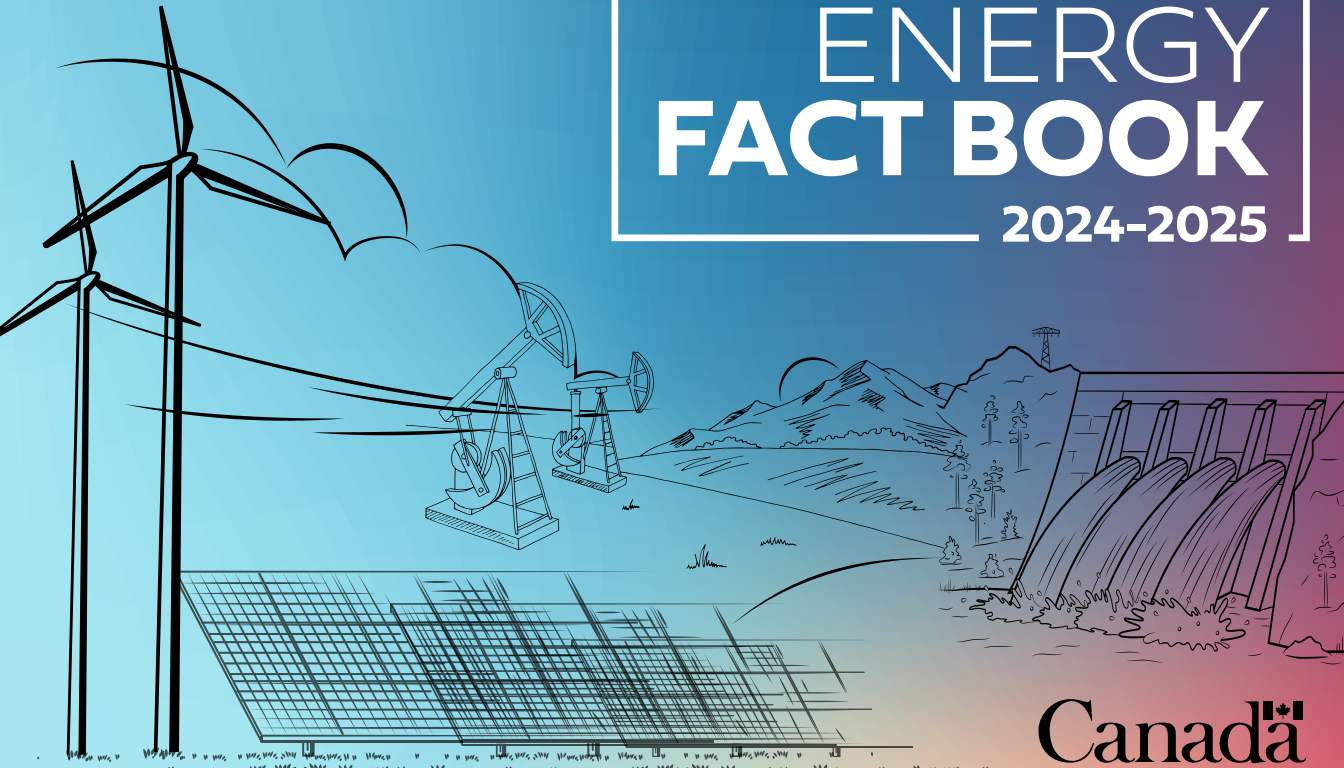
Natural Resources Canada

Ressources naturelles Canada

ENERGY FACT BOOK 2024–2025



Canada

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ENERGY FACT BOOK

2024–2025

Canada

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PREFACE

The purpose of the *Energy Fact Book* is to provide key information on energy markets in Canada in a format that is easy to consult. Resources including a summary of units and conversion factors, abbreviations, and data sources used throughout this publication are available in the annexes.

All data is subject to revisions by statistical sources. In some instances, more than one source may be available and discrepancies in numbers may occur because of conceptual or methodological differences. In addition, some numbers may not add up precisely due to rounding.

This publication was assembled by the Energy and Economic Analysis Division of the Energy Policy Branch with the help of subject experts from across Natural Resources Canada (NRCan).

For questions or comments, contact NRCan at **energyfacts-faitsenergetiques@nrcan-rncan.gc.ca.**

In this publication, energy industries are generally considered to include oil and gas extraction; coal mining; uranium mining; electric power generation, transmission and distribution; pipeline transportation; natural gas distribution; biofuels production; petroleum refineries; and support activities for oil and gas extraction. The petroleum sector is a subset of these industries, and in this publication consists of oil and gas extraction and support activities, pipeline transportation and distribution of oil and gas, and petroleum refineries.

Clean energy industries such as renewable and nuclear electricity generation, biofuels production and carbon capture and storage facilities are contained within the definition of energy industries. Some energy-related industries (e.g. petroleum product wholesaler-distributors and coal product manufacturing) are excluded because of a lack of data.

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INTRODUCTION

From an energy perspective, Canada is very fortunate. We have a large land mass, small population and one of the largest and most diverse supplies of energy in the world. Our rivers discharge close to 7% of the world's renewable water – a tremendous source of hydroelectric power. We have the fourth-largest proven oil reserves and third-largest reserves of uranium; our energy resources are a source of strength that continues to shape our economy and society.

Canada is at the forefront of innovative technologies for how we produce and use energy. For example, low- or non-emitting forms of energy are growing in significance as part of our evolving electricity mix. In fact, wind and solar photovoltaic (PV) energy are the fastest-growing sources of electricity generation in Canada. In addition, technological advancements, such as co-generation, have resulted in an increase in energy-efficient practices and a reduction in greenhouse gas (GHG) emissions in areas such as the oil sands. Ongoing developments in areas such as grid-scale electricity storage, carbon capture and storage, hydrogen, and electric and alternative fuel vehicles have the potential to further transform the energy system.

For over ten years, the *Energy Fact Book* has provided a solid foundation for Canadians to understand and discuss important developments across the energy sector. A significant milestone in Canadian energy information was achieved in 2019 with the launch of the Canadian Center for Energy Information (CCEI). Housed at Statistics Canada, the CCEI brings together Canada's existing energy information in one place, facilitating access to products like the Energy Fact Book.

Section 2:
Investment

Capital expenditures

Canada's Energy Infrastructure and Major Energy Projects

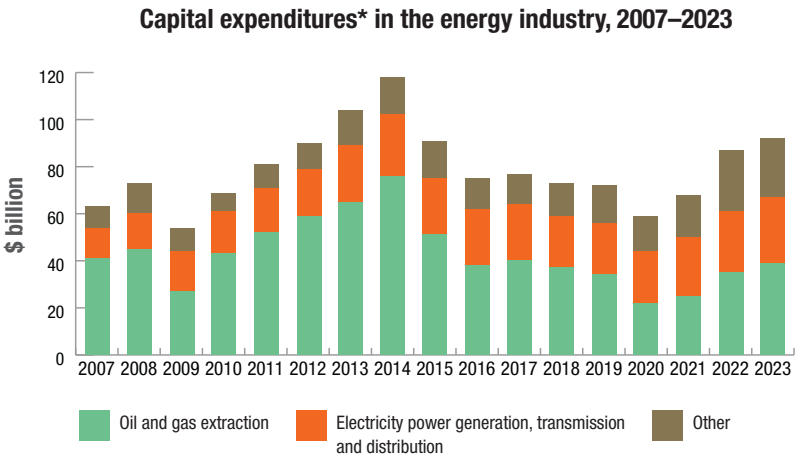
Foreign Direct Investment and Canadian Direct Investment Abroad

Canadian Energy Assets Abroad, foreign control of assets

RD&D and Mission Innovation

Environmental Protection Expenditures

CAPITAL EXPENDITURES

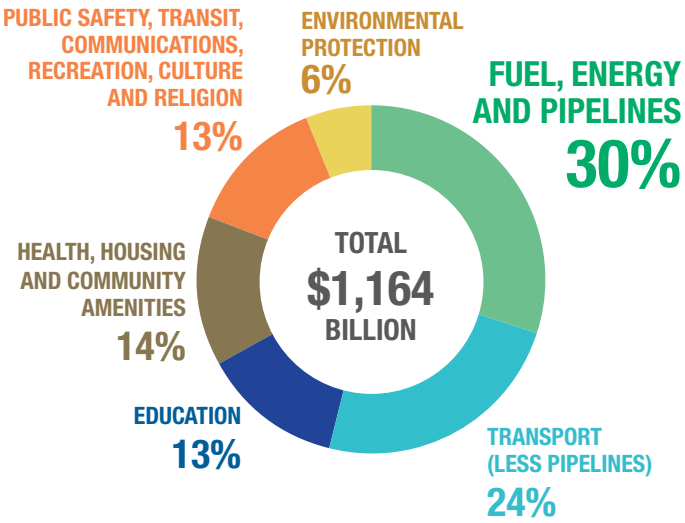


- Capital expenditures in Canada's energy sector totaled **$92 billion** in 2023, a decrease of 22% from a peak in 2014.
- After reaching an eleven year low of **$59 billion** in 2020, investment has rebounded by **47%**.
- Oil and gas extraction was the largest area of energy sector capital expenditure at **$39.2 billion** in 2023, followed by electrical power generation and distribution ($27.6 billion).

*Excludes residential expenditures and intellectual property investments such as exploration expenses. Includes investments in renewable electricity, does not capture other forms of renewable energy.

CANADA'S ENERGY INFRASTRUCTURE

Fuel, energy and pipeline infrastructure made up the largest proportion of Canada's infrastructure at **30%** of net stock in 2023.



Statistics Canada defines infrastructure as:

> "the physical structures and systems that support the production of goods and services and their delivery to and consumption by governments, businesses and citizens."

Fuel, energy and pipeline infrastructure includes electric power infrastructure like wind and solar, hydro, nuclear, and thermal generation, power transmission and distribution lines and oil and gas pipelines.

FUEL, ENERGY AND PIPELINE INFRASTRUCTURE INVESTMENT AND OPERATIONS

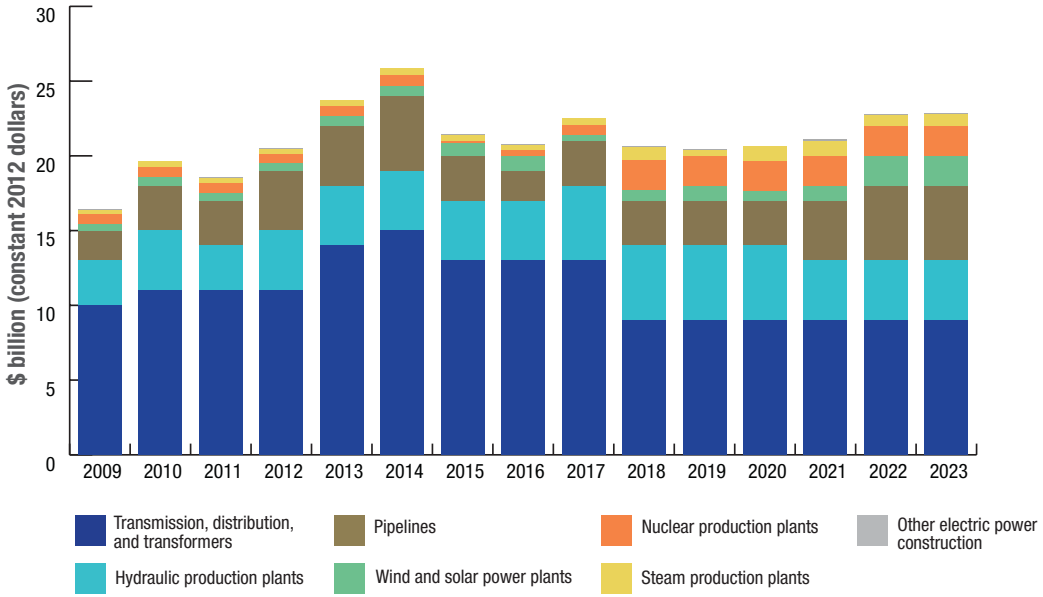
supported
140.1 k jobs

generated $12.7 billion
in employment income

and $23.5 billion
in GDP
in 2023
(direct and indirect contributions).

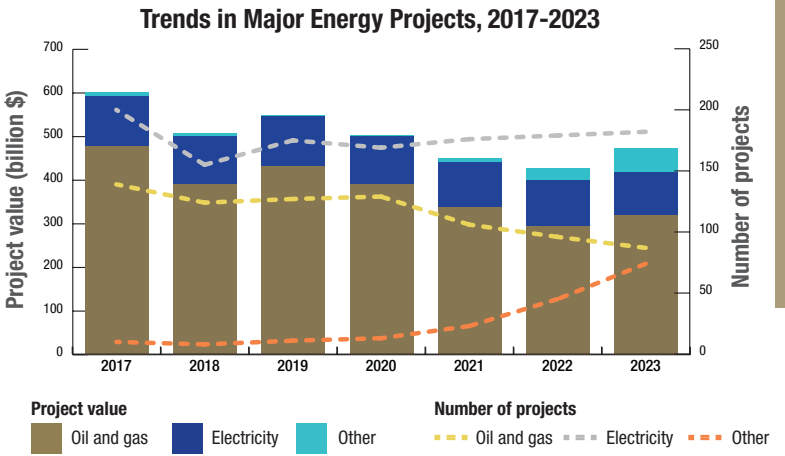
Public and private investment in fuel, energy and pipeline infrastructure in 2023 was **$30.6 billion** (nominal).

Public and private investment in fuel, energy and pipeline infrastructure, 2009–2023



CANADA'S MAJOR ENERGY PROJECTS

- In 2023, there were 223 planned (announced, under review, or approved) energy projects worth **$294B**, and 120 energy projects under construction worth **$180B**.
- Oil and gas sector projects accounted for the largest portion of project value ($319B), while there were more electricity projects overall (182).
- There were **233 clean technology projects** valued at **$159B**.



Natural Resources Canada's Major Projects Inventory captures information on major natural resource projects in Canada that are either currently under construction or planned in the next 10 years.

Minimum capital thresholds for inclusion are: **$50 million** for oil and gas, **$20 million** for electricity, and **$10 million** for other clean energy or technology projects.

Projects that are either announced, under review, approved and under construction are included.

CLEAN TECHNOLOGY PROJECT TRENDS 2018-2023

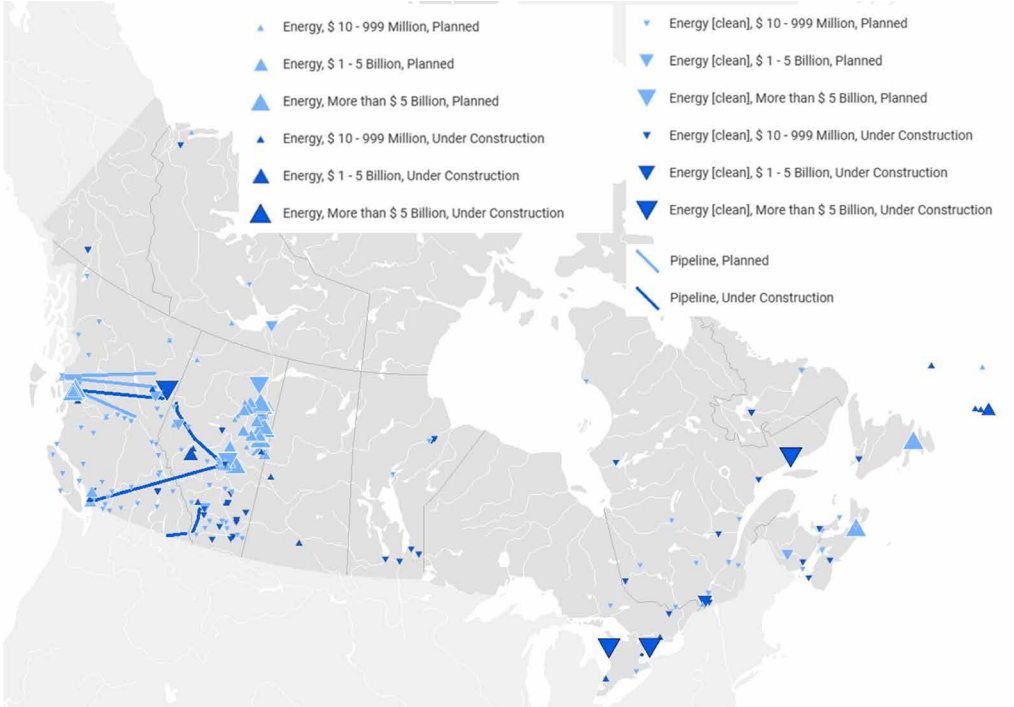
	2018	2019	2020	2021	2022	2023
Total Clean Technology Projects	**144 projects ($109.5B)**	**151 projects ($99.3B)**	**159 projects ($99.4B)**	**178 projects ($104B)**	**197 projects ($118B)**	**233 projects ($159B)**
Hydro	65 projects ($48.2B)	70 projects ($50.0B)	61 projects ($52.0B)	58 projects ($39.2B)	63 projects ($44.8B)	78 projects ($38.9B)
Wind	27 projects ($9.1B)	31 projects ($9.4B)	36 projects ($8.3B)	41 projects ($14.6B)	35 projects ($13.4B)	31 projects ($12.3B)
Biomass/Biofuels	33 projects ($6.4B)	32 projects ($3.0B)	29 projects ($4.6B)	31 projects ($8.0B)	35 proejcts ($9.4B)	42 projects ($13.8B)
Solar	7 projects ($0.9B)	6 projects ($0.7B)	13 projects ($1.4B)	22 projects ($2.2B)	30 projects ($3.0B)	31 projects ($6.2B)
Nuclear	5 projects ($28.5B)	5 projects ($28.5B)	3 projects ($26.1B)	4 projects ($27.4B)	3 projects ($26.1B)	2 projects ($25.8B)
Carbon Capture and Storage	3 projects ($16.3B)	2 projects ($7.2B)	1 project ($6.0B)	2 projects ($11.3B)	6 projects ($15.5B)	9 projects ($38.3B)
Geothermal	1 project ($0.0B)	2 projects ($0.2B)	3 projects ($0.3B)	5 projects ($0.4B)	4 projects ($0.4B)	4 projects ($0.4B)
Tidal	0 project ($0.0B)	1 project ($0.1B)	6 projects ($0.3B)	6 projects ($0.3B)	7 projects ($0.4B)	7 projects ($0.4B)
Multiple[1]	0 project ($0.0B)	0 project ($0.0B)	0 project ($0.0B)	1 project ($0.03B)	1 project ($0.03B)	1 project ($0.03B)
Other[2]	3 projects ($0.1B)	2 projects ($0.1B)	7 projects ($0.4B)	8 projects ($0.5B)	13 projects ($5.3B)	28 projects ($22.6B)

Certain values from 2020 to 2022 have been revised due to updated data.

[1] The Haida Gwaii Clean Energy Project is a multi-phased project consisting of hydro and solar sites.

[2] "Other" includes novel initiatives such as micro-grid projects, battery storage projects, bioplastics, and a helium purification plant.

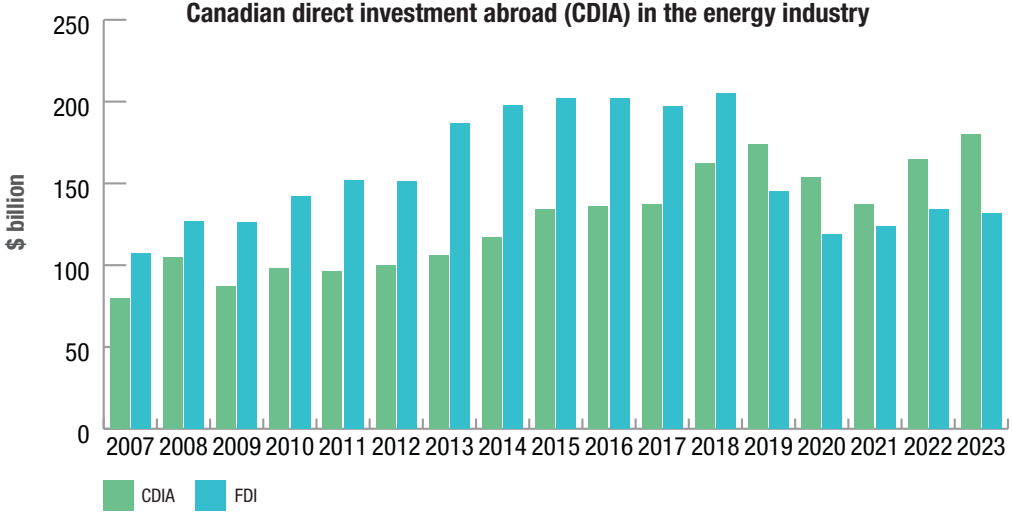
MAJOR ENERGY PROJECTS
PLANNED AND UNDER CONSTRUCTION, 2023-2033



INTERNATIONAL INVESTMENTS AND INVESTORS

Canada's energy industries operate in free markets, where investments by both Canadian and foreign companies ensure an efficient, competitive and innovative energy system.

Stock of foreign direct investment (FDI)* in Canada and Canadian direct investment abroad (CDIA) in the energy industry



* Direct investment is defined as a company owning a minimum of 10% of voting equity interest in a foreign enterprise and is measured as the total equity value at the time of acquisition. Excludes residential expenditures and intellectual property investments such as exploration expenses.

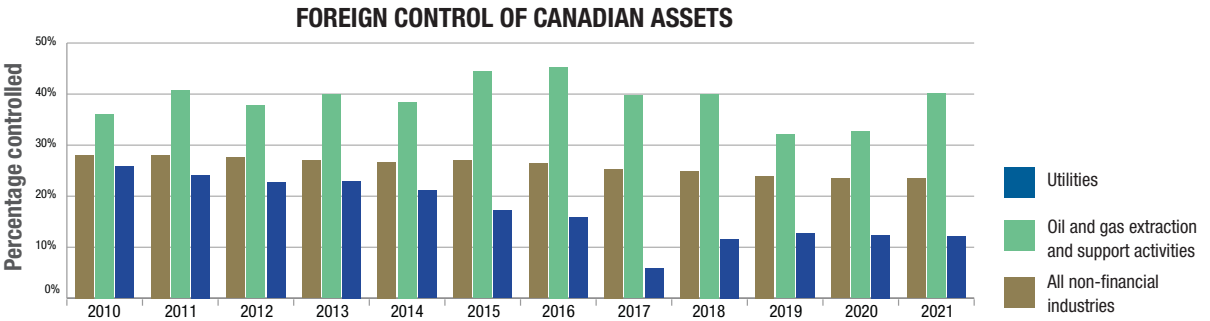
FDI and CDIA include investments in renewable electricity, do not capture other forms of renewable energy.

STOCK OF FOREIGN DIRECT INVESTMENT IN CANADA AND CANADIAN DIRECT INVESTMENT ABROAD

- The stock of **foreign direct investment** (FDI) in the energy sector fell in 2023 to **$132 billion** (-1.8% over the previous year).
- The energy industry's share of overall FDI in Canada was **10%** in 2023, same as in 2022.
- The stock of **Canadian direct investment abroad** (CDIA) was valued at **$180 billion** in 2023, up 9% from 2022.
- Investment in oil and gas extraction accounted for **$39 billion** of the CDIA stock in 2023.

FOREIGN CONTROL OF CANADIAN ASSETS

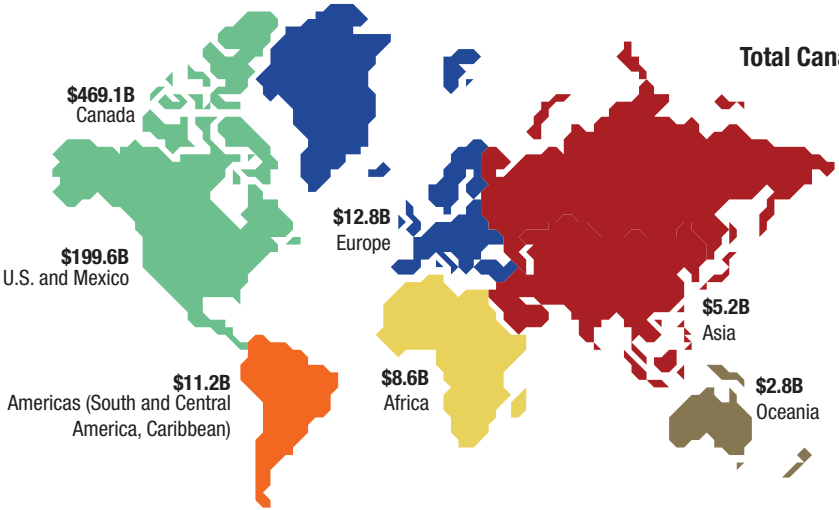
Foreign control is a measure of the extent to which foreign entities operate in Canada. Generally, a corporation is deemed to be foreign-controlled if **more than 50%** of its shares are owned by one or more foreign companies.



CANADIAN ENERGY ASSETS

The total value of Canadian* energy assets (CEA) went up in 2021 to **$710 billion**, a slight increase of **2.1%** from **$695 billion** in 2020. In 2021, domestic CEA totaled **$469 billion**, **down 2.3%** from 2020, while CEA abroad totaled **$240 billion**, up from **$215 billion**.

CANADIAN ENERGY ASSETS BY REGION, 2021



Total Canadian energy assets

$710B

Total Canadian energy assets abroad

$240B

* A Canadian company is here defined as a publicly traded company headquartered in Canada and not foreign-controlled.

RESEARCH, DEVELOPMENT AND DEMONSTRATION

CANADIAN TOTAL EXPENDITURES ON ENERGY RD&D

In 2022-23, federal energy RD&D expenditures were $1,061M and provincial and territorial (P&T) government energy RD&D expenditures were $424M, for a combined total of $1,485M.

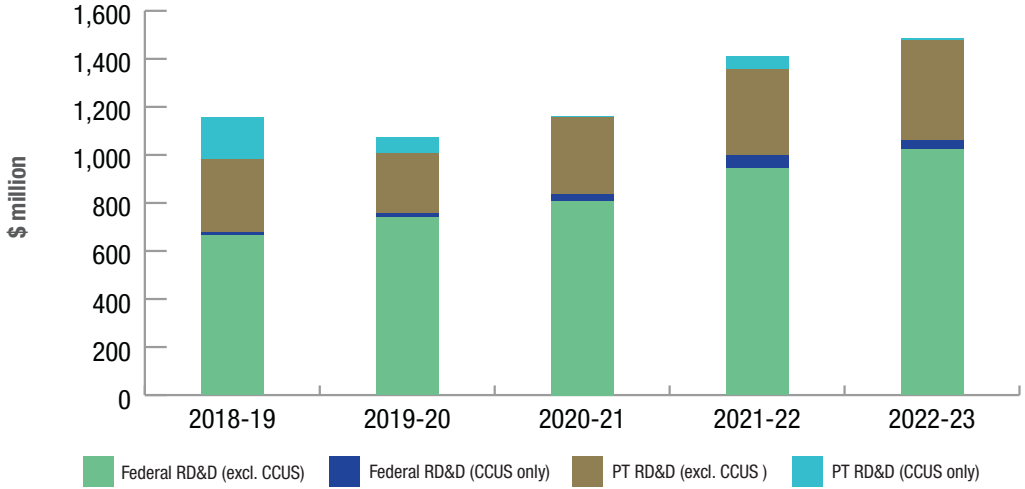
In 2022-23, federal spending increased by **6% ($60M) compared to 2021-22**. Energy efficiency accounts for one third of total federal expenditures ($385M) and investments **show a steady increase** since 2018-19 ($289M).

Canada's active participation in Mission Innovation (MI) has catalyzed increased investments in clean energy RD&D, including from 2015-2021 when Canada surpassed its MI commitment to double investments in clean energy RD&D, and through Canada's 2022 commitment of $2B in pre-allocated money to the Clean Energy Technologies Demonstration Challenge, mobilizing public investments internationally for clean energy demonstrations by 2026. Through the first two years of its commitment, federal demonstration investments have reached over $500M and remain on track to meet the 2026 commitment.

In 2022-23, P&T spending increased by **3% ($13M increase)**. CCUS had a significant decrease by $45M to $9M in 2022-23, compared to $54M in 2021-22.

Canadian industry spent about **$2.3B** on energy R&D in 2021, a significant increase from the spending reported in 2020 (**$1.7B**).

CANADIAN PUBLIC EXPENDITURES ON ENERGY RD&D



* Provincial and territorial (P/T) includes utilities and other publicly owned entities (i.e. State-Owned Entities).

Generally, federal and provincial/territorial energy RD&D spending continues to increase with significant and steady federal contributions. In 2022-23, combined federal, provincial/territorial CCUS spending decreased, similar to the spending in 2020-21.

EXPENDITURES ON ENERGY RD&D BY TECHNOLOGY AREA ($ MILLIONS)

	Federal (2022-23)	Provincial and territorial (2022-23)	Industry (2021)
Hydrocarbons (including CCUS)	96	63	830
Renewable and non-emitting energy**	530	154	756
Energy end use***	435	208	701
Total*	1,061	424	2,287

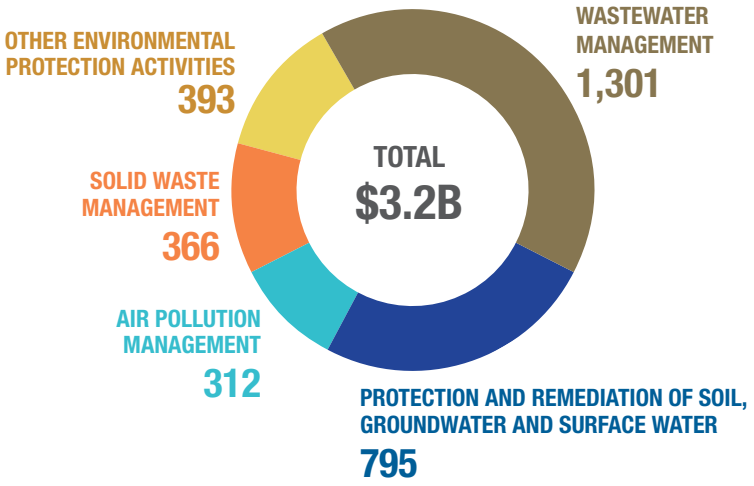
* Totals may not be exact due to rounding.
** Renewable and non-emitting energy includes renewable and nuclear energy.
*** Energy end use includes energy efficiency related to transport, industry and buildings & communities.
Note: Latest data for industry spending was not available at the time of this publication.

ENVIRONMENTAL PROTECTION EXPENDITURES

Environmental protection expenditures (operating and capital spending combined) by the energy sector totalled **$4.3 billion** in 2021, representing **41%** of expenditures made by all industries.

The oil and gas sector ($3.2 billion) accounts for the largest share of those expenditures, at 30% of total environmental protection expenditures made by all industries.

OIL AND GAS EXTRACTION EXPENDITURES PER ENVIRONMENTAL ACTIVITY (2021, $ MILLIONS)



- Electric power generation, transmission and distribution invested **$689 million** on environmental protection measures.
- Petroleum and coal product manufacturing invested **$425 million** in environmental protection activities, with the largest percentage of spending (84%) in pollution abatement and control.

ANNEXES

ANNEX 1: UNITS AND CONVERSION FACTORS

PREFIXES AND EQUIVALENTS

Prefix SI/Metric		Imperial	Equivalent	
k	kilo	M	thousand	10^3
M	mega	MM	million	10^6
G	giga	B	billion	10^9
T	tera	T	trillion	10^{12}
P	peta	-	quadrillion	10^{15}

Notes

- Tonne may be abbreviated to “t” and is not to be confused with “T” for tera or trillion.
- Roman numerals are sometimes used with imperial units (this can create confusion with the metric “M”).

CRUDE OIL

Upstream

- reserves usually in barrels or multiples (million barrels)
- production/capacity often in barrels per day or multiples (thousand barrels/day or Mb/d, million barrels/day or MMb/d)
- metric: 1 cubic metre = 6.2898 barrels
- International Energy Agency: uses weight (tonnes) rather than volume

Downstream (petroleum products)

- volumes of refined products usually in litres
- 1,000 litres = 1 cubic metre
- U.S.: 1 U.S. gallon = 3.785 litres

NATURAL GAS

Volume

- reserves/production usually in cubic feet or multiples (billion cubic feet or Bcf, trillion cubic feet or Tcf)
- production/capacity often in cubic feet per day or multiples (Bcf/d, Tcf/d)
- metric: 1 cubic metre = 35.3147 cubic feet

Density

- 1 million t LNG = 48.0279 billion cubic feet

Pricing

Volume-based:

- cents per cubic metre (¢/m^3) (customer level in Canada)
- $ per hundred cubic feet ($/CCF) (customer level in the U.S.)

Energy content-based:

- $ per gigajoule ($/GJ) (company level in Canada)
- $ per million British thermal units ($/MMbtu) (company level in the U.S., LNG)

URANIUM

- 1 metric tonne = 1,000 kilograms of uranium metal (U)
- U.S.: in pounds of uranium oxide (U_3O_8)
- 1 lb. U_3O_8 = 0.84802 lb. U = 0.38465 kg U

COAL

- 1 metric tonne = 1,000 kilograms
- U.S.: 1 short ton = 2,000 pounds
- 1 metric tonne = 1.10231 short tons

ELECTRICITY

Capacity

- maximum rated output that can be supplied at an instant, commonly expressed in megawatts (MW)

Total capacity

- installed generator nameplate capacity

Generation/sales

- flow of electricity over time, expressed in watt-hours or multiples:
  - kilowatt-hours or kWh (e.g. customer level)
  - megawatt-hours or MWh (e.g. plant level)
  - gigawatt-hours or GWh (e.g. utility level)
  - terawatt-hours or TWh (e.g. country level)

From capacity to generation

- A 1-MW unit operating at full capacity over one hour generates 1 MWh of electricity
- Over one year, this unit could generate up to 8,760 MWh (1 MW × 24 hr × 365 days)

- Units are rarely used at full capacity over time because of factors such as maintenance requirements, resource limitations and low demand
- "Capacity factor" is the ratio of actual generation to full capacity potential

ENERGY CONTENT

Rather than using "natural" units (e.g. volume, weight), energy sources can be measured according to their energy content – this allows comparison between energy sources

- metric: joules or multiples (gigajoules or GJ, terajoules or TJ, petajoules or PJ)
- U.S.: 1 British thermal unit (BTU) = 1,055.06 joules
- IEA: energy balances expressed in oil equivalent: :
  - thousand tonnes of oil equivalent (ktoe)
  - million tonnes of oil equivalent (Mtoe)

Typical values

- 1 m^3 of crude oil = 39.0 GJ
- 1,000 m^3 of natural gas = 38.3 GJ
- 1 MWh of electricity = 3.6 GJ
- 1 metric tonne of coal = 29.3 GJ
- 1 metric tonne of wood waste = 18.0 GJ
- 1 metric tonne of uranium = 420,000 GJ to 672,000 GJ

ANNEX 2: ABBREVIATIONS

AC	alternating current
AECO	Alberta Energy Company
AESO	Alberta Electric System Operator
AER	Alberta Energy Regulator
B	billion
b/d	barrels per day
Bcf/d	billion cubic feet per day
Bcm/d	billion cubic metres per day
BEV	battery electric vehicle
CANDU	Canada deuterium uranium
CAPP	Canadian Association of Petroleum Producers
CanREA	Canadian Renewable Energy Association
CCS	carbon capture and storage
CCUS	carbon capture, utilization and storage
CDIA	Canadian direct investment abroad
CEA	Canadian energy assets
CER	Canada Energy Regulator
CFS	Canadian Forest Service
CO_2 equivalent	carbon dioxide equivalent
CPI	consumer price index
CPL	cents per litre
DC	direct current
ECCC	Environment and Climate Change Canada
ECTPEA	Environmental and Clean Technology Products Economic Account
EGS	enhanced geothermal system
EIA	Energy Information Administration (U.S.)
EU	European Union
EV	electric vehicle
FDI	foreign direct investment
G7	seven wealthiest major developed nations: Canada, France, Germany, Italy, Japan, U.K. and U.S.
GDP	gross domestic product
GHG	greenhouse gas
GJ	gigajoule
GST	Goods and Services tax
GWh	gigawatt hours
HGL	hydrocarbon gas liquids
HST	Harmonized sales tax
IEA	International Energy Agency
IHA	International Hydropower Association
kg	kilogram
km	kilometre
km^2	square kilometre
kt	kilotonne
kWh	kilowatt hour
lb.	pound
L	litre
LCOE	levelized cost of electricity
LNG	liquefied natural gas
LPG	liquefied petroleum gases
LWR	light water reactor

m	metre
m^2	square metre
m^3	cubic metre
Mb/d	thousand barrels per day
MJ	megajoule
MMb/d	million barrels per day
MMcf/d	million cubic feet per day
MMbtu	million British thermal units
Mt	million tonnes; megatonne
Mtoe	million tons of oil equivalent
MW	megawatt
NGCC	natural gas combined cycle
NGL	natural gas liquids
NRCan	Natural Resources Canada
OEE	NRCan Office of Energy Efficiency
NRSA	Natural Resources Satellite Account
NSERC	National Science and Engineering Research Council of Canada
NYMEX	New York Mercantile Exchange
OECD	Organisation for Economic Co-operation and Development
PHEV	plug-in hybrid electric vehicle
PHWR	pressurized heavy water reactor
PJ	petajoule
Pkm	passenger-kilometre

Provinces

Alta.	Alberta
B.C.	British Columbia
Man.	Manitoba
N.B.	New Brunswick
N.L.	Newfoundland and Labrador
N.S.	Nova Scotia
N.W.T.	Northwest Territories
Ont.	Ontario
P.E.I.	Prince Edward Island
Que.	Quebec
Sask.	Saskatchewan
Y.T.	Yukon
Atl.	Atlantic provinces
Terr.	Territories
P/T	provincial/territorial
PV	photovoltaic
RD&D	research, development and demonstration
R&D	research and development
RPP	refined petroleum products
SDTC	Sustainable Development Technology Canada
StatCan	Statistics Canada

States

Ala.	Alabama
Ariz.	Arizona
Ark.	Arkansas
Calif.	California

Colo. – Colorad
Conn. – Connecticut
Del. – Delaware
D.C. – District of Columbia
Fla. – Florida
Ga. – Georgia
Ill. – Illinois
Ind. – Indiana
Kans. – Kansas
Ky. – Kentucky
La. – Louisiana
Me. – Maine
Md. – Maryland
Mass. – Massachusetts
Mich. – Michigan
Minn. – Minnesota
Miss. – Mississippi
Mo. – Missouri
Mont. – Montana
Nebr.– Nebraska
Nev. – Nevada
N.H. – New Hampshire
N.J. – New Jersey
N.Mex. – New Mexico
N.Y.– New York
N.C.– North Carolina
N.D. – North Dakota
Okla.– Oklahoma
Ore. – Oregon
Penn. – Pennsylvania
R.I. – Rhode Island
S.C. – South Carolina
S.D. – South Dakota
Tenn. – Tennessee
Tex. – Texas
Vt.– Vermont
Va. – Virginia
Wash. – Washington
W.Va. – West Virginia
Wis. – Wisconsin
Wyo. – Wyoming

Tcf	trillion cubic feet
Tcm	trillion cubic metres
Tkm	tonne-kilometre
t	tonnes
TPES	total primary energy supply
TWh	terawatt-hour
TSX	Toronto Stock Exchange
U.K.	United Kingdom
U.S.	United States
US$	United States dollars
V	volt
WCS	Western Canadian Select
WTI	West Texas Intermediate

ANNEX 3: SOURCES

SECTION 1: KEY ENERGY, ECONOMIC AND ENVIRONMENTAL INDICATORS

- **ENERGY PRODUCTION AND SUPPLY**
  - **Global Primary Energy Production:** IEA. *Annual Database*
  - **Global Energy Rankings:** IEA. *Annual Database*; IHA. *World Hydropower Outlook*
  - **Primary Energy Production by Region & Source:** StatCan. Tables *25-10-0020-01, 25-10-0029-01, 25-10-0030-01, 25-10-0031-01,* and *25-10-0082-01*; NRCan OEE. *National Energy Use Database*; ECCC. *Special tabulations*
  - **Canada's energy supply:** IEA. *Annual Database*
  - **Primary and secondary energy use:** NRCan OEE. *National Energy Use Database*
- **ECONOMIC CONTRIBUTION**
  - **GDP:** StatCan. Tables *38-10-0285-01, 36-10-0221-01, 36-10-0103-01* and *36-10-0400-01*; StatCan. *Custom tabulations*; NRCan estimates
  - **Employment:** StatCan. Tables *38-10-0285-01, 36-10-0480-01* and *14-10-0023-01*; StatCan. *Custom tabulations*; NRCan estimates
  - **Energy Trade:** StatCan. *International Merchandise Trade Database*; IEA. *Annual Database*; U.S. EIA. *U.S. Imports by Country of Origin*
  - **Canada-U.S. Energy Trade:** StatCan. *International Merchandise Trade Database*; U.S. EIA. *U.S. Imports by Country of Origin*; U.S. Bureau of Economic Analysis. *Gross Domestic Product by State*
  - **Government Revenues:** StatCan. Tables *33-10-0500-01* and *25-10-0065-01*; CAPP. *Statistical Handbook*, *Table 01-01*; geoLOGIC Systems Ltd. Daily Oil Bulletin. *Land sales data*; Canada-Newfoundland and Labrador Offshore Petroleum Board; *Annual Report*; Canada-Nova Scotia Offshore Petroleum Board. *Annual Report*
- **ENERGY AND GHG EMISSIONS**
  - **Emissions by Sector:** ECCC. *National Inventory Report*; Climate Watch. *Data Explorer*
  - **Indexed Trend in GHG Emissions:** ECCC. *National Inventory Report*; StatCan. Tables *17-10-0005-01* and *36-10-0434-03*

SECTION 2: INVESTMENT

- **Capital expenditures:** StatC*an. Tables 34-10-0035-01, 34-10-0036-01* and *34-10-0040-01*
- **Canada's Energy Infrastructure:** StatCan. Table *36-10-0608-01*
- **Canada's Major Energy Projects:** NRCan. *Major Projects Inventory*
- **Foreign Direct Investment and Canadian Direct Investment Abroad:** StatCan. Table *36-10-0009-01*
- **Foreign Control of Canadian Assets:** StatCan. Tables *33-10-0033-01, 33-10-0005-01* and *33-10-0006-01*
- **Canadian Energy Assets:** Compiled by NRCan from S&P Global Market Intelligence and annual financial statements from publicly traded Canadian energy companies
- **Research, Development and Demonstration:** Compiled by NRCan from internal sources
- **Environmental Protection Expenditures:** StatCan. Tables *38-10-0130-01* and *38-10-0132-01*

SECTION 3: SKILLS, DIVERSITY AND COMMUNITY

- **Energy Sector Demographics:** StatCan. *NRSA Human Resources*

Module custom tables

- **Energy Affordability:** StatCan. Estimation of Energy Poverty Rates Using the 2021 Census of Population ; StatCan. Table *11-10-0222-01*
- **Household Expenditures on Energy:** StatCan. Table *11-10-0222-01*
- **Energy Retail Prices:** StatCan. Table *18-10-0004-01* and *18-10-0001-01*; IEA. *Annual Database*
- **Energy Reliant Communities:** NRCan analysis based on StatCan 2021 Census Data

SECTION 4: ENERGY EFFICIENCY

- **Energy use, efficiency and trends:** NRCan OEE. *National Energy Use Database*; NRCan estimates

SECTION 5. CLEAN POWER AND LOW CARBON FUELS

- **CLEAN TECHNOLOGY AND THE ECONOMY**
  - **Environmental and clean technology:** NRCan. *2022 Cleantech Industry Survey*; StatCan. Tables *14-10-0023-01, 36-10-0103-01, 36-10-0629-01* and *36-10-0632-01*; Toronto Stock Exchange. *TSX & TSXV Listed Companies*
- **ELECTRICITY**
  - **World production and exports:** IEA. *Electricity Information* [note: IEA production/generation data is expressed on a "gross" basis, i.e. before generating station use])
  - **Trade:** CER. *Commodity Tracking System*
  - **Canadian and provincial supply:** Compiled by NRCan's Energy Systems Sector from various sources
  - **Prices:** Hydro-Québec. *Comparison of Electricity Prices in Major North American Cities*
  - **Electricity energy use:** NRCan OEE. *National Energy Use Database*
- **RENEWABLES**
  - **Electricity GHG emissions:** ECCC. *National Inventory Report*
  - **International context – Production:** IEA. *Renewables Information*
  - **International context – share of energy supply:** IEA. *World renewables and waste energy supply*
  - **Domestic production:** IEA. *Renewables Information*
  - **Hydro – international generation:** IEA. *Electricity Information*; IEA. *Energy Balances of OECD Countries*; IEA. *Energy Balances of Non-OECD Countries*
  - **Hydro – capacity in Canada:** WaterPower Canada. *Hydropower Refurbishments and Redevelopments in Canada*
  - **Hydro – facilities and projects:** WaterPower Canada. *Hydropower Refurbishments and Redevelopments in Canada*
  - **Biomass – Renewable balance:** IEA. *Renewables balances*
  - **Biomass – production and facilities:** StatCan. Table *25-10-0031-01*; NRCan CFS data compiled from various sources
  - **Biomass – wood fuel use by sector:** StatCan. Tables *25-10-0025-01* and *25-10-0084-01*; NRCan estimates
  - **Wind – international context:** Global Wind Energy Council. Global Wind Report
  - **Wind – generation and capacity in Canada:** CanREA. *By the Numbers*; NRCan analysis based on various sources
  - **Wind – wind farms:** AESO. *Current Supply Demand Report*; CanREA. *By the Numbers*; Government of Ontario. *Renewable*

Energy Projects Listing; Hydro Québec. *Electricity supply contracts in force in Québec*; SaskPower. *System Map*

- **Solar PV – international context:** IEA Photovoltaic Power Systems Programme. *2024 Snapshot of Global PV Markets*
- **Solar PV – capacity in Canada:** NRCan and CanREA. *National Survey Report of PV Power Applications in Canada - 2022*
- **Solar PV – generation in Canada:** Compiled by NRCan from various sources
- **Solar PV – solar PV farms:** CanREA. *By the Numbers*; AESO. *Current Supply Demand Report*; Government of Ontario. *Renewable Energy Projects Listing*; NRCan analysis based on various sources

- **URANIUM AND NUCLEAR**
  - **World uranium production and exports:** World Nuclear Association. *World Uranium Mining*; NRCan estimates
  - **World known recoverable resources of uranium:** OECD Nuclear Energy Agency and International Atomic Energy Agency. Uranium: *Resource, Production and Demand*; World Nuclear Association. *Supply of Uranium*
  - **World generation of nuclear power:** International Atomic Energy Agency. *Nuclear Power Reactors in the World*
  - **Canadian supply and demand:** World Nuclear Association. *Uranium in Canada*; Cameco. *Annual report*; NRCan estimates
  - **Nuclear in Canada infographic:** NRCan. *Nuclear Energy and Uranium*
  - **Purchases by U.S. nuclear reactors:** U.S. EIA. *Uranium Marketing Annual Report*
  - **CANDU nuclear reactors and nuclear power plants in Canada:** International Atomic Energy Agency. *Power Reactor Information System*; NRCan analysis based on various sources
  - **Spot prices:** U.S. EIA. *Annual Uranium Market Report*

- **BIOFUELS AND TRANSPORTATION**
  - **Biofuels – international context:** IEA. *Renewables Information*
  - **Biofuels – production, supply and demand:** StatCan. Tables *25-10-0081-01* and *25-10-0082-01*
  - **Transportation – Electric vehicle sales:** StatCan. Tables *20-10-0021-01* and *20-10-0024-02*
  - **Transportation – Electric vehicle chargers:** NRCan. *Electric vehicle charging – EV charging basics*; NRCan. *Electric Charging and Alternative Fuelling Stations Locator*
  - **Transportation – GHG emissions:** ECCC. *National Inventory Report*
  - **Hydrogen:** IEA. *Global Hydrogen Review*; NRCan. *Hydrogen Strategy for Canada*

SECTION 6: PETROLEUM, GAS AND COAL

- **PETROLEUM AND THE ECONOMY**
  - **GDP and employment:** StatCan. Tables *38-10-0285-01* and *36-10-0480-01*; *StatCan. Special tabulations of the NRSA Human Resources Module*
  - **Capital expenditures:** StatCan. Table *34-10-0036-01* and *special tabulations*
  - **Exports:** StatCan. *International Merchandise Trade Database*

- **CRUDE OIL**
  - **World production and exports:** IEA. *Annual Database*
  - **World proved reserves:** Oil and Gas Journal. *Worldwide Look at Reserves and Production*
  - **Canadian resources – remaining established reserves:** AER. *Alberta Energy Outlook (ST98)*; CAPP. *Conventional reserves special tabulation*
  - **Oil wells in Western Canada:** AER. *ST59: Alberta Drilling*

Activity Monthly Statistics; BCER. *Drilling Data for All Wells in BC [BCOGC-41984]*; Petrinex. *Saskatchewan Public Data*; Province of Manitoba. *Oil & Gas Statistics*

- **Canadian and provincial production:** StatCan. Tables *25-10-0063-01* and *25-10-0014-01*; NRCan analysis
- **Canadian Supply and Demand:** StatCan. Tables *25-10-0063-01* and *25-10-0014-01*; *StatCan. International Merchandise Trade Database*
- **Trade:** StatCan. Table *25-10-0063-01*; StatCan. *International Merchandise Trade Database*; U.S. EIA. *Imports by Country of Origin and Refining and Processing*
- **Oil Sands:** CAPP. *Statistical Handbook*, *Table 04-14*; StatCan. Tables *34-10-0036-01* and *25-10-0063-01*; AER. *Alberta Energy Outlook (ST98)*
- **Prices:** U.S. EIA. Table *Cushing*, *OK WTI Spot Price FOB*; Sproule. *Price Forecast*
- **Pipelines:** CER. *Crude Oil Pipeline Transportation System*
- **Transportation by Rail:** CER. *Canadian Crude Oil Exports by Rail – Monthly Data*; StatCan. Table *23-10-0062-01*
- **Oil Sands Environmental Considerations:** ECCC. *National Inventory Report*; World Resources Institute. *Country Greenhouse Gas Emissions Data*; Alberta Government. *Oil Sands Information Portal*; Alberta Government. *Oil Sands 101*; Alberta Government. *Lower Athabasca Regional Plan*; AER. *Oil Sands Mining Water Use*; AER. *Oil Sands In Situ Recovery Water Use*; AER. *Alberta Mineable Oil Sands Plant Statistics Monthly Supplement (ST39)*; AER. *Alberta In Situ Oil Sands Production Summary (ST53)*; StatCan. Table *25-10-0063-01*; NRCan. *Boreal forest data*

- **NATURAL GAS**
  - **World production and exports:** IEA. *World natural gas statistics*
  - **World proved reserves:** Oil and Gas Journal. *Worldwide look at reserves and production*
  - **Canada and U.S. – Proved reserves:** U.S. EIA. *International Data Browser*; Oil and Gas Journal. *Worldwide look at reserves and production*
  - **Canada and U.S. – Marketable and technically recoverable resources:** CER. *Canada's Energy Future 2023, Macro Indicators*; U.S. EIA. *Annual Energy Outlook 2023*; U.S. EIA. *Shale Gas, Proved Reserves as of Dec. 31* ; NRCan analysis
  - **Canadian average marketable production:** CER. *Canada's Energy Future 2023*, *Figure Data (Excel)*; StatCan. Table *25-10-0055-01*
  - **U.S. average marketable production:** U.S. EIA. *Annual Energy Outlook 2023*; U.S. EIA. *Dry Natural Gas Production, Annual*
  - **LNG imports, Canada:** StatCan. *Canadian International Merchandise Trade Database*
  - **LNG imports, U.S.:** U.S. EIA. U.S. *Liquefied Natural Gas Imports (MMcf)*
  - **LNG exports, Canada:** CER. *Commodity Tracking System*
  - **LNG exports, U.S.:** U.S. EIA. *Liquefied U.S. Natural Gas Exports (MMcf)*
  - **Natural gas wells in Western Canada:** AER. *ST59*: *Alberta Drilling Activity Monthly Statistics*; BCER. *Drilling Data for All Wells in BC [BCOGC-41984]*; Petrinex. *Saskatchewan Public Data*; Province of Manitoba. Oil & Gas Statistics
  - **Canadian and U.S. marketable production of natural gas:** StatCan. Table *25-10-0055-01*; U.S. EIA. *Dry Natural Gas Production, Annual*

- **Canadian trade of natural gas:** CER. *Commodity Tracking System*; StatCan. *Canadian International Merchandise Trade Database*
- **Marketable production by province:** StatCan. Table *25-10-0055-01*
- **Upstream prices:** Sproule. *Sproule Price Forecast*; StatCan. Table *33-10-0163-01*
- **Pipelines:** CER. *Facilities we regulate*
- **Natural gas energy use:** NRCan OEE. *National Energy Use Database*

- **HGLs**
  - **Processing plant production:** StatCan. Table *25-10-0036-01*
  - **Refinery production:** StatCan. *Monthly Refined Petroleum Product Survey*
  - **Shares of NGL Production by province:** CAPP. *Custom report for NRCan*
  - **NGLs end use:** NRCan OEE. *National Energy Use Database*
  - **Exports:** CER. *Commodity Tracking System*
  - **Imports:** StatCan. *International Merchandise Trade Database*

- **RPPs**
  - **Canadian refineries:** Compiled by NRCan from various sources
  - **Supply and Demand:** StatCan. Table *25-10-0081-01*
  - **Crude oil shipped to domestic refineries:** StatCan. Table *25-10-0063-01*
  - **Domestic consumption by product:** StatCan. Table *25-10-0081-01*; NRCan analysis
  - **Trade:** StatCan. Table *25-10-0081-01*; StatCan. *International Merchandise Trade Database*. U.S. EIA. *U.S. Imports by Country of Origin for Petroleum and Other Liquids*
  - **Gasoline prices:** Kalibrate Technologies Ltd. *Petroleum price data, Pricing analytics: Margin*
  - **Refinery capacity:** Oil Sands Magazine. *List of Canadian Refineries; NRCan analysis*

- **COAL**
  - **World proved reserves:** U.S. EIA. *Coal Reserves*
  - **World production and exports:** IEA. *Coal Information*
  - **Canadian supply and demand:** IEA. *Coal Information*; StatCan. *International Merchandise Trade Database*; *NRCan analysis*
  - **Canadian Production:** StatCan. Table *25-10-0046-01*; *NRCan analysis*
  - **Electricity Generation:** StatCan. Tables *25-10-0017-01* and *25-10-0084-01*; *Data* compiled by NRCan from StatCan and other public sources

- **GHG EMISSIONS FROM PETROLEUM**
  - **GHG Emissions by Sector:** ECCC. *National Inventory Report*

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