MANITOBA ANALYTICS

Economic Contribution of the Oil and Mineral Mining Industry in Manitoba

Introduction

Global oil and mineral mining has been going through many challenges in recent years, including volatile commodity prices, technological innovations, and trade policies. There are concerns that these challenges may be causing a gradual decline in Canada's oil and mineral mining position in the world. For Manitoba, the oil and mineral mining sector is an important contributor to the provincial economy generating an annual average of $2.15 billion in economic activity over the past decade, a 3.70% share of provincial Gross Domestic Product (GDP).[1] Given the market challenges, growth in the sector has been levelling off in recent years.

This report provides insight into the main contributions of the oil and mineral mining production sector to Manitoba's economy. The first section of the report provides a broad overview of oil and mineral supply chain activity in Manitoba, including its industries, main product uses, assets, and key trends. The second section, using data from Statistics Canada, Natural Resources Canada and the Manitoba Petroleum Branch, provides an economic trend analysis of key macroeconomic elements including economic output, gross domestic product, labour income, employment, international trade, and capital investment. The third section expands on this through an economic impact analysis of the sector and its component industries in Manitoba. The report concludes with a summary assessment as well as suggestions for addressing some of the opportunities and challenges shaping the sector.

Manitoba's Oil and Mineral Mining Production Sector

Commercial Mineral Uses

Manitoba's oil and mineral mining sector is comprised of three industries, as follows:

a) Metal Production
- *Zinc*: This is mainly used to galvanize metals to prevent rusting. It is also used in manufacturing paints, rubbers, cosmetics, pharmaceuticals, plastics, inks, soaps, batteries, textiles, nuts and bolts.
- *Nickel*: This is primarily used in producing stainless steel. It is also used in manufacturing batteries, kitchen ware, mobile phones, medical equipment, buildings, power generation and jewelry.
- *Gold*: This is used in manufacturing jewelry, dental appliances (e.g. filings, crowns and bridges) and medical appliances, electronics, computers, coins, medals and statues.
- *Copper*: This is used in electrical wiring, motors, cables, plumbing, roofing, cookware, power generation and transmission, industrial machinery and transportation vehicles.
- *Silver*: This is used in jewelry, tableware, solder, dentistry, batteries, light-emitting diode (LED) chips, medicine, photography, solar energy panels, electric car components, radio-frequency identification (RFID) tags, semiconductors, touchscreens and water purification.
- *Lithium*: This is used for batteries, drugs, high temperature ceramics, fluxes and lubricants.
- *Cesium*: This is used for cesium formate drilling fluid, catalysts, doping agents, brazing fluxes, photoelectric cells, vacuum tube manufacturing and infrared lamps.

[1] In this report, the term Gross Domestic Product (GDP) refers to Real Gross Domestic Product (Real GDP), a measure that is adjusted to account for inflation.

- *Tantalum*: This is used to improve strength, ductility and corrosion resistance in metal alloys. It is used for capacitors, semi-conductors, ballistics, medical devices, surgical implants and closures, high temperature cutting tools, optical applications, sonic wave filters and turbine blades.
- *Rubidium*: This is used in manufacturing atomic clocks (used in global navigation systems, cell and television base stations), photocells, ceramics, fireworks, batteries, and used as a catalyst in laser cooling and in medical imaging.
- *Cobalt*: This is used in electroplating, engine and magnetic alloys, rechargeable batteries, orthopedic implants, radiation therapy, sterilization, nutrition, and the blue colour in ceramics.

b) Non-Metal Production
- *Stone*: This is mainly used as heat and acid corrosion resistant liners, building stone, wall cladding, flooring and patio stones, countertops, landscape applications, head stones, memorials and mausoleums.
- *Crushed Rock Aggregate*: This is mainly used in road, concrete and building construction.
- *Sand and Gravel*: This is mainly used in concrete, for landscaping, road bases, unpaved roads, asphalt, roofing shingles, water filtration and for traction on icy surfaces.
- *Gypsum*: This is mainly used in wallboard construction, cement, plaster of Paris and soil conditioning.
- *Salt*: This is mainly used for chemical applications, road de-icing and table salt.
- *Peat*: This is used for soil products such as seeding, container gardening, patching lawns and growing beds.
- *Silica Sand (quartz)*: This is primarily used for glass, ceramics, foundry sand, abrasives, pesticides, hydraulic fracturing, soluble silicates for the chemical industry and filtration.

c) Oil Fuel Production
- This is mainly used for transportation fuel, fuel oils for heating, electricity generation, asphalt and road oil, and feedstock for making chemicals, plastics and synthetic materials.

Supply Chain

Oil and mineral mining is a cyclical sector with high operating and capital costs occurring over a long investment horizon. The sector is also challenged by public demands to enhance environmental performance and Indigenous engagement. Addressing these issues in a meaningful manner better allows for a predictable and reliable environment that is conducive for attracting larger scale investment and fostering industry competiveness.

There are four stages to the oil and mineral mining supply chain. The first two involve production of raw materials and the last two involve value-added processing of products. The four stages include primary production, smelting and refining, semi-fabrication, and fabrication. This report focuses on primary production.

1) *Primary Production* – involves exploration activity leading to the discovery of oil or ore as well as its extraction and processing.
2) *Smelting and Refining* – entails the smelting and refining of ores, as well as their roasting, calcining, direct reducing and leaching. Oil refining also occurs at this stage.
3) *Semi-Fabrication* – the processing or manufacturing of commodities to bring them to a semi-finished or semi-fabricated stage. The product may also be used as an input in other industries.
4) *Fabrication* – involves the further processing of products from the previous stage.

Manitoba's ability to respond to local, national and international demand for oil and mineral commodities is based on its production and distribution assets. With respect to mineral production, Manitoba has seven metal mines[2], two smelters and three refineries[3]. There are also 29 facilities for non-metal processing including five for peat, fourteen for sand and gravel, eight for stone, two for gypsum and one for salt. As for oil production, Manitoba has thirteen designated oil fields, 171 producing oil pools, and 3,918 producing oil wells (out of 5,241 wells capable of production).

[2] Of the seven mines, four are currently active and three are under care and maintenance.
[3] Hudbay operates a hydrometallurgical zinc plant in Flin Flon, which is expected to close in 2022. Vale's smelter and refinery in Thompson were shut down in 2018.

As for distribution, commodities are transported to markets for further processing and future commercial use. Most metal ores are shipped by rail[4] for smelting and refining in Sudbury, Ontario with non-metals relying on a combination of truck and rail for additional processing. Gypsum is processed into a final product in Winnipeg. Oil produced in southwestern Manitoba is shipped by pipeline and rail to refineries in the United States and to Regina, Saskatchewan.

Key Trends

For many years, Canadian provinces relied on the export of primary resources in agriculture, forestry and mineral mining to fuel their economic growth. Then in the 1960s and continuing into the next century, export reliance shifted to manufactured goods. To enhance export growth, new legislation was developed, primarily focusing on trade with the United States, such as with the Canada – United States Free Trade Agreement in 1989 and the North America Free Trade Agreement in 1994. When China joined the World Trade Organization in 2001, an additional commodity boom for oil and minerals occurred in Canada.

Technological innovations played an important role in advancing the resource sector. Originally developed in the 1950s in the United States, fracking technology using horizontal drilling became widely used by 2010. New oil discoveries in places such as North Dakota and in the Gulf of Mexico meant less reliance on foreign sources, which contributed to lower prices in 2014.

Increasing global demands for oil and minerals from 2004 to 2014 led to rising commodity prices, particularly for crude oil, and a strengthened Canada – United States exchange rate. The appreciation of the Canadian dollar provided favorable conditions for capital investment in Manitoba during this period, where significant upgrades occurred in plants, machinery and equipment.

By 2010 it became increasingly important for resource companies to engage and partner with local communities, particularly with Indigenous peoples, to gain their acceptance to operate a mining facility in or near their community. The aim is to ensure natural resources are properly managed in a sustainable way for future generations, accounting for environmental impacts and meeting minimum labour standards, while respecting community views. Having government and industry consult and engage with Indigenous peoples is critical to the commercial success of mining companies as well as for the long term economic development of Indigenous communities.

In recent years, ongoing economic uncertainty due to trade tensions, softening investment and weakened consumer demand resulted in subdued growth for the sector. **Figure 1** captures this pattern of growth for Manitoba's oil and mineral mining sector up to 2019.

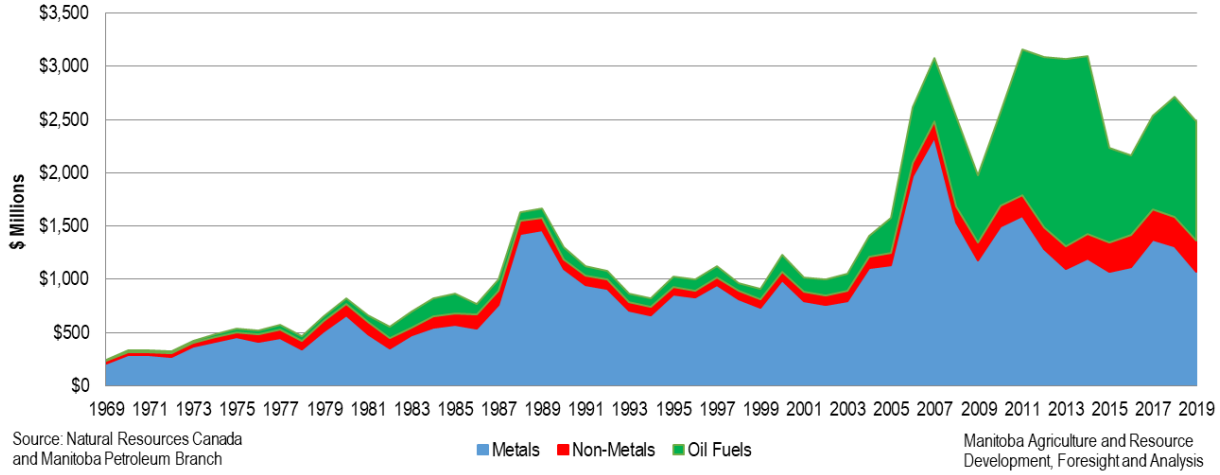
[4] Zinc ore is trucked from Snow Lake to Flin Flon.

Economic Trend Analysis of Manitoba's Oil and Mineral Mining Sector

Value of Production / Output (Sales Revenue)

As reflected in **Figure 1**, after facing a period of stagnation in the 1990s, demand for Manitoba's oil and minerals picked up starting in 2004, peaking in 2011 and dropping off slightly in recent years. The rise in sales began with metals followed by oil fuels. By 2012, oil fuel sales overtook mineral sales for the first time in Manitoba's history due to strong demand and high prices. Total sales increased by 10.93% from $2.24 billion in 2015 to $2.48 billion in 2019 at a compounded annual growth rate (CAGR) of 2.63%, mainly driven by a 26.04% increase in oil fuel sales.

FIGURE 1: MANITOBA OIL & MINERAL MINING SALES REVENUE



Source: Natural Resources Canada and Manitoba Petroleum Branch

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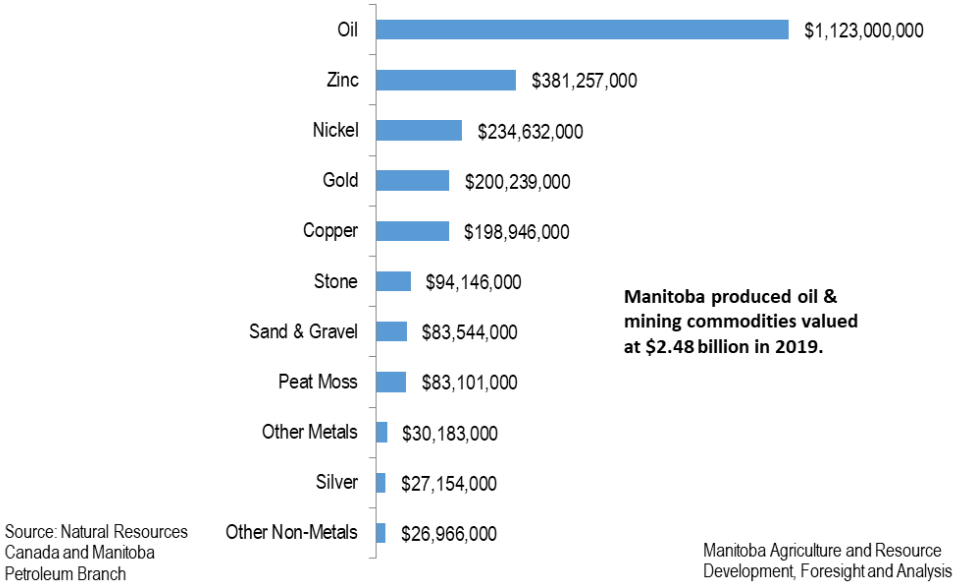
As illustrated in **Figure 2**, the top sales revenue generating commodities in 2019 were oil at $1.12 billion, followed by metals (e.g. zinc, nickel, gold, copper, silver and others) at $1.07 billion and then by non-metals (e.g. stone, sand & gravel, peat and others) at $288 million.

FIGURE 2: MANITOBA OIL & MINERAL MINING SALES IN 2019



Source: Natural Resources Canada and Manitoba Petroleum Branch

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Gross Domestic Product (GDP) / Value Added

Gross Domestic Product represents the value of all final goods produced and services provided, which provides a better snapshot of a sector's size, economic health and growth. A healthy, growing oil and mineral sector is important for attracting business investment to Manitoba. **Table 1** captures GDP for the oil and mineral mining sector, comparing to other sectors and the overall Manitoba economy. Over the last five years, the sector's GDP has been declining by 2.73% each year, from $2.20 billion to $1.97 billion. This compares with growth in Manitoba's Total Real GDP of 1.81%.

Looking at the industries within the sector, metals experienced the greatest decline in GDP during this five-year period at 7.33% followed by oil fuels at 1.17%, which were offset by growth in non-metals at 4.92%. Compared to the other sectors in Manitoba's economy, the oil and mineral sector is the largest goods-producing sector experiencing a declining GDP, primarily arising from declining commodity prices.

TABLE 1: MANITOBA OIL AND MINERAL MINING - GROSS DOMESTIC PRODUCT (GDP) BY INDUSTRY

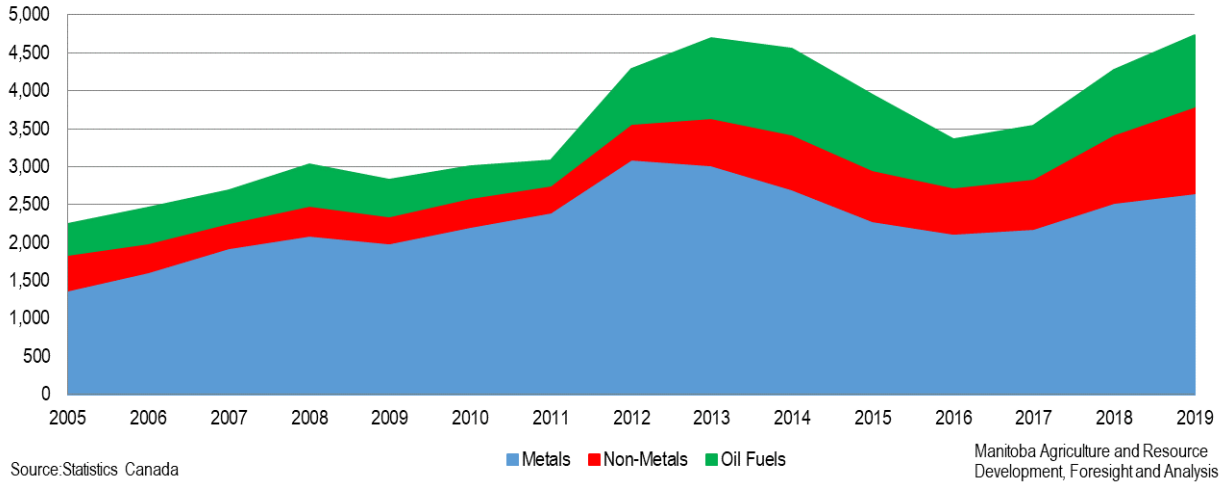
Industry	2015 ($ million)	2016 ($ million)	2017 ($ million)	2018 ($ million)	2019 ($ million)	CAGR 2015-2019
Agriculture, forestry, fishing and hunting	2,957	3,060	3,400	3,348	3,266	2.51%
Oil & Mineral Mining	***2,198***	***2,085***	***2,065***	***2,014***	***1,967***	*-2.73%*
Metals	*826*	*851*	*860*	*717*	*609*	*-7.33%*
Non-Metals	*129*	*147*	*148*	*153*	*156*	*4.92%*
Oil Fuels	*1,245*	*1,082*	*1,055*	*1,133*	*1,188*	*-1.17%*
Utilities	1,934	2,017	2,069	2,007	2,160	2.80%
Construction	4,337	4,306	4,593	4,742	4,815	2.64%
Manufacturing	6,002	5,846	6,046	6,233	6,141	0.57%
Wholesale trade	3,035	3,027	3,174	3,125	3,039	0.04%
Retail trade	3,176	3,260	3,465	3,492	3,495	2.42%
Transportation and warehousing	3,612	3,741	3,974	4,128	4,166	3.63%
Information and cultural industries	1,672	1,750	1,693	1,748	1,773	1.48%
Finance and insurance	3,154	3,284	3,343	3,354	3,431	2.13%
Real estate and rental and leasing	7,458	7,669	7,868	8,079	8,276	2.64%
Professional, scientific and technical services	1,866	1,987	1,988	2,056	2,109	3.10%
Management of companies and enterprises	410	348	352	331	305	-7.12%
Administrative, waste management and remediation services	997	1,023	1,030	1,018	1,018	0.51%
Educational services	3,362	3,424	3,503	3,572	3,652	2.09%
Health care and social assistance	5,345	5,416	5,547	5,629	5,766	1.91%
Arts, entertainment and recreation	444	457	470	477	468	1.34%
Accommodation and food services	1,138	1,172	1,227	1,251	1,284	3.07%
Other services (except public administration)	1,154	1,155	1,180	1,166	1,150	-0.08%
Public administration	4,762	4,809	4,866	4,982	5,043	1.45%
Manitoba Total Real GDP	**59,083**	**59,967**	**61,933**	**62,863**	**63,487**	**1.81%**

Source: Statistics Canada — Manitoba Agriculture and Resource Development, Foresight and Analysis

Employment and Labour Income

The level of employment is one of the key indicators to economic growth. When employment is increasing, it reflects growth in demand and shows that there are greater opportunities to produce value for a business. The trend in **Figure 3** shows increasing employment for the sector, growing 57.57% over the last ten years, or 5.18% on an annual basis, with most of that growth coming from the non-metal and oil fuel industries. In the last five years, employment growth has been strong, a growth of 19.87% or 4.65% annually, from 3,950 to 4,735 full-time equivalent (FTE) jobs.

FIGURE 3: MANITOBA OIL & MINERAL MINING EMPLOYMENT



Source:Statistics Canada

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Labour income is an important factor in attracting a skilled workforce. Though remuneration for the oil and mineral mining sector has been flat in recent years, as shown in **Table 2**, average annual compensation of $101,563 in 2019 for the sector far exceeds the average salary of $56,498 for Manitoba workers by 79.76%. Clearly, the sector is providing attractive compensation even though income growth of 0.01% is stagnant and not keeping up with inflation.[5] In terms of each industry, metals provides the most attractive compensation, followed by oil fuels and non-metals, with all three exceeding the average income for Manitoba. In recent years, the oil industry has been experiencing a salary decline of 4.56% per year, likely due to subdued market conditions as well as using technology and equipment that requires fewer employees.

TABLE 2: MANITOBA OIL AND MINERAL MINING - AVERAGE ANNUAL SALARY

Average Salary	2015 ($/year)	2016 ($/year)	2017 ($/year)	2018 ($/year)	2019 ($/year)	CAGR 2015-2019
Manitoba	52,115	52,615	54,128	55,272	56,498	2.04%
Oil & Mineral Sector	101,513	101,868	105,004	102,462	101,563	0.01%
Metals	112,590	116,060	121,710	120,035	121,992	2.03%
Non-Metals	59,736	62,036	64,605	66,566	66,494	2.72%
Oil Fuels	104,139	92,617	91,194	88,671	86,416	-4.56%

Source: Statistics Canada

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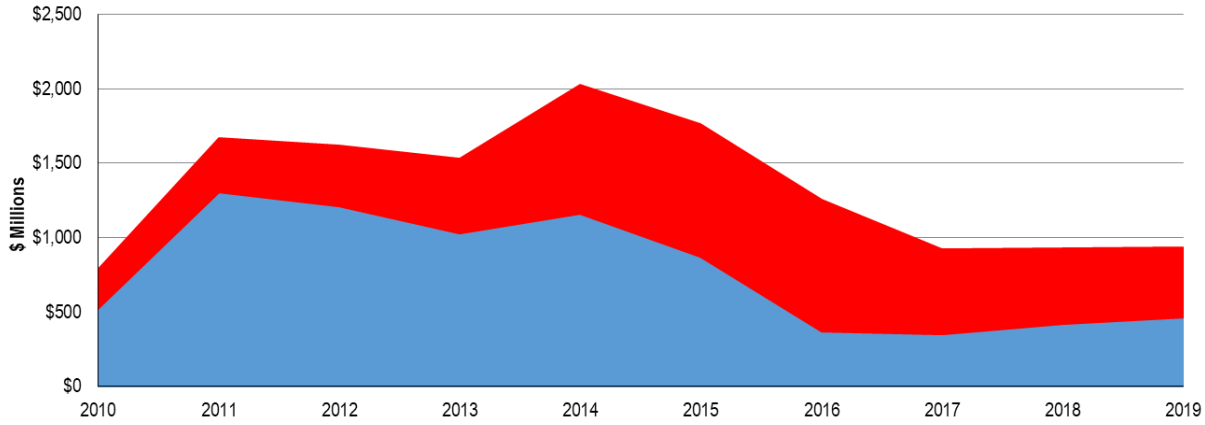
International Trade / Exports and Imports

International exports are also important to Manitoba's economic growth. As seen in **Figure 4**, Manitoba's oil and mineral international exports peaked in 2011, declining slowly afterwards, due to reduced exports to Manitoba's top buyers in the United States, China, Bulgaria and Germany. This amounts to a ten-year decline of 11.43% or 1.34% annually. In 2015, oil and minerals imports from abroad surpassed exports for the first time. Though fluctuating from 2010 to 2019, total international

[5] Manitoba's inflation rate averaged 2.2% in 2019, above the Canadian rate of 1.9%. Source: *Manitoba Economic Highlights*, Manitoba Finance. August 7, 2020.

trade for the oil and mineral mining sector grew by 19.31%. This was offset over the last five years, as total international trade declined annually by 14.77% from $1.76 billion to $931 million.

FIGURE 4: MANITOBA OIL & MINERAL MINING - TOTAL INTERNATIONAL TRADE



Source:Statistics Canada, Trade Data Online

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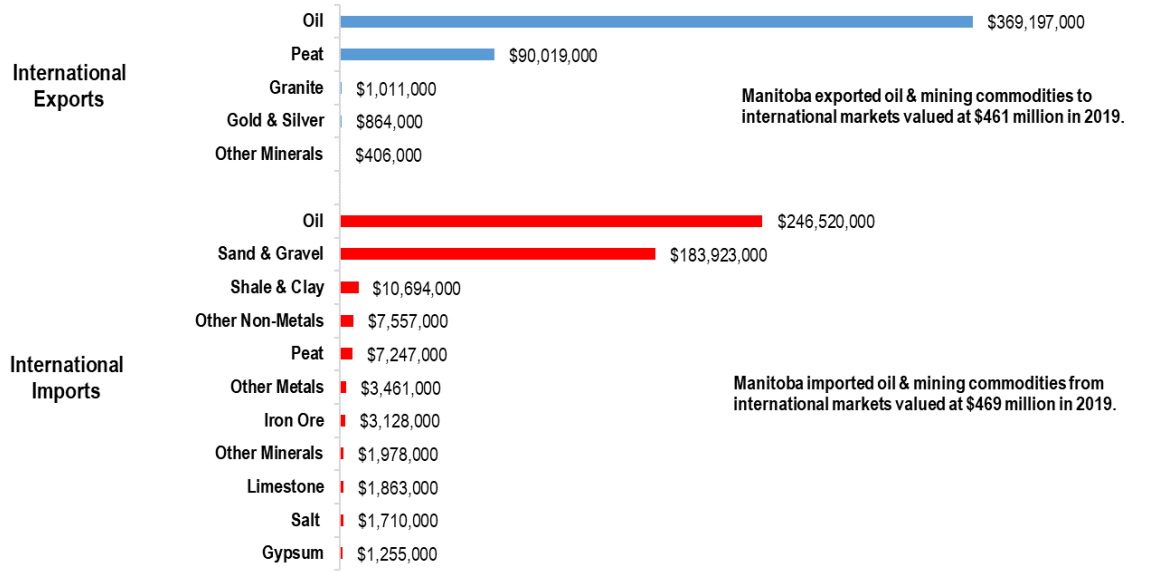
Despite a slowdown in economic activity in many advanced countries, Manitoba had a relatively good year in 2019. As reflected in **Figure 5**, Manitoba's top international exports by value were oil, peat and granite and for imports, oil, sand and gravel, and shale and clay were key purchases.

FIGURE 5: MANITOBA OIL & MINERAL MINING INTERNATIONAL EXPORTS & IMPORTS IN 2019



Source:Statistics Canada, Trade Data Online

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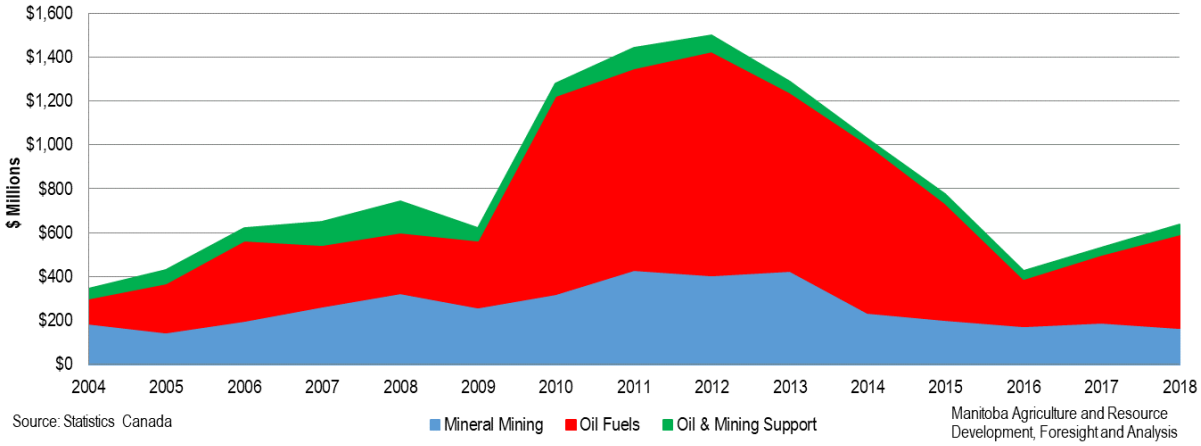
Capital Investments

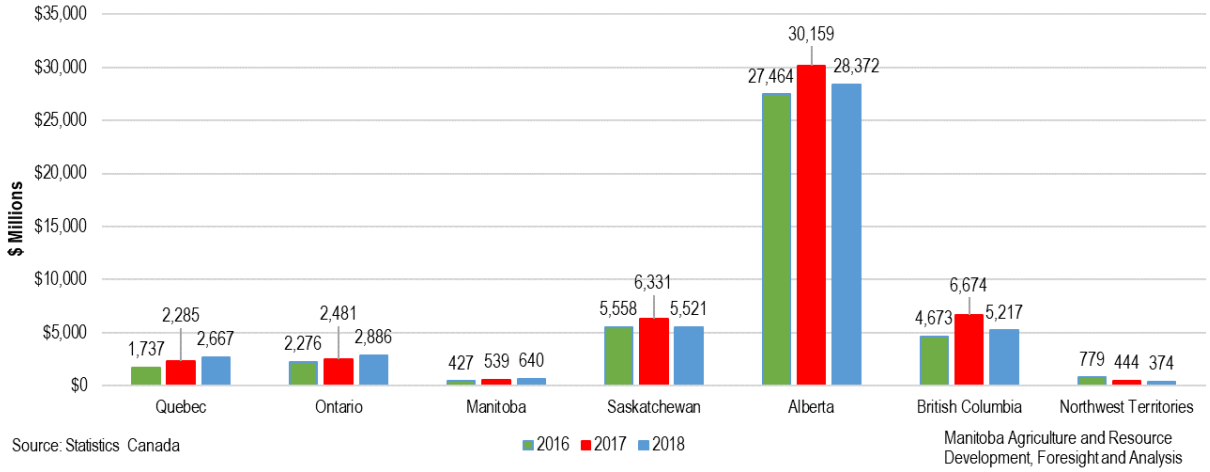
Businesses improving their properties, facilities and equipment, are usually better able to grow their sales. When commodity prices are attractive, companies are willing to make capital investments to enhance their operational capabilities. As seen in **Figure 6**, oil and mineral mining companies increased their spending on structures and facilities, in line with strong oil and mineral prices and consumer demand. Investments increased up to 2012, declining thereafter, with a small surge in 2017. From 2009 to 2018, investments in the sector grew by 2.74% during that period or 0.30% per year, with most investments occurring in the oil industry, growing annually by 3.76% from $305 million to $425 million. This was offset by a decline of 4.76% in minerals (metals and non-metals) from $259 million to $167 million over the same period. Over the last five years, investments in the sector are declining annually by 11.22%.

FIGURE 6: MANITOBA OIL & MINERAL MINING CAPITAL INVESTMENTS



The past decade of slow growth in capital investments in Manitoba's oil and mineral mining sector has been occurring throughout Western Canada, ranging from a low of -5.48% per year in the Northwest Territories to a high of 1.14% in Alberta. Though compound annual growth rates have been low over the past ten years, annual capital investments in the last three years are still significant, as shown in **Figure 7**, with spending of $86 billion in Alberta, $17.41 billion in Saskatchewan and $16.56 billion in British Columbia, with Manitoba investing $1.61 billion.

FIGURE 7: PROVINCIAL OIL & MINERAL MINING CAPITAL INVESTMENTS



Economic Impact of the Oil and Mineral Mining Sector on the Manitoba Economy

An economic impact is a change in economic activity (as measured by gross output/sales, GDP/value-added[6], labour income and employment) within a region or sector arising from a change in a business decision, government policy or consumer behavior. Examples may include investment in a new production facility or equipment, a change in trade policy, or demand for a new product. There are three common types of impacts: direct, indirect and induced.

Direct impacts are activities directly related to oil and mineral mining operations, including the use of facilities and heavy machinery by engineering and mining staff for excavation and drilling. Indirect impacts happen when suppliers provide goods and services to oil and mining companies such as fuel and equipment. Induced impacts occur when employees and shareholders spend their earnings on household goods and services such as food, clothing and shelter.

The indirect and induced impacts are also known as secondary effects where multipliers from an economic input-output model capture the purchasing of supplies and spending of households. These spinoff activities ripple throughout other sectors and supply chains in the Manitoba economy. The sum of the direct, indirect and induced impacts gives the total impact.

Oil and Mineral Mining Production

This is conveyed in **Table 3** which reflects the metal, non-metal and oil fuel production industries that comprise Manitoba's oil and mineral mining sector. In 2019, Manitoba's oil and mining production sector generated an estimated $2.48 billion in direct economic output (or sales revenue) and nearly $2 billion in GDP (value added), paying oil and mining workers $481 million in wages, salaries and benefits to 4,735 workers in Manitoba.

When the ripple effects (indirect and induced impacts) are taken into account, the additional economic activity on the Manitoba economy from oil and mining are $594 million in output, $398 million in GDP, $434 in labour income and 8,632 jobs.

All together, this results in total economic output of nearly $3.08 billion and $2.36 billion in GDP, paying labour income of $915 million to 13,367 workers throughout Manitoba.

TABLE 3: ECONOMIC IMPACT OF MANITOBA'S OIL AND MINERAL MINING SECTOR IN 2019

Type of Impact	Output (sales) ($ million)	GDP ($ million)	Labour Income ($ million)	Employment (jobs)
Direct	2,483	1,967	481	4,735
Indirect	405	262	324	5,611
Induced	189	136	110	3,021
Total	3,077	2,364	915	13,367

Source: Statistics Canada Manitoba Agriculture and Resource Development, Foresight and Analysis

Metal Production

Turning to metal production in Manitoba, the main commodities extracted in 2019 include zinc, nickel, gold, copper and silver. As seen in **Table 4**, the metal mining industry in Manitoba produced an estimated $1.07 billion in direct economic output,

[6] Value added activity transforms raw materials or components into a finished product. Value added is Gross Domestic Product (GDP) at basic prices which includes salaries, rent, interest and profit. It is measured as Gross Output (sales revenue) minus the cost of inputs such as materials, supplies, fuel and electricity. Economic gross output (sales revenue) minus value added (GDP) equals input costs (expenditures). A broader measure is Gross Value Added (GVA), which is GDP plus subsidies minus taxes.

$609 million in GDP, $324 million in labour income and 2,655 jobs. When including the ripple effects on the Manitoba economy, the metal mining industry generated in total, an estimated sales revenue of $1.33 billion, $732 million in value-added activity, including $616 million in wages and salaries and 7,494 jobs in Manitoba.

TABLE 4: ECONOMIC IMPACT OF MANITOBA OIL AND MINERAL MINING - METALS IN 2019

Type of Impact	Output (sales) ($ million)	GDP ($ million)	Labour Income ($ million)	Employment (jobs)
Direct	1,072	609	324	2,655
Indirect	175	81	218	3,146
Induced	82	42	74	1,694
Total	1,329	732	616	7,494

Source: Statistics Canada Manitoba Agriculture and Resource Development, Foresight and Analysis

Non-Metal Production

The main commodities extracted from the non-metal mineral mining industry in Manitoba in 2019 include stone, sand and gravel, peat, quartz and gypsum. **Table 5** indicates direct economic output from this industry of $288 million, $156 million in GDP, $76 million in income and 1,140 jobs. Accounting for the indirect and induced impacts on the Manitoba economy, the total economic output is $357 million, with $188 million in value-added activity including $144 million in salaries and wages, resulting in a total of 3,219 jobs.

TABLE 5: ECONOMIC IMPACT OF MANITOBA OIL AND MINERAL MINING - NON-METALS IN 2019

Type of Impact	Output (sales) ($ million)	GDP ($ million)	Labour Income ($ million)	Employment (jobs)
Direct	288	156	76	1,140
Indirect	47	21	51	1,351
Induced	22	11	17	728
Total	357	188	144	3,219

Source: Statistics Canada Manitoba Agriculture and Resource Development, Foresight and Analysis

Oil Fuel Production

As shown in **Table 6**, the oil fuel production industry is the largest of the three industries by value, generating a direct economic output of $1.12 billion, $1.19 billion in GDP, $81 million in labour income and 940 jobs in 2019. When allowing for secondary spending throughout the Manitoba economy, the total economic output from oil fuel production is $1.39 billion, $1.43 billion in value-added activity, including $155 million in salaries and wages resulting in 2,654 jobs across Manitoba.

TABLE 6: ECONOMIC IMPACT OF MANITOBA OIL AND MINERAL MINING - OIL FUELS IN 2019

Type of Impact	Output (sales) ($ million)	GDP ($ million)	Labour Income ($ million)	Employment (jobs)
Direct	1,123	1,188	81	940
Indirect	183	158	55	1,114
Induced	85	82	19	600
Total	1,391	1,428	155	2,654

Source: Statistics Canada Manitoba Agriculture and Resource Development, Foresight and Analysis

Summary

The Manitoba oil and mineral mining production sector is an important contributor to the Manitoba economy, generating a total economic impact in 2019 of just over $3 billion in sales, nearly $2.4 billion in value-added activity and over 13,000 jobs.

By extracting the raw resources used in the manufacture of many of the products consumed by Manitobans, the sector creates value. Commodities such as metals (e.g. zinc, nickel, gold), non-metals (e.g. stone, gravel, peat) and oil fuels are used to make goods for household (e.g. cookware, soaps, plastics, batteries), industrial (e.g. cables, motors, plumbing, roofing), construction (e.g. asphalt, concrete, landscaping), energy (e.g. electrical generation and transmission, solar panels), health (e.g. pharmaceuticals, dental and medical equipment) and high tech sectors (e.g. cell phones, touchscreens, semiconductors).

The sector has grown over time, largely by being able to reach markets beyond Manitoba borders, mainly in the United States but also in Asia and Europe. Favourable federal government policies and legislation have allowed for improved market access through trade and investment agreements as well as competitive taxes and regulations. Global economic uncertainty in recent years, due to trade tensions, weaker consumer demand and lower investment, may be stalling growth in the sector.

Although the oil and mineral sector has experienced annual growth in sales (2.63%) and in employment (4.64%) for the past five years, it is also facing annual declines in GDP (-2.73%), international exports (-14.67%) and capital investments (-11.22%) and zero growth in labour income (-0.01%). These are the early signs of a slow decline in the sector, compromising its future economic position, unless these signs are addressed. Ensuring ongoing economic growth requires not only markets willing to purchase Manitoba commodities, but also investments that generate a sufficient supply of reserves used to meet future consumer demands.

With economic uncertainty continuing over the short term, the following are suggestions for addressing the opportunities and challenges the oil and mineral mining sector will encounter:

- *Indigenous Engagement*: continuous collaboration between Indigenous communities, governments and the mining industry in areas such as health, education and housing is important for enhancing participation in the sector.
- *Innovation*: investing in new exploration techniques and technologies as well as partnering with the private sector to support new innovations is important for improving business productivity, energy efficiency and environmental protection. Recent innovations in the oil and gas industry include 4-D seismic applications, and enhanced oil recovery methods that include CO2 and nitrogen flooding of reservoirs.
- *Skills*: ongoing collaboration between government, industry and educational institutions is important for ensuring new entrants have the right skills.
- *Investment Competitiveness*: oil and mineral exploration, mine and well development are very reliant on attracting domestic and foreign investment. Ensuring taxes are competitive and regulations are not burdensome is critical.

- *Market Access*: expanding market access through free trade and investment agreements is also critical to the future success of the oil and mining industry.
- *Market Incentives*: it is important to prioritize and incentivize critical minerals to attract investors to further develop Manitoba's mineral resources.
- *Risk Reduction*: Geoscience data and mapping products will help industry reduce investment risk.
- *Sustainability*: it is important to ensure that the sector is a key provider of raw materials used for sustainable innovations in other sectors including clean technology, manufacturing, transportation, high-tech and defense.

Contact us

- Go to manitoba.ca/agriculture and click on Markets and Statistics
- Email us at industryintelligence@gov.mb.ca
- Call us at 204-945-3503
- Follow us on Twitter @MBGovAg