expenditures on labour and capital as well as gross operating profits.
- **Indirect impacts** arise from the activities of the firms providing inputs to the company's suppliers (in other words, the suppliers of its suppliers).
- **Induced impacts** are the result of consumer spending by employees of the businesses stimulated by direct and indirect expenditures.

The input-output model for Manitoba, used for the purpose of this assessment, was developed based on Statistic Canada's model and is maintained by the Government of Manitoba. Alamos' own estimates of provincial corporate income tax and mining tax were used in place of the model's estimates.

## Regional impacts

In addition to the province-wide impacts, we have estimated the economic impacts associated with the Lynn Lake Project at a sub-provincial level. The regional impacts were estimated for the Northern region of Manitoba, which consists of the following four Manitoba census divisions: 19, 21, 22 and 23. Refer to Statistics Canada 2016 Census for exact definition of the census divisions used.

In order to allocate the above impacts to the four census divisions of Manitoba, we applied a location quotient to each industry affected by the project. A location quotient is an analytical statistic that measures a region's (in this case, the four census divisions considered) industrial specialization relative to a larger geographic unit (Manitoba). We compute the location quotient as an industry's share of a regional total for employment by economic area divided by the industry's share of the provincial total for employment in each industry affected.

Note that direct impacts, by definition, occur at the project site, which is located within the four census divisions. Indirect and induced impacts were allocated to each region based on the methodology described above.

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<sup>14</sup> Defined as the value of goods and services used or transformed as inputs by a process of production.

# Appendix B: References

**Alamos Gold (2018). NI 43-101 Technical Report: Feasibility Study for the Lynn Lake Gold Project, Manitoba, Canada.**

Fraser Institute (2019). Fraser Institute Annual Survey of Mining Companies 2018.

Mining Association of Canada (2019). Facts and Figures of the Canadian Mining Industry 2018.

Natural Resources Canada (2019). Canadian Mineral Exploration Information Bulletin. Retrieved from: <https://www.nrcan.gc.ca/maps-tools-publications/publications/minerals-mining-publications/canadian-mineral-exploration-information-bulletin/17762>

Statistics Canada CANSIM Table 36-10-0402-01, Gross domestic product (GDP) at basic prices, by sector and industry, provincial and territorial (x 1,000,000)

Statistics Canada Table 36-10-0489-01, Labour statistics consistent with the System of National Accounts (SNA), by job category and industry

# Appendix C: Limitations

**Data limitations:** PwC has relied on the information provided by Alamos regarding the provincial allocations of operating and capital expenses of Alamos' business operations in Canada. PwC has relied upon the completeness, accuracy, and fair presentation of all information and data obtained from Alamos and the various sources set out in our report, which were not audited or otherwise verified. The findings in this report are conditional upon such completeness, accuracy, and fair presentation, which have not been verified independently by PwC. Accordingly, we provide no opinion, attestation or other form of assurance with respect to the results of this study.

Where the information or data provided is not sufficient to conduct the analysis that has been requested, we have made assumptions, as noted throughout the report.

**Receipt of new data or facts:** PwC reserves the right at its discretion to withdraw or revise this report should we receive additional data or be made aware of facts existing at the date of the report that were not known to us when we prepared this report.

**Input-output analysis:** Input-output analysis (a model used to estimate Gross Domestic Product ("GDP") and employment impact) does not address whether the inputs have been used in the most productive manner or whether the use of these inputs in this industry promotes economic growth by more than their use in another industry or economic activity. Nor does input-output analysis evaluate whether these inputs might be employed elsewhere in the economy if they were not employed in this industry at the time of the analysis. Input-output analysis calculates the direct, indirect and induced economic impacts that can reasonably be expected to affect the economy based on historical relationships within the economy. This analysis does not take into account fundamental shifts in the relationships within the economy that may have taken place since the last estimation of multipliers by Statistics Canada, nor shifts that may take place in the future.

**Use limitations:** This report has been prepared solely for the use and benefit of, and pursuant to a client relationship exclusively with Alamos. We understand that Alamos may share our report with third parties. Alamos can release this report to third parties only in its entirety and any commentary or interpretation in relation to this report that Alamos intends to release to the public either requires PwC's written consent or has to be clearly identified as Alamos's own interpretation of the report or Alamos is required to add a link to the full report. PwC accepts no duty of care, obligation or liability, if any, suffered by Alamos or any third party as a result of an interpretation made by Alamos of this report.

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**This report and related analysis must be considered as a whole:** Selecting only portions of the analysis or the factors considered by us, without considering all factors and analysis together, could create a misleading view of our findings. The preparation of our analysis is a complex process and is not necessarily susceptible to partial analysis or summary description. Any attempt to do so could lead to undue emphasis on any particular factor or analysis.

We note that significant deviations from the above listed major assumptions may result in a significant change to our analysis.



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