



Economic Impact Study

Canada's conventional
oil and natural gas sector

March 2024



Canadian
Chamber of
Commerce

Chambre de
Commerce
du Canada



Business
Data Lab

Laboratoire de données
sur les entreprises



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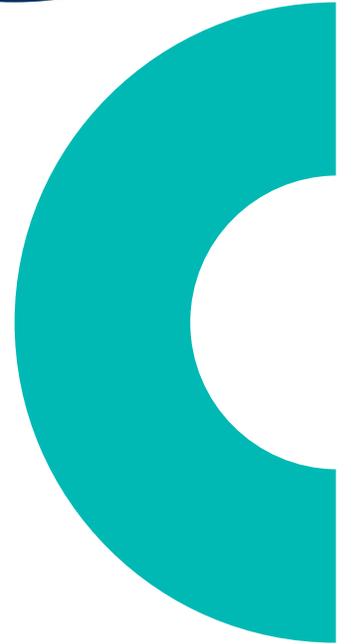
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Key Findings Overview

Canada's conventional oil and gas sector

\$52 billion

in direct contribution to Canada's GDP



2.5%

share of direct GDP



Oil and natural gas revenues to governments across Canada in 2022 *

\$45 billion



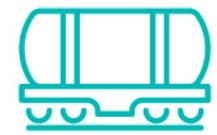
\$90/hour

in compensation \$47/hour greater than the national average

Supports nearly

5 jobs

for every million dollars



\$178 billion

of exports to the U.S. but are increasingly being shipped around the world *



90%

of R&D is industry-funded *



2022 Economic Impact

Supports **\$97 billion** of Canada's GDP

5% of total GDP

Supports **493,000 jobs**

3% of total employment

Includes direct, indirect, and induced impact.



3rd Largest oil exporter

4th Largest oil producer

5th Largest gas producer

6th Largest natural gas exporter

Source: Natural Resources Canada, *Energy Fact Book*

*An oil and natural gas industry-wide basis. Note: oil and gas revenues from Statistics Canada Table: 25-10-0065-01



Key Findings



- Conventional oil and natural gas extraction (i.e., excluding oil sands) contributes \$52 billion to Canada's real gross domestic product (GDP), representing 2.5% of the total.
- Despite investment slowing down in Canada's conventional oil and natural gas industry after global oil prices dropped in 2014-15, the country's conventional oil production has since held steady.
- Employment in conventional oil and gas extraction has grown faster than other industries, on average. Compensation has also outpaced other industries, averaging \$90 per hour, compared to the national average of \$43 per hour—representing a premium of \$47/hour.
- Exports of oil and natural gas are largely destined for the United States (\$178 billion) but are increasingly being shipped to other markets around the world.
- The oil and gas industry funds most of its own Research and Development (R&D), with only 1% of total in-house energy R&D coming from government sources, compared to an average of 8%. Leading environmental protection funding, the oil and gas industry represents a third of all business funding in environmental protection.
- After modelling its direct, indirect, and induced economic activity, the Business Data Lab estimates that, in 2022, the conventional oil and gas extraction industry contributed \$97 billion to Canada's GDP (worth 5% of the total), while supporting 493,000 jobs (or 3% of total employment).
- For every dollar spent in the conventional oil and gas extraction industry, 54 cents is added to Canada's GDP, and for every million dollars spent in the industry, nearly 5 jobs are created.
- Oil and natural gas revenues to governments across Canada totaled \$45 billion last year. These revenues, collected through taxes, royalties and leases allow government to operate hospitals, invest in social programs, and support Canadians across the country.
- Alberta is, not surprisingly, the largest economic contributor, accounting for 70% of the total GDP impact, followed by 14% from Saskatchewan, 11% from Newfoundland and Labrador, and 10% from British Columbia.





Industry Context

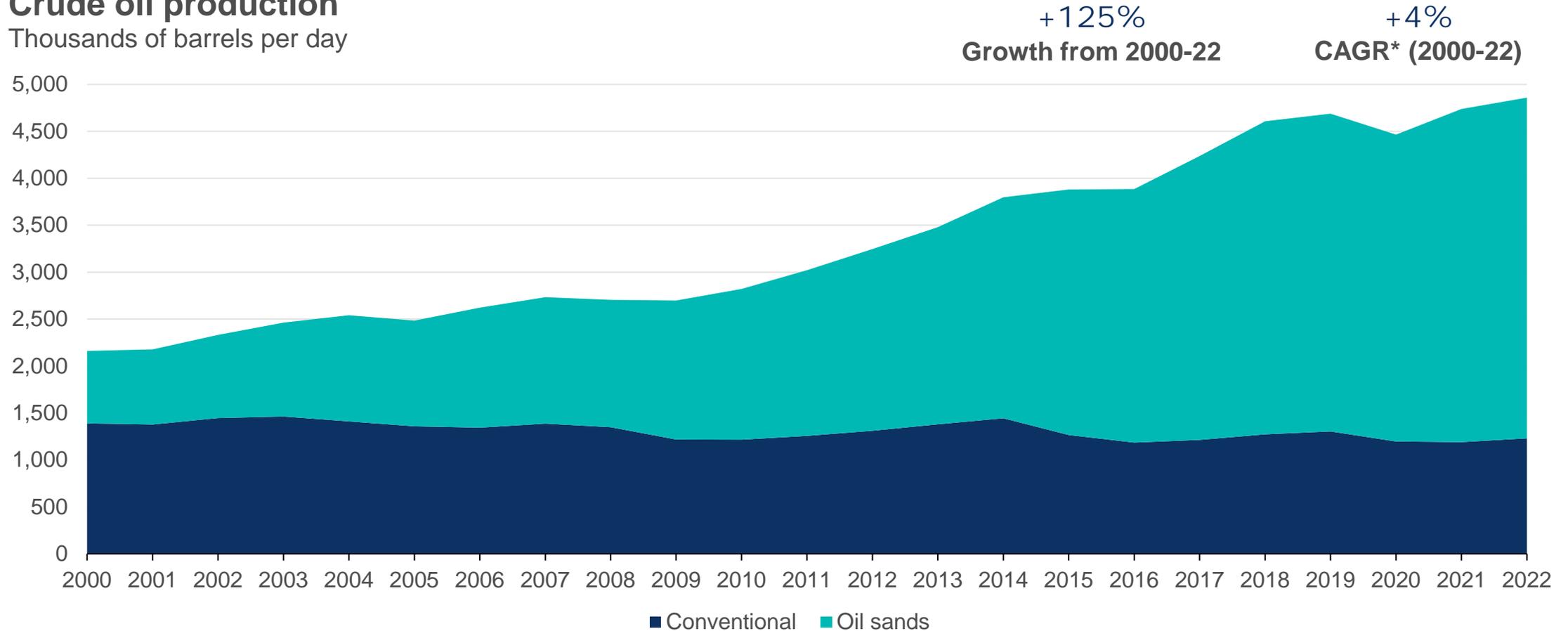


Crude oil production has grown 125% since 2000

The production of crude oil in Canada grew at a stable pace from 2.2 million barrels per day (b/d) in 2000, but since 2009, crude oil production shifted away from the conventional oil sources to bitumen sources, growing in share to bring total production to 4.9 million b/d in 2022.

Crude oil production

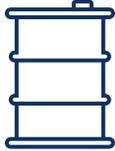
Thousands of barrels per day



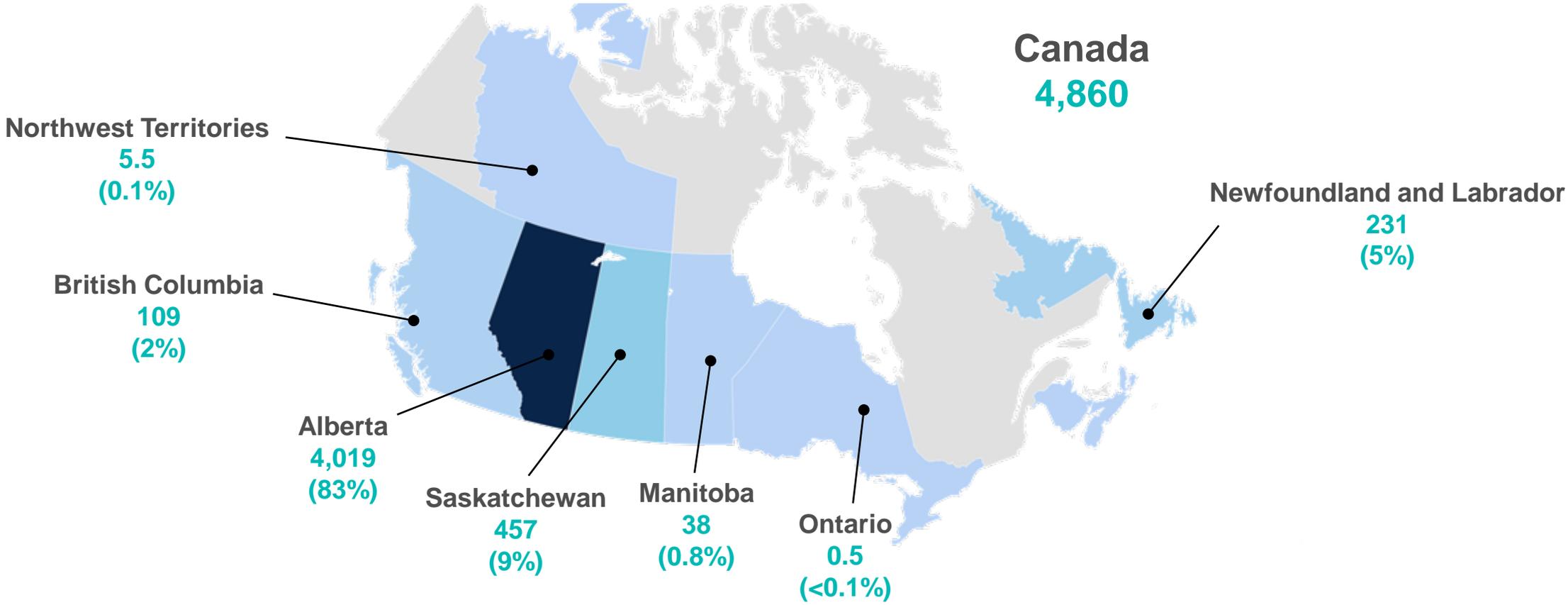
Sources: Canada Energy Regulator, *Estimated Production of Crude Oil and Equivalent*, BDL calculations

Note: "Conventional" includes light and heavy crude oils. "Oil sands" includes bitumen, synthetic, and condensate crude oils. *CAGR: compound average annual growth rate

Oil production is concentrated in Western Canada



Average oil production, 2022
Thousands of barrels per day
(Share of total production)



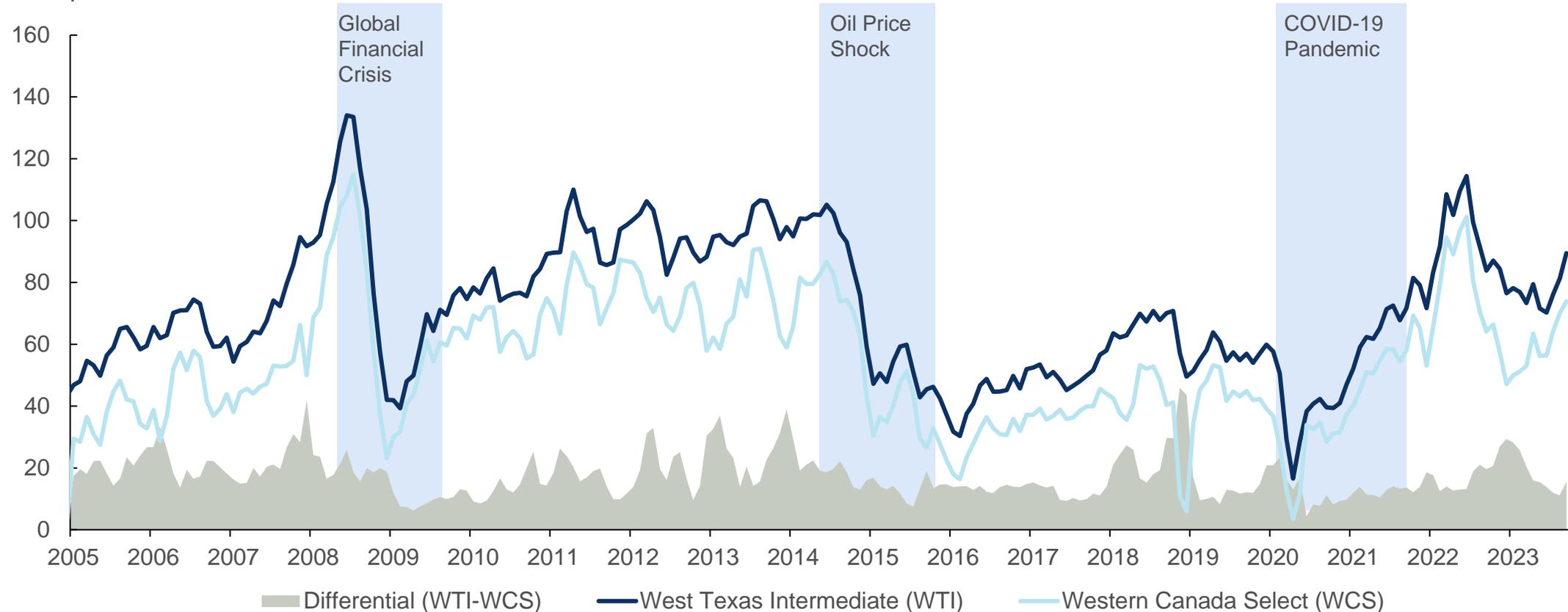
Source: Canada Energy Regulator, Estimated Production of Canadian Crude Oil and Equivalent
Note: Includes conventional and oil sands production. Grey area represents no marketable oil production. May not add up due to rounding.

Oil prices

North American oil prices experienced various shocks over the past two decades, mainly due to global economic downturns. Recently, prices have trended higher due to supply restrictions, rather than strong global demand. The price discount of Western Canadian Select relative to West Texas Intermediate, attributable to both transportation costs and differences in grades, have averaged \$16 over the past five years.

Benchmark oil prices

\$US per barrel



Sources: U.S. Energy Information Administration, Alberta Energy

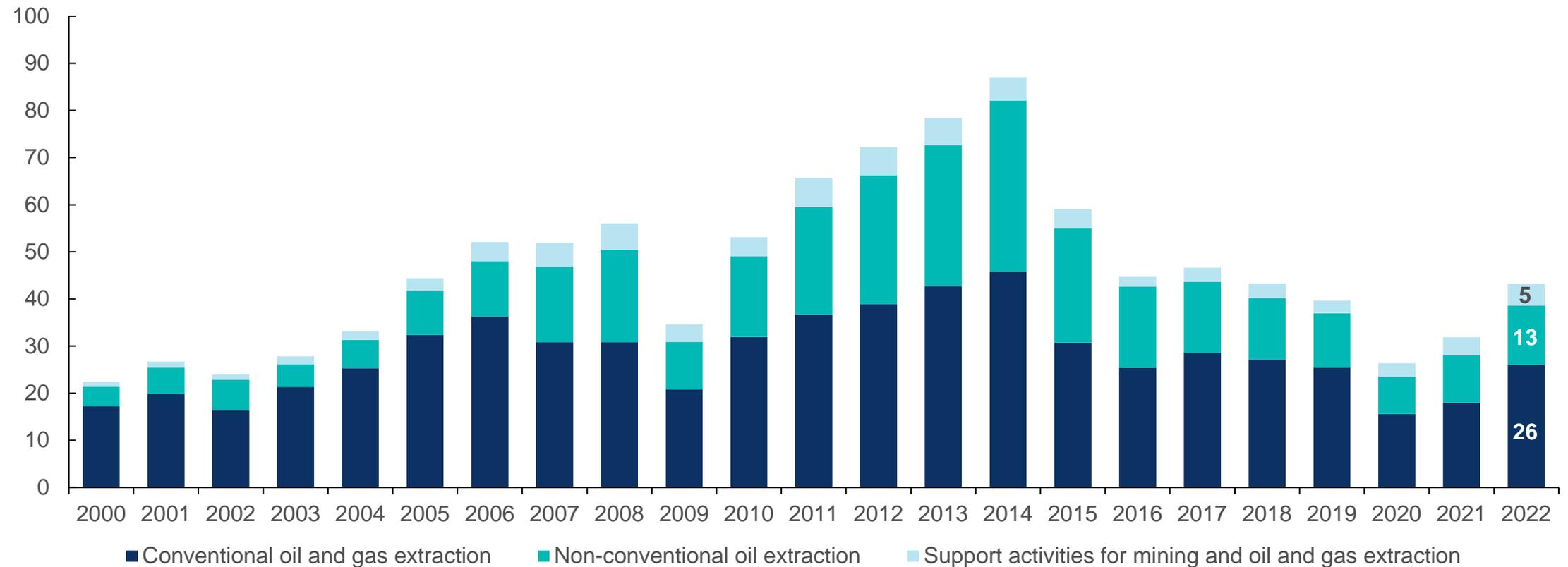


Oil and natural gas investment is recovering after recent downturn

Investment in both conventional and non-conventional oil and gas has been declining since mid-2014 following the global collapse of oil prices. Conventional oil and gas extraction continues to attract the largest investments, worth \$18 billion in 2021.

Oil and natural gas investment

Billions of dollars



Source: Statistics Canada (Table: 36-10-0096-01)

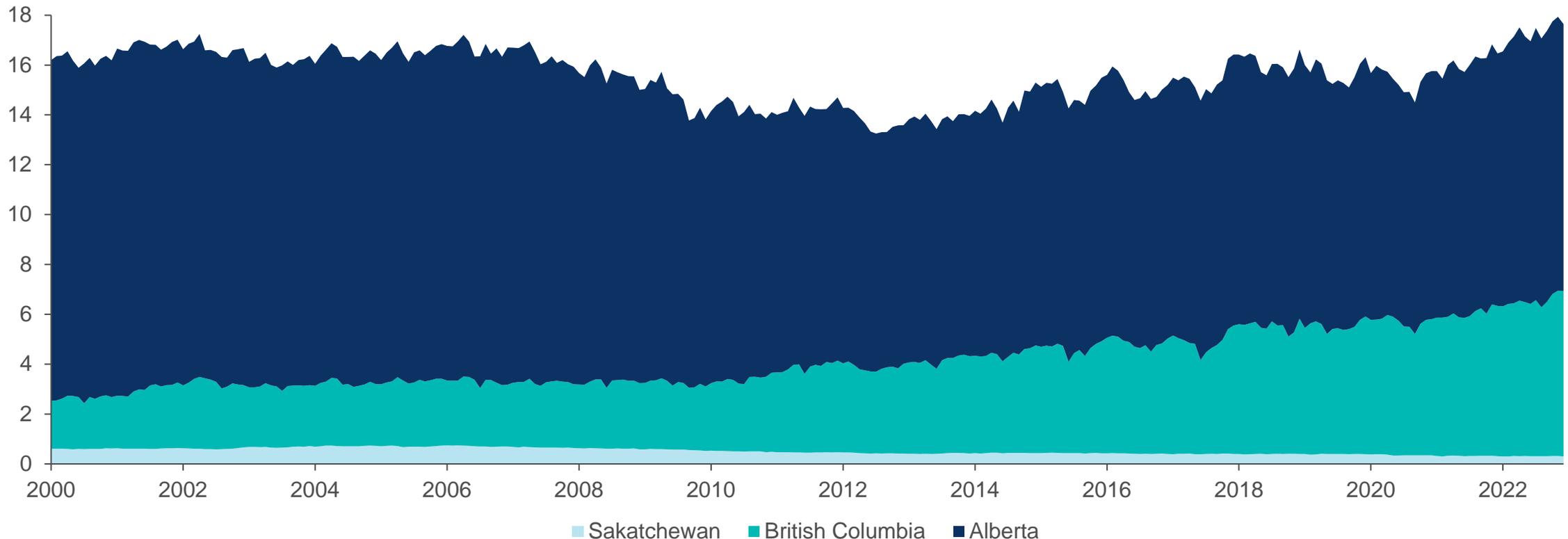
Note: Industries are based on IOIC classifications. Non-conventional oil extraction is oil sands extraction. Support activities includes mining. Disaggregation wasn't possible.

Natural gas production growth is mainly coming from B.C., while total production remains flat over 20-year period

Natural gas production in Canada has been flat over the past 20 years, reaching 17.3 bcf/d in 2022. Following the evolution of tight and shale gas extraction, British Columbia has grown their share of production in Canada. With limited export opportunities and strong shale U.S. production, Canada's natural gas production is expected to remain at similar levels.

Natural gas production

Billion cubic feet per day (Bcf/d)

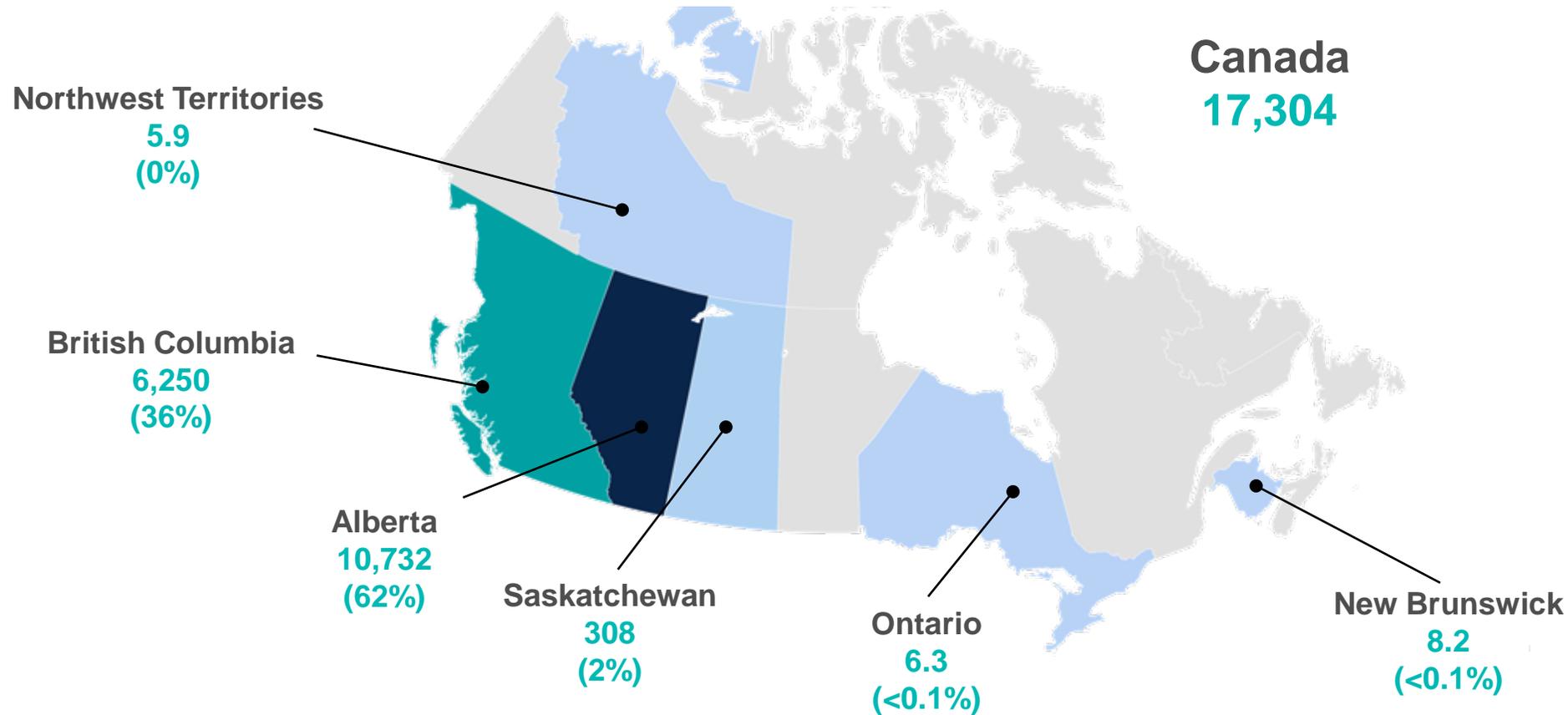


Source: Canada Energy Regulator, *Market Snapshot: Western Canadian Natural Gas Production Reaches a Record High in 2022*

Natural gas production in Canada



Average natural gas production, 2022
Million cubic feet per day
(Share of total production)



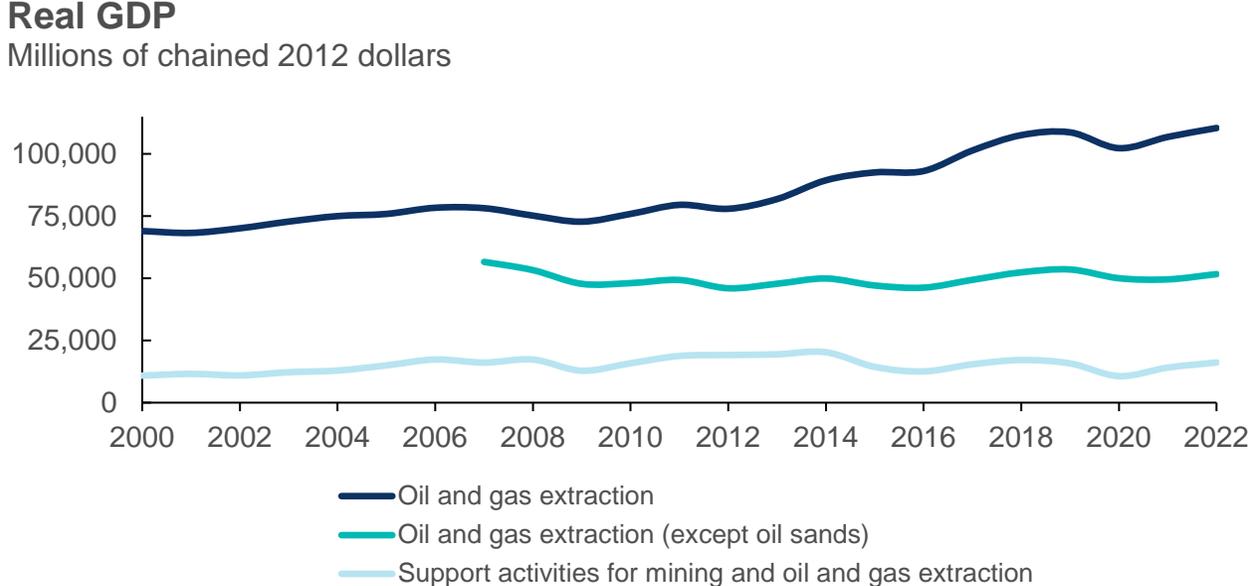
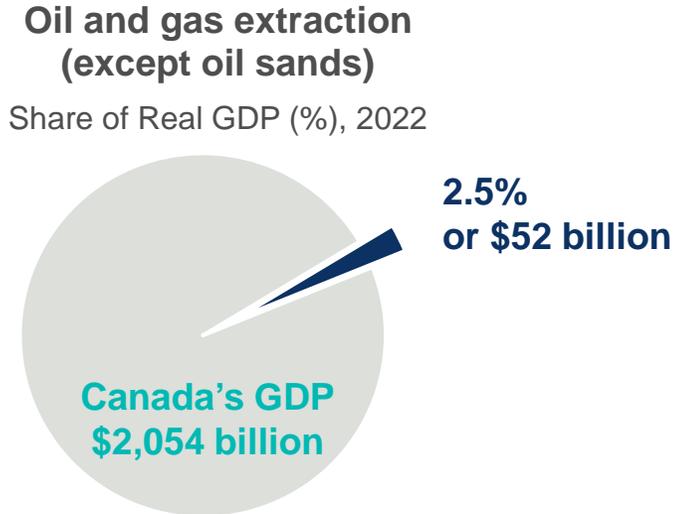
Source: Canada Energy Regulator, Marketable Natural Gas Production Statistics
Note: Grey area represents no marketable natural gas production. May not add up due to rounding.



Economic Indicators



Conventional oil and natural gas extraction real GDP has remained steady



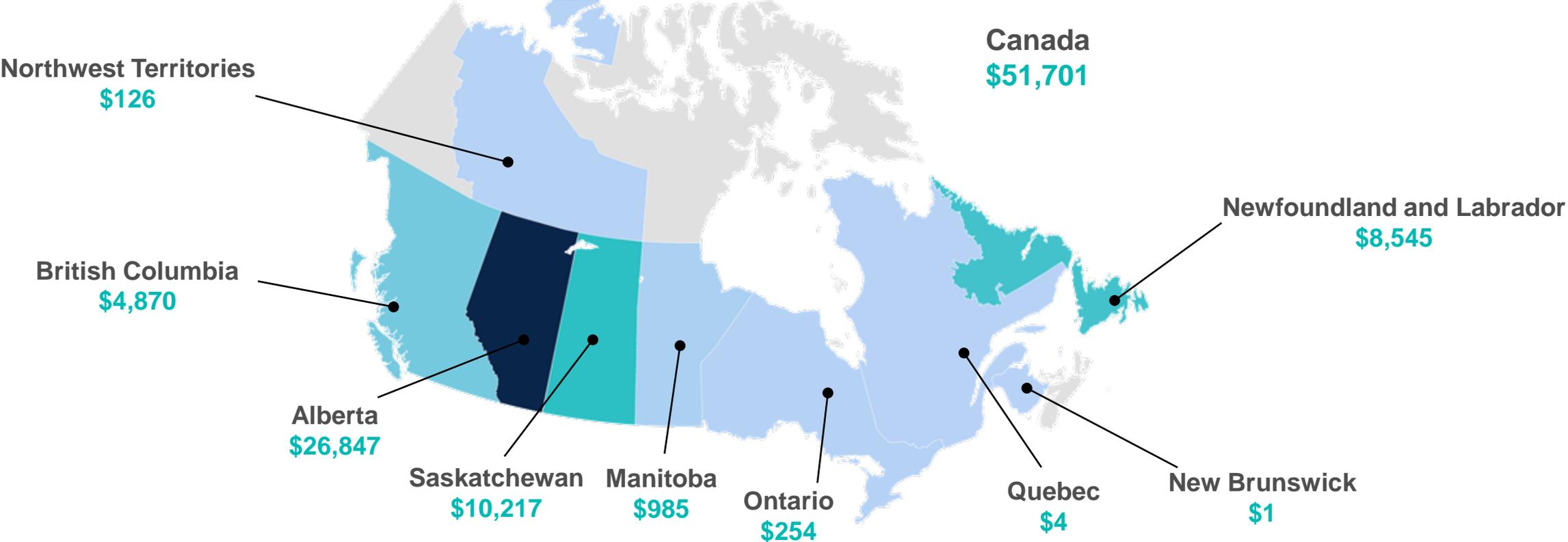
Industry	Real GDP, 2022 (\$ Bill)	Share of GDP (%)	10-yr CAGR (%)
Oil and Gas Extraction (NAICS 211)	\$110.5	5.4%	3.6%
Oil and Gas Extraction, except oil sands (NAICS 21111)	\$51.7	2.5%	1.2%
Supporting activities for mining, oil and gas extraction (NAICS 213)	\$16.1	0.8%	-1.7%

Sources: Statistics Canada (Table: 36-10-0434-03), BDL calculations
 Note: GDP is an annual average of GDP throughout the year at basic prices. NAICS 213 was most detailed level available. CAGR: compound average annual growth rate. GDP figures are in chained 2012 dollars.



Oil and natural gas production contributes to GDP from coast to coast, but with activity concentrated in Alberta, Saskatchewan, and Newfoundland and Labrador

Oil and gas extraction (except oil sands)
Real GDP, millions of chained 2012 (\$) dollars, 2022



Source: Statistics Canada (Table: 36-10-0402-01)
Note: Real GDP for oil and gas extraction (except oil sands) (NAICS 21111). May not add up to national GDP due to rounding.

The conventional oil and natural gas industry supports 3% of total employment, with faster long-run growth than other sectors. It pays more than twice as much per hour than the national average, representing a \$47 per hour premium.



57%

Employment growth since 2000
O&G Extraction (excl. oil sands)



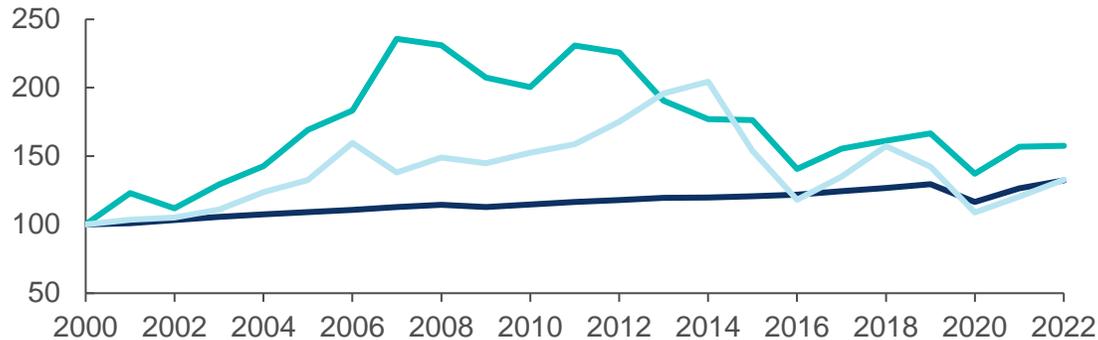
32%

Employment growth since 2000
Canada

Employment

Index 2000 = 100

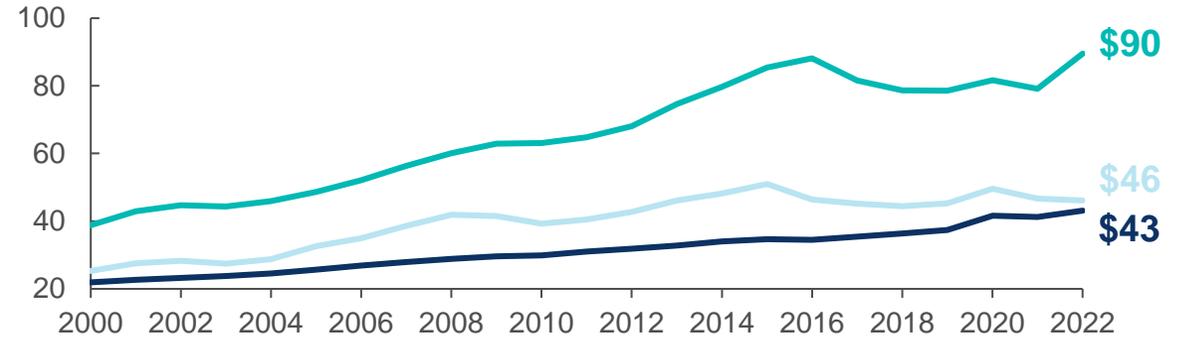
— All industries
— Conventional oil and gas extraction
— Support activities for oil and gas extraction



Compensation per hour

Dollars per hour

— All industries
— Conventional oil and gas extraction
— Support activities for oil and gas extraction



Output per worker, by industry

Thousands of chained 2012 dollars



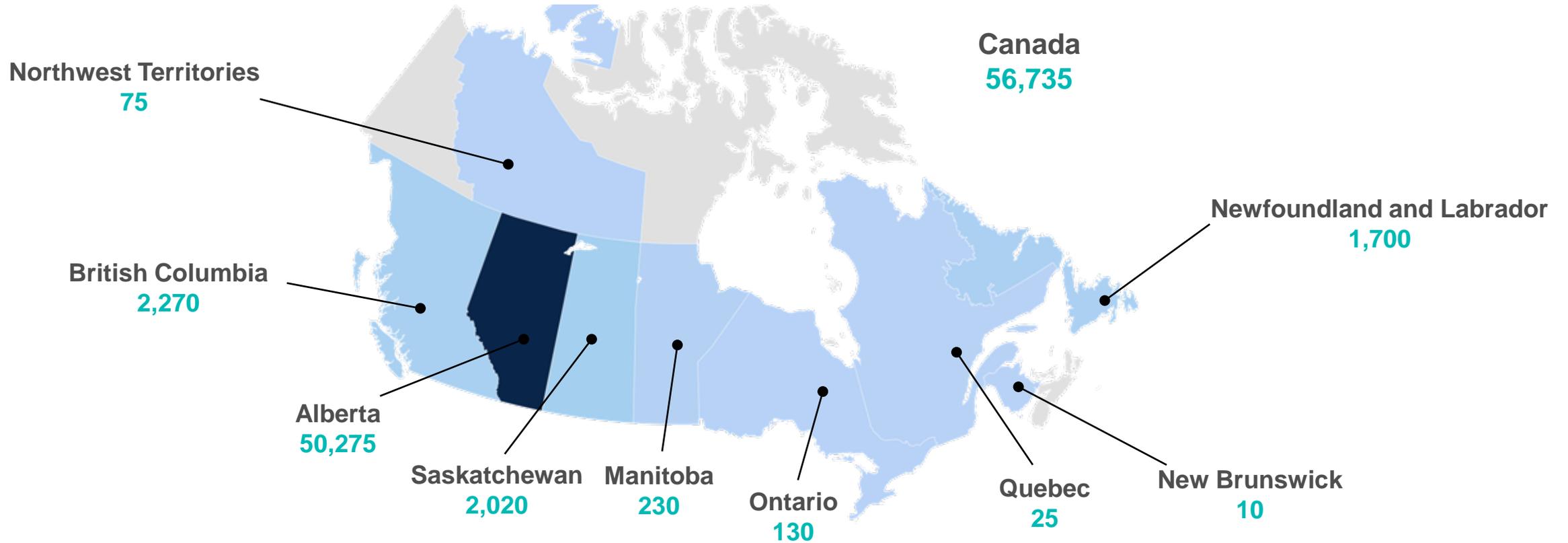
Sources: Statistics Canada; (Table: 36-10-0480-01, Table: 36-10-0434-03), BDL calculations

Note: Industry classifications for employment and compensation per hour use IOIC classifications. Output per worker calculation used both NAICS (GDP) and IOIC (Employment). See Appendix for concordance. Output per worker is defined as real GDP per total employment. Support activities for O&G extraction in GDP calculation includes mining (NAICS 213).



Alberta is the hub of employment, with support from across the country

Oil and gas extraction (except oil sands)
Number of direct jobs, 2022



Source: Statistics Canada (Table: 36-10-0480-01)
Note: Data uses IOIC classification for conventional oil and gas extraction (BS211113)

Oil and gas extraction trade is largely destined for the U.S., but has a growing presence in trade with other countries.



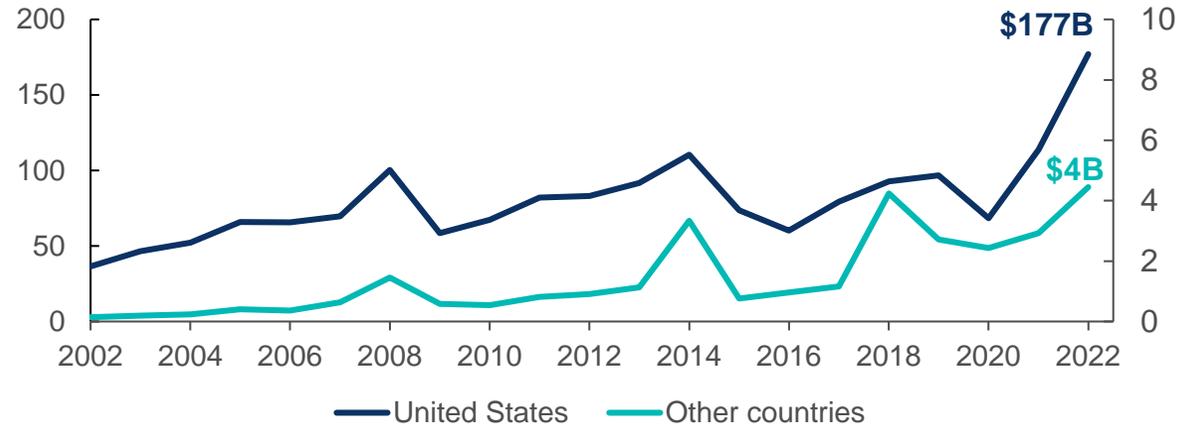
Exports to the United States
2022 value: \$178B
Share of Canada total: 23%



Exports to other countries
2022 value: \$4.4B
Share of Canada total: 1%

Oil and gas extraction exports, by destination

Billions of dollars

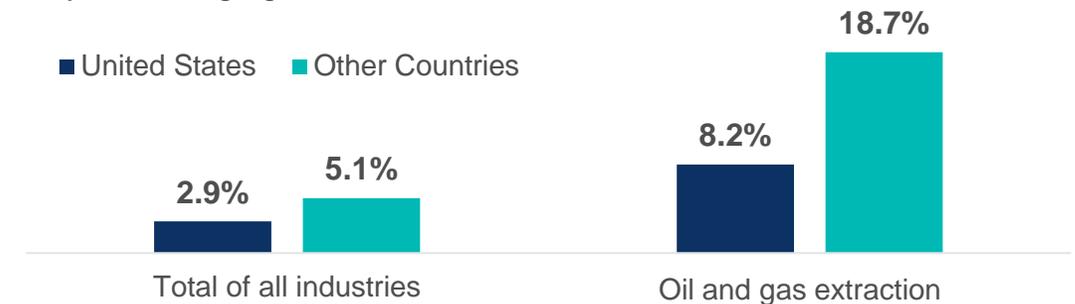


Top 5 export destinations (2022)

1. **United States (\$178B)**
2. **United Kingdom (\$1.3B)**
3. **Spain (\$1.1B)**
4. **Germany (\$427M)**
5. **Netherlands (\$385M)**

Export growth rates, by destination

20-year average growth*



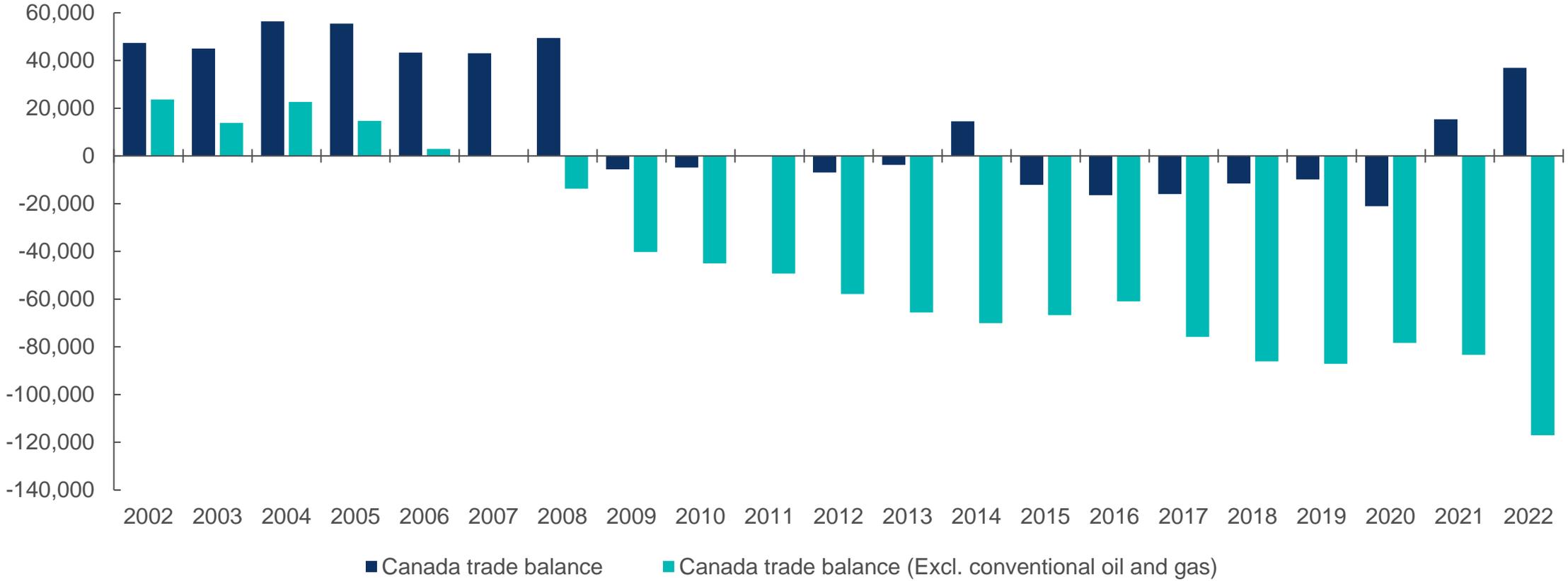
Sources: Statistics Canada (Table: 12-10-0136-01), Industry Canada Trade Data Online, BDL calculations

Note: Data is under oil and gas extraction (except oil sands) (NAICS 21111). This NAICS trade data doesn't distinguish between conventional and non-conventional, likely including synthetics and upgraded crude oil.

*using CAGR calculation (2000-2022)

Canada would be in a significant trade deficit without conventional oil and gas exports.

Canada's trade balance
Millions of Canadian dollars



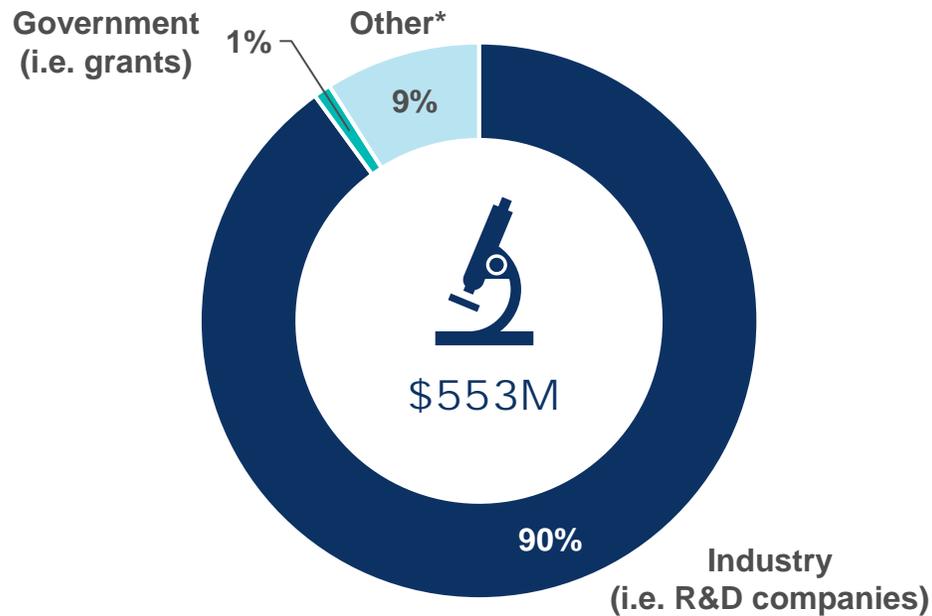
Sources: Statistics Canada (Table: 12-10-0136-01), Industry Canada Trade Data Online, BDL calculations
Note: Data is under oil and gas extraction (except oil sands) (NAICS 21111). This NAICS trade data doesn't distinguish between conventional and non-conventional, likely including synthetics and upgraded crude oil.

Energy research & development investments led by industry with nearly 1% in funding from government sources.

R&D funding is generally driven by industry funds, including the oil and gas extraction sector. However, the industry average of R&D funding from government is 8%, compared to nearly 1% in oil and gas extraction. The oil and gas extraction industry R&D expenditure has been on the decline represents nearly one quarter of all in-house R&D expenditure in Canada.

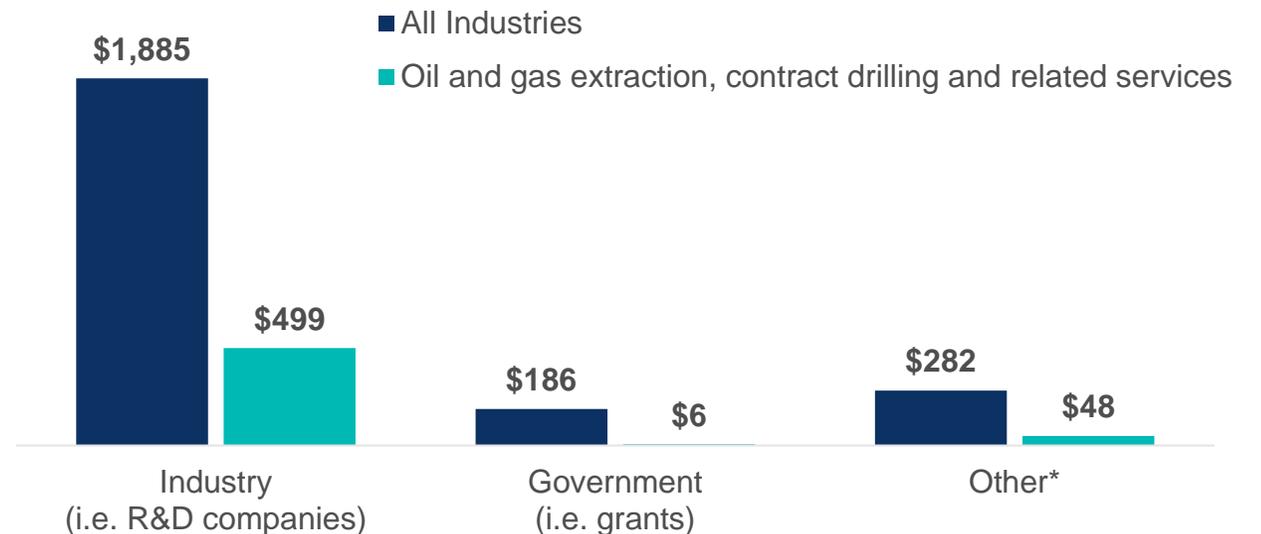
O&G extraction, contract drilling and related services energy in-house R&D*

By source, 2021



In-house industrial energy R&D expenditure, 2021

Millions of dollars



Sources: Statistics Canada (Table: 27-10-0347-01), BDL calculations

Note: R&D funding calculations are based on in-house expenditure for total country of control and total energy technologies. *Oil and gas extraction, contract drilling, and related services includes NAICS 211, 213111, and 213118. This includes oil sands and disaggregation isn't possible. **Other includes other Canadian sources and foreign sources of funding. Aggregation of funding sources may lead to double counting.



The oil and natural gas industry spends nearly a third of all business spending on environmental protection

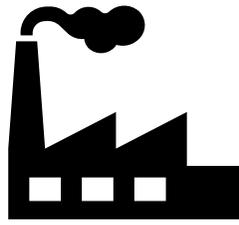
Environmental protection spending
2018-2020 average, by industry



Oil and natural gas
extraction

\$3 billion

34.3%



Other manufacturing

\$1.1 billion

12.9%



Mining and quarrying

\$882 million

9.9%



Primary metal
manufacturing

\$786 million

8.8%



Paper manufacturing

\$587 million

6.6%



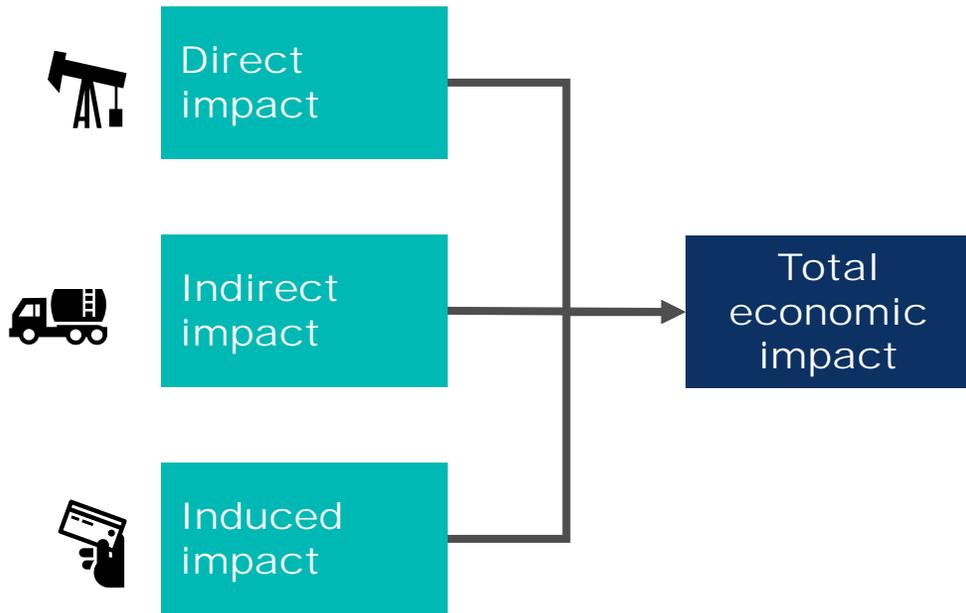
Sources: Statistics Canada (Table: 38-10-0130-01), Canadian Association of Petroleum Producers
*Shares may not add up due to rounding



Economic Impact



Any sector's total economic impact can be broken down into its direct, indirect and induced impacts



Direct impact: the immediate impact of operating activities of the oil and gas sector.

Indirect impact: includes the activity of suppliers to the oil and gas sector. This captures the economic output generated in the sector's supply chain.

Induced impact: Spending from the sector's employees and its suppliers on the wider economy.



Note: This study uses multipliers provided by Statistics Canada and standard methodology to estimate the impact of the oil and gas extraction (except oil sands) sector. Gross domestic product (GDP) is the value-added portion of the O&G sector. Gross output includes the value added and the inputs used by the sector. Gross output would always be greater than GDP.

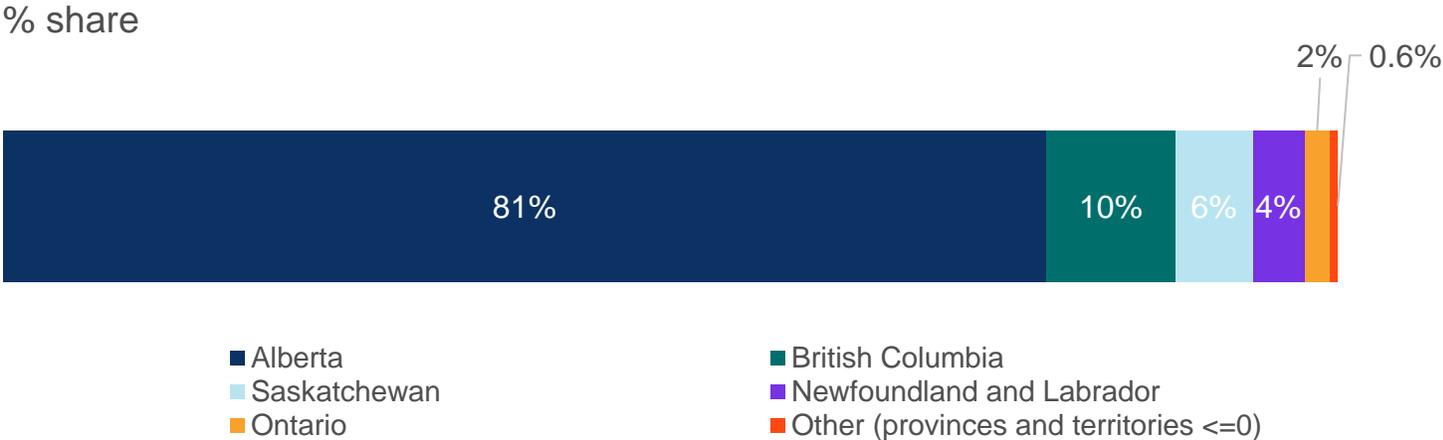
The conventional oil and gas sector supports 5% of Canada's GDP and 3% of total employment.

- The conventional oil and gas sector supported \$97 billion to Canadian GDP in 2022, equivalent to 5% of the national GDP.
- The sector also supported 493,000 jobs or 3% of total employment. The distribution is concentrated in Alberta and Western Canada. The labour share of the national total is lower than that of GDP because the oil and gas sector is more capital intensive.
- The direct GDP to output ratio for oil and gas sector overall is 54% implying that for every dollar spent in O&G sector, it adds 54 cents to Canada's GDP.

Summary of economic impact of the oil and gas (except oil sands) sector

Impact		Direct	Indirect	Induced	Total	% of Canada
GDP	\$ Millions	51,701	29,942	15,308	96,951	5%
Employment	# of jobs	84,205	259,368	149,944	493,518	3%

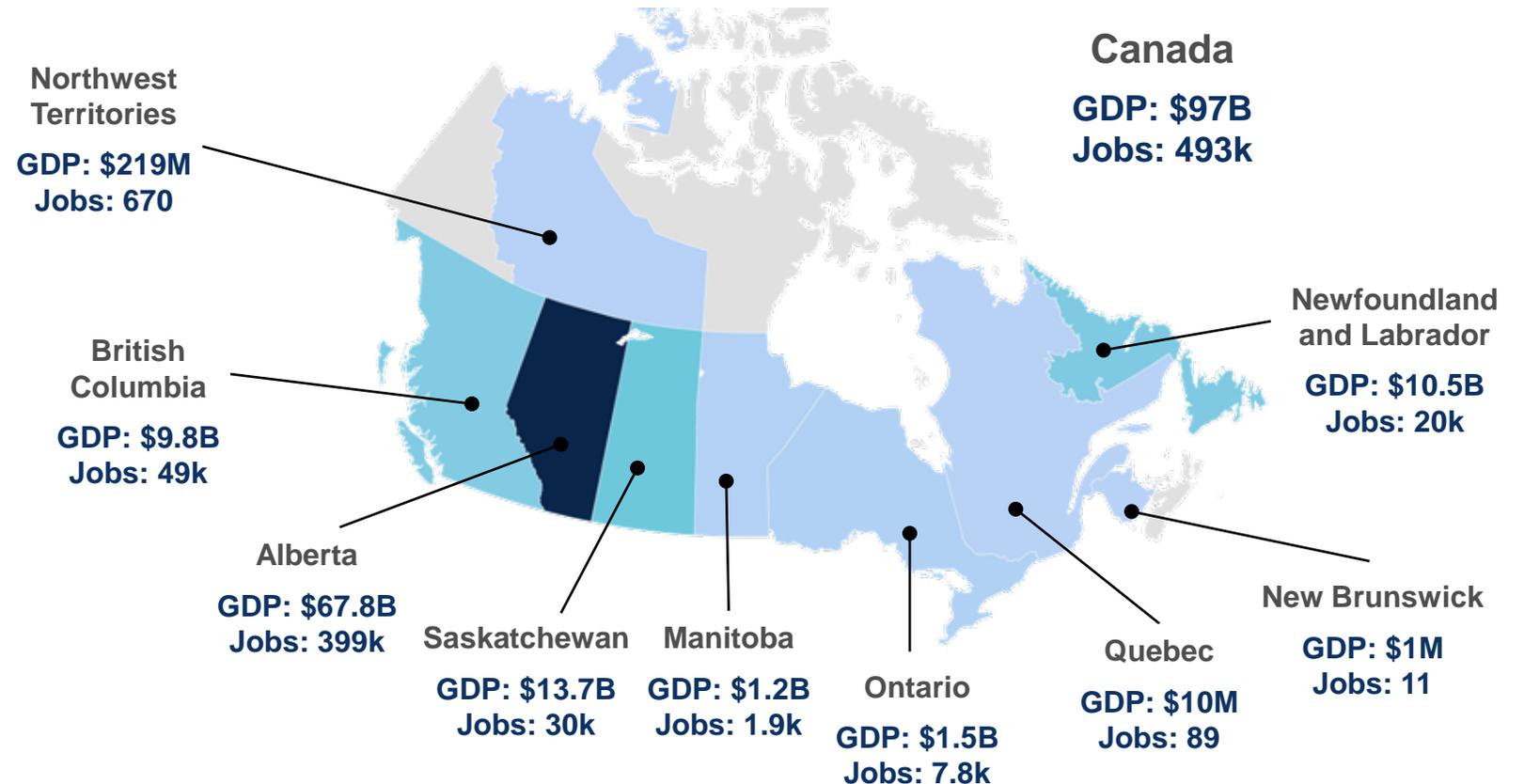
Employment impact, by province and territory



Source: BDL calculations based on data provided by Statistics Canada
 Note: Distribution All estimates are in chained 2012 dollars. Calculations use IOIC classification (BS 211110).

Western Canada accounts for 85% of the total GDP impact and 87% of employment.

Economic impact, by province and territory, 2022



Alberta is the largest economic contributor accounting for 70% of the total GDP impact, followed by 14% from Saskatchewan and 11% from Newfoundland & Labrador, and 10% from British Columbia.



Source: BDL calculations based on data provided by Statistics Canada
 Note: Jobs supported throughout Canada through this province's O&G activities. Calculations use IOIC classifications (BS 211110).
 All GDP estimates are in chained 2012 dollars.



Appendix



National level impact of the oil & gas sector and industries

Conventional oil and gas extraction and oil sands extraction both supported nearly 45% of the total GDP impact, with another 10% coming from the support activities.

Breakdown of economic impact of oil and gas sector

Impact	Direct	Indirect	Induced	Total
GDP Impact, \$ millions				
Oil and gas extraction and support activities (1) = (2)+(5)	122,695	57,319	30,547	210,561
Oil and gas extraction (2) = (3)+(4)	110,602	54,404	26,244	191,251
Oil and gas extraction (except oil sands) (3)	51,701	29,942	15,308	96,951
Oil sands extraction (4)	58,901	24,462	10,936	94,299
Support activities for oil and gas extraction (5)	12,093	2,915	4,303	19,310
Employment Impact, # of Jobs				
Oil and gas extraction and support activities (6) = (7)+(10)	190,903	499,365	298,903	989,171
Oil and gas extraction (7) = (8)+(9)	119,216	472,801	256,766	848,783
Oil and gas extraction (except oil sands) (8)	84,205	259,368	149,944	493,518
Oil sands extraction (9)	35,011	213,433	106,821	355,266
Support activities for oil and gas extraction (10)	71,687	26,564	42,137	140,388

Source: BDL calculations based on data from Statistics Canada

Note: Calculations are based on IOIC classifications. See industry classifications page for industry codes. All estimates are in chained 2012 dollars



Industry Classifications

North American Industry Classification System (NAICS) 2017 v3	2017 v3 NAICS	2016 IOIC	Input-Output Industry Classification (IOIC) 2016
All Industries	All	All	
Mining, quarrying, and oil and gas extraction	21	BS210	Mining, quarrying, and oil and gas extraction
Oil and gas extraction	211	BS21100	Oil and gas extraction
Oil and gas extraction (except oil sands)	21111/ 211110	BS211110/ BS211113	Oil and gas extraction (except oil sands) / Conventional oil and gas extraction
Oil sands extraction	21114	BS211140/ BS211114	Oil sands extraction / Non-conventional oil and gas extraction
Support activities for mining and oil and gas extraction	213	BS21311A	Support activities for oil and gas extraction
Support activities for oil and gas extraction* / Services to oil and gas extraction	21311A/ 213111	BS21311A	Support activities for oil and gas extraction
Support activities for oil and gas extraction* / Oil and gas contract drilling	21311A/ 213118	BS21311A	Support activities for oil and gas extraction

Notes: Certain economic variables used in the study were not available in NAICS and the most applicable classification was used. For example, conventional oil and gas extraction (IOIC BS211110 or BS211113) was used to replicate oil and gas extraction (except oil sands) (NAICS 21111 or 211110). Refer to the notes of each page for clarification. When IOIC 2016 industry codes are used, including in the economic impact assessment, the codes were mapped to 2017 v3 NAICS concordance.

* Combines the following NAICS codes: 213111 and 213118. Some IOIC codes were terminated and replaced by the appropriate code above.



Methodological notes and data sources

Economic Variables	Source
Output, GDP and employment multipliers	Statistics Canada Table: 36-10-0595-01
National GDP by NAICS	Statistics Canada Table: 36-10-0434-03
Provincial GDP by NAICS	Statistics Canada Table: 36-10-0402-01
Labour force data	Statistics Canada Table: 14-10-0023-01

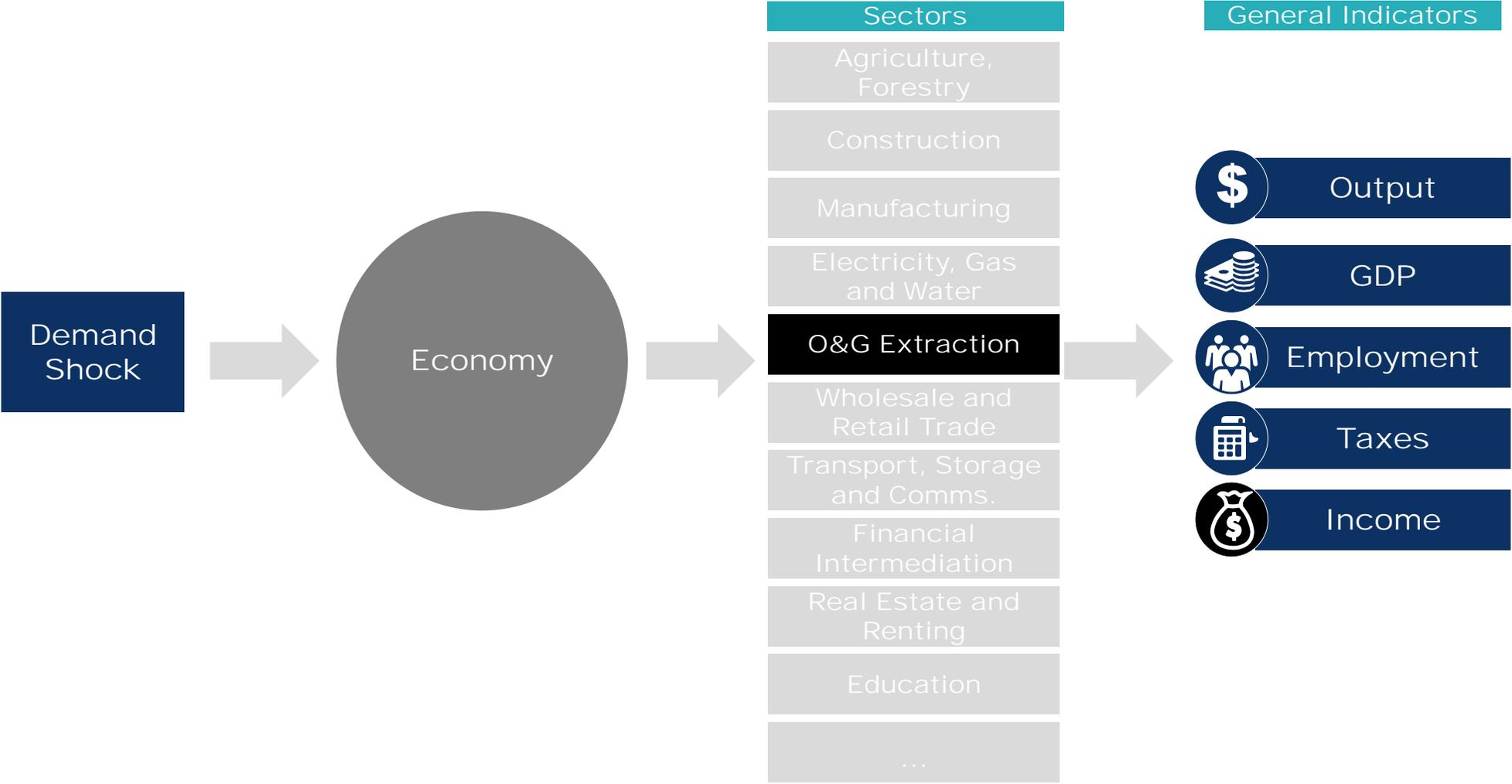
Economic Impact Assessment Notes

- All economic impact estimates are in chained 2012 Canadian dollars.
- The GDP to output ratio from 2019 was used to convert 2022 GDP (2012 chained dollars) into 2022 output.
- Direct, indirect and induced multipliers are based on Statistics Canada’s supply-use tables.
- Statistics Canada provides output data and multipliers in IOIC codes while GDP data is in NAICS industry codes. Appropriate concordance between the two codes structure were mapped as necessary.
- Total GDP and labour data for Canada and provinces was taken from appropriate Statistics Canada tables.
- Total labour data for territories is not given in the labor force tables by Statistics Canada. It was estimated using the employment multipliers from the supply-use tables.
- Type I and Type II multipliers are not available at provincial level and output impact is not reported at provincial level.



Disclaimer: This report was primary written in November 2023. Revisions to national accounts data can occur resulting in discrepancies with numbers in this report not matching. All sources are provided in each page for updated figures.

Economic impact assessment measures how an increase in demand for a sector impacts economic outcomes



Note: The study focuses on the impact of the conventional oil and gas extraction as well as of support activities. Investments by the sector are not included.