

# Canadian System of Environmental–Economic Accounts: Energy use and greenhouse gas emissions, 2017

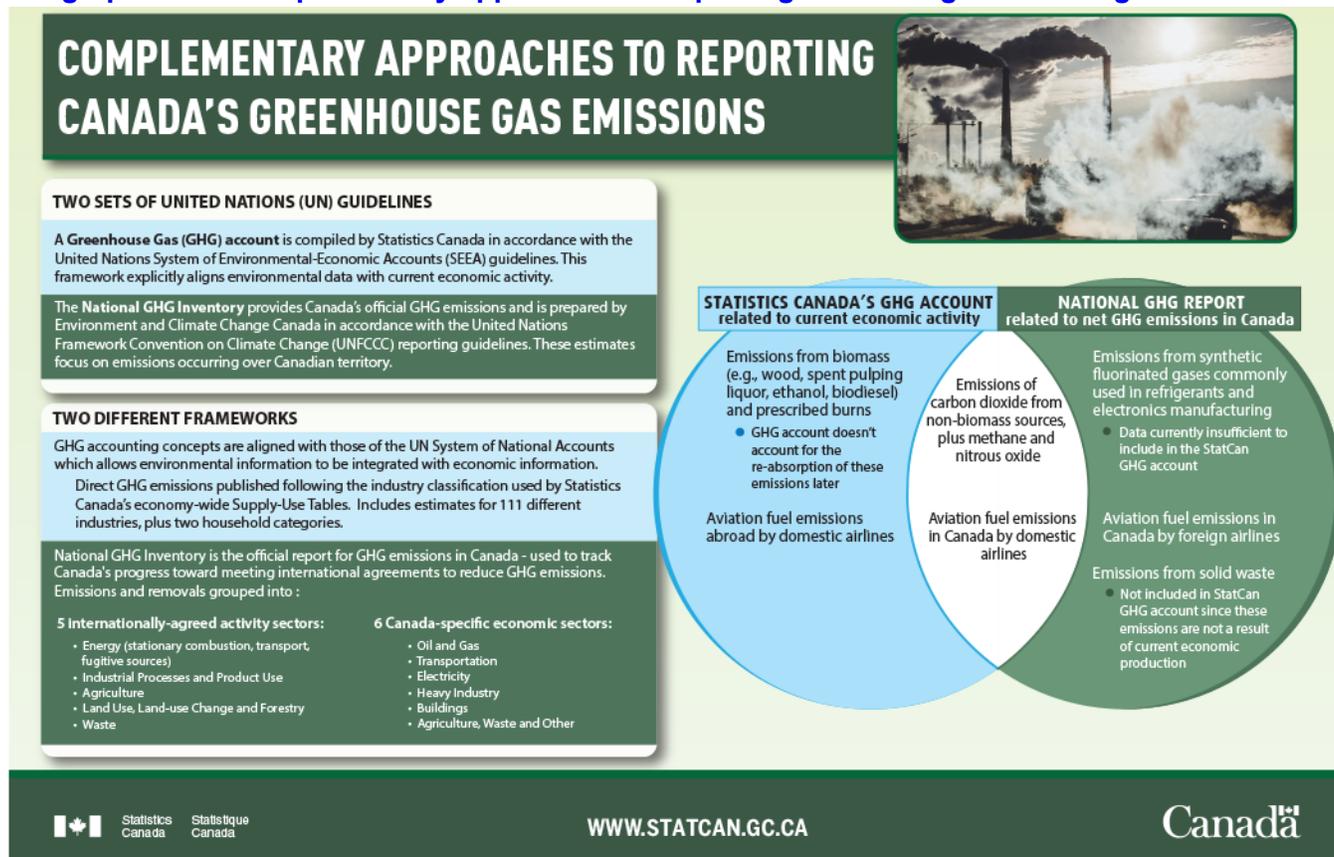
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These data are presented to reflect the activities of industries, households and governments, and they follow the classification system of industries and commodities used in Statistics Canada's supply and use tables. This allows the integration of energy use and greenhouse gas (GHG) emissions data with economic statistics.

Environment and Climate Change Canada is responsible for producing Canada's National Inventory Report on Greenhouse Gas Sources and Sinks (NIR). This inventory fulfills Canada's reporting obligations under the United Nations Framework Convention on Climate Change (UNFCCC), and is the official benchmark for GHG emissions in Canada.

Despite drawing from common sources, the estimates in Statistics Canada's GHG emissions account differ from those reported in the NIR. This is because the reporting requirements of the UNFCCC differ from the methodological guidelines of the United Nations System of Environmental–Economic Accounting, which is used to create the GHG account described in this article. The sector definitions of the NIR also differ from those of the physical flow accounts and, therefore, should not be directly compared.

## Infographic 1 – Complementary approaches to reporting Canada's greenhouse gas emissions



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## Energy use and greenhouse gas emissions by industries in Canada

Total energy use in Canada by industries increased 2.0% in 2017, following a 2.7% decrease in 2016. Meanwhile, industrial GHG emissions rose 1.6% in 2017, following a 2.7% decline from 2015 to 2016. These changes took place as economic growth, measured by gross domestic product (GDP), increased 1.0% in 2016 and 3.2% in 2017. Canada's direct industrial energy intensity in 2017 was 4.68 terajoules per million dollars of GDP, down 1.2% from 2016, while its direct industrial GHG emissions intensity decreased 1.5% from 2016 to 0.33 kilotonnes per million dollars of GDP.

Following a 1.6% decrease in 2016, energy use in the mining, quarrying and oil and gas extraction industries increased 5.8% in 2017. These industries accounted for 19.7% of total energy use in 2017, up 0.7 percentage points from 2016. This sector continued to be the largest source of GHG emissions in 2017, accounting for 23.9% of the national total and comprising a larger share relative to energy use because of fugitive emissions from oil and gas extraction.

GHG emissions from the agriculture, forestry, fishing and hunting industries (accounting for 3.1% of energy use, but 11.4% of GHG emissions, nationally) were augmented by the contribution of methane and nitrous oxide emissions from crop and animal production.

The shares of GHG emissions for the manufacturing sector (17.2%) and the other services and public administration sector (5.9%) were lower than their shares of energy use (20.2% and 9.4% respectively). This was because electricity, which does not contribute directly to GHG emissions, represents a relatively large proportion of the fuel mix for these sectors.

## National energy use and greenhouse gas emissions by households

The residential sector continued to be the largest energy user in 2017, at 23.8% of total energy consumption in Canada, a slight drop of 0.1 percentage points from its share in 2016. This amounted to 76.0 gigajoules of household energy use per person. The share of GHG emissions from households was 18.8%, because a large share of their energy use came from electricity. In 2017, household emissions decreased slightly to 3.9 tonnes of GHG emissions on a per capita basis.

## Provincial and territorial greenhouse gas emissions

Alberta continued to be the leading contributor to Canada's total GHG emissions in 2017. Alberta's largest producer of GHG emissions, the oil and gas extraction industry, emitted the equivalent of 130 megatonnes of carbon dioxide, up 6.1% from 2016. The provinces recording the next-largest emissions shares were Ontario and Quebec, both of which counted households as their largest source of direct GHG emissions, with 31.4% and 34.6% shares, respectively.

Biomass consumption in wood product manufacturing and in pulp, paper and paperboard mills (14.4%) accounted for more than one-seventh of GHG emissions in British Columbia and was the largest source of emissions outside of households (20.5%) in that province. In Saskatchewan, oil and gas extraction (25.9%), crop and animal production (25.4%), and electric power generation (21.7%) made up almost three-quarters of the provinces' total GHG emissions.

In 2017, Manitoba's (37.5%) and Prince Edward Island's (23.1%) crop and animal production industries continued to account for a large share of these provinces' total GHG emissions. Most of these emissions stemmed from fugitive sources such as enteric fermentation and manure management.

The electric power generation, transmission and distribution industry was a significant source of GHG emissions in Nova Scotia (37.4%), New Brunswick (22.6%), and Newfoundland and Labrador (12.9%).

In the territories, the mining sector accounted for half of Nunavut's and nearly half of the Northwest Territories' GHG emissions. In the latter territory, emissions from non-metallic mineral mining and quarrying went up 20.5% from the previous year, reflecting an uptick in production. For Yukon, households were responsible for one-quarter of total GHG emissions.

## Household greenhouse gas emissions per capita

Household emissions per capita represent the average amount of GHG emissions directly generated by one member of a population for final-consumption activities that occur within the household sector. Examples of final consumption include emissions from motor gasoline by households to drive their cars and emissions from natural gas to heat their homes. A region's available fuel mix, climate, average household size and household incomes are some of the factors that influence per capita emissions.

At 3.1 tonnes, British Columbia produced the lowest per capita household GHG emissions among provinces in 2017. Manitoba (3.3 tonnes), Ontario (3.7 tonnes) and Quebec (3.8 tonnes) were all below the national per capita level of 3.9 tonnes.

Per capita household GHG emissions were highest in some Atlantic provinces, with Prince Edward Island at 6.8 tonnes, and Newfoundland and Labrador and Nova Scotia both at 5.8 tonnes.

Taken together, the territories had the lowest per capita household GHG emissions (2.6 tonnes) in all of Canada in 2017.

### Note to readers

Statistics Canada's physical flow accounts (PFA) record the annual flows of selected natural resources, products and residuals between the Canadian economy and the environment. As such, data are presented to reflect the activities of industries, households and governments, and they follow the classification system of industries and commodities used in [Statistics Canada's supply and use tables](#).

Environment and Climate Change Canada (ECCC) is responsible for producing Canada's [National Inventory Report on Greenhouse Gas Sources and Sinks \(NIR\)](#). This inventory fulfills Canada's reporting obligations under the United Nations Framework Convention on Climate Change (UNFCCC), and is the official benchmark for greenhouse gas (GHG) emissions in Canada.

Despite drawing from common sources, the estimates in Statistics Canada's GHG emissions account differ from those reported in the NIR. This is because the reporting requirements of the UNFCCC differ from the methodological guidelines of the United Nations System of Environmental–Economic Accounting, which is used to create the GHG account described in this article. The sector definitions of the NIR also differ from those of the PFA and therefore should not be directly compared.

For more information on the methodological differences, see the [physical flow accounts metadata page \(5115\)](#).

Preliminary data for 2017 from the PFA are now available for national energy use (38-10-0096) and national, provincial and territorial GHG emissions (38-10-0097). Estimates for 2009 to 2016 for energy use and GHG emissions were updated with revised source data.

Energy use and GHG emissions intensities by industry (38-10-0098) for 2009 to 2015 were revised to reflect the updates to energy use and GHG emissions data.

A revised table for 2009 to 2015 for energy use and greenhouse gas emissions by final-demand category (38-10-0010) is now available, again to reflect the updates to energy use and GHG emissions data.

**Table 1**  
**Energy use and greenhouse gas emissions in Canada, 2017**

	Energy use			Greenhouse gas emissions <sup>1</sup>		
	terajoules	% of total	% change from the previous year	kilotonnes	% of total	% change from the previous year
<b>Total, industries and households</b>	<b>11 648 405</b>	<b>100.0</b>	<b>1.8</b>	<b>760 139</b>	<b>100.0</b>	<b>1.5</b>
Agriculture, forestry, fishing and hunting	360 167	3.1	0.1	86 626	11.4	0.8
Mining, quarrying, and oil and gas extraction	2 295 778	19.7	5.8	181 471	23.9	4.9
Utilities and construction	1 458 985	12.5	-2.1	90 900	12.0	-2.0
Manufacturing	2 351 374	20.2	1.3	130 433	17.2	0.8
Wholesale and retail trade	329 837	2.8	2.4	16 958	2.2	1.8
Transportation and warehousing	976 416	8.4	0.1	65 583	8.6	1.1
Other services and public administration	1 100 428	9.4	3.5	45 213	5.9	1.2
Households	2 775 420	23.8	1.2	142 958	18.8	0.8

1. Data from the physical flow accounts on greenhouse gas emissions differ from those in Environment and Climate Change Canada's *National Inventory Report on Greenhouse Gas Sources and Sinks* because of differences in the methodology used to produce them. See the physical flow accounts survey page (5115) for more information.

Source(s): Tables [38-10-0096-01](#) and [38-10-0097-01](#).

**Table 2**  
**Greenhouse gas emissions in Canada, 2017**

	2017		2016 to 2017
	kilotonnes	% of total	% change
<b>Canada</b>			
<b>Total, industries and households</b>	<b>760 139</b>	<b>100.0</b>	<b>1.5</b>
Agriculture, forestry, fishing and hunting	86 626	11.4	0.8
Mining, quarrying, and oil and gas extraction	181 471	23.9	4.9
Utilities and construction	90 900	12.0	-2.0
Manufacturing	130 433	17.2	0.8
Wholesale and retail trade	16 958	2.2	1.8
Transportation and warehousing	65 583	8.6	1.1
Other services and public administration	45 213	5.9	1.2
Households	142 958	18.8	0.8
<b>Newfoundland and Labrador</b>			
<b>Total, industries and households</b>	<b>11 847</b>	<b>100.0</b>	<b>-3.3</b>
Agriculture, forestry, fishing and hunting	469	4.0	-17.0
Mining, quarrying, and oil and gas extraction	3 376	28.5	1.3
Utilities and construction	2 018	17.0	-1.0
Manufacturing	1 321	11.2	-13.8
Wholesale and retail trade	111	0.9	-22.9
Transportation and warehousing	584	4.9	-12.0
Other services and public administration	888	7.5	-1.2
Households	3 076	26.0	0.2
<b>Prince Edward Island</b>			
<b>Total, industries and households</b>	<b>1 933</b>	<b>100.0</b>	<b>0.3</b>
Agriculture, forestry, fishing and hunting	521	27.0	-4.9
Mining, quarrying, and oil and gas extraction	2	0.1	-10.5
Utilities and construction	33	1.7	7.7
Manufacturing	98	5.2	4.1
Wholesale and retail trade	38	2.0	-8.2
Transportation and warehousing	134	6.9	-2.3
Other services and public administration	78	3.9	-11.5
Households	1 029	53.2	4.4
<b>Nova Scotia</b>			
<b>Total, industries and households</b>	<b>17 106</b>	<b>100.0</b>	<b>1.2</b>
Agriculture, forestry, fishing and hunting	950	5.6	0.4
Mining, quarrying, and oil and gas extraction	401	2.3	-26.2
Utilities and construction	6 496	38.0	1.1
Manufacturing	1 375	8.1	4.3
Wholesale and retail trade	394	2.3	12.9
Transportation and warehousing	1 001	5.8	-1.7
Other services and public administration	990	5.8	0.3
Households	5 502	32.2	3.3
<b>New Brunswick</b>			
<b>Total, industries and households</b>	<b>17 369</b>	<b>100.0</b>	<b>-4.2</b>
Agriculture, forestry, fishing and hunting	1 129	6.5	0.3
Mining, quarrying, and oil and gas extraction	271	1.6	-2.1
Utilities and construction	4 023	23.2	-14.8
Manufacturing	6 501	37.4	5.7
Wholesale and retail trade	186	1.1	-14.4
Transportation and warehousing	892	5.1	-8.3
Other services and public administration	520	3.0	-9.7
Households	3 839	22.1	-6.0
<b>Quebec</b>			
<b>Total, industries and households</b>	<b>90 780</b>	<b>100.0</b>	<b>0.2</b>
Agriculture, forestry, fishing and hunting	11 804	13.0	0.2
Mining, quarrying, and oil and gas extraction	2 230	2.5	-6.3
Utilities and construction	1 663	1.8	4.9
Manufacturing	23 922	26.4	1.6
Wholesale and retail trade	3 179	3.5	-1.0
Transportation and warehousing	9 635	10.6	1.7
Other services and public administration	6 967	7.7	0.9
Households	31 379	34.6	-1.2
<b>Ontario</b>			
<b>Total, industries and households</b>	<b>164 560</b>	<b>100.0</b>	<b>-1.5</b>
Agriculture, forestry, fishing and hunting	14 294	8.7	0.9

**Table 2 - continued**  
**Greenhouse gas emissions in Canada, 2017**

	2017		2016 to 2017
	kilotonnes	% of total	% change
Mining, quarrying, and oil and gas extraction	2 696	1.6	2.9
Utilities and construction	6 708	4.1	-28.2
Manufacturing	45 371	27.6	-0.4
Wholesale and retail trade	6 151	3.7	5.5
Transportation and warehousing	20 622	12.5	-2.0
Other services and public administration	17 101	10.4	2.5
Households	51 614	31.4	-0.5
<b>Manitoba</b>			
<b>Total, industries and households</b>	<b>21 803</b>	<b>100.0</b>	<b>3.4</b>
Agriculture, forestry, fishing and hunting	8 258	37.9	2.4
Mining, quarrying, and oil and gas extraction	511	2.3	11.2
Utilities and construction	621	2.8	0.6
Manufacturing	2 397	11.0	3.6
Wholesale and retail trade	583	2.7	24.7
Transportation and warehousing	2 864	13.1	0.2
Other services and public administration	2 148	9.8	14.0
Households	4 426	20.3	-0.1
<b>Saskatchewan</b>			
<b>Total, industries and households</b>	<b>75 165</b>	<b>100.0</b>	<b>2.5</b>
Agriculture, forestry, fishing and hunting	19 201	25.5	2.5
Mining, quarrying, and oil and gas extraction	21 589	28.7	2.4
Utilities and construction	17 452	23.2	3.0
Manufacturing	2 484	3.3	3.6
Wholesale and retail trade	883	1.2	3.7
Transportation and warehousing	4 179	5.6	-2.1
Other services and public administration	2 982	4.0	4.4
Households	6 393	8.5	3.0
<b>Alberta</b>			
<b>Total, industries and households</b>	<b>281 520</b>	<b>100.0</b>	<b>4.3</b>
Agriculture, forestry, fishing and hunting	23 076	8.2	0.8
Mining, quarrying, and oil and gas extraction	135 909	48.3	6.4
Utilities and construction	49 529	17.6	2.2
Manufacturing	27 757	9.9	1.8
Wholesale and retail trade	3 656	1.3	-3.6
Transportation and warehousing	12 872	4.6	2.8
Other services and public administration	8 791	3.1	-0.8
Households	19 929	7.1	7.6
<b>British Columbia</b>			
<b>Total, industries and households</b>	<b>75 357</b>	<b>100.0</b>	<b>0.9</b>
Agriculture, forestry, fishing and hunting	6 916	9.2	-2.1
Mining, quarrying, and oil and gas extraction	13 359	17.7	-2.7
Utilities and construction	2 069	2.7	-8.2
Manufacturing	19 185	25.5	-0.2
Wholesale and retail trade	1 734	2.3	4.8
Transportation and warehousing	12 219	16.2	9.0
Other services and public administration	4 419	5.9	1.7
Households	15 457	20.5	1.6
<b>Yukon</b>			
<b>Total, industries and households</b>	<b>552</b>	<b>100.0</b>	<b>6.8</b>
Agriculture, forestry, fishing and hunting	6	1.2	-3.5
Mining, quarrying, and oil and gas extraction	117	21.4	36.2
Utilities and construction	34	6.2	12.4
Manufacturing	0	0.4	-2.4
Wholesale and retail trade	18	3.2	-2.9
Transportation and warehousing	86	15.7	2.4
Other services and public administration	143	26.5	-7.0
Households	140	25.4	7.3
<b>Northwest Territories</b>			
<b>Total, industries and households</b>	<b>1 533</b>	<b>100.0</b>	<b>-17.7</b>
Agriculture, forestry, fishing and hunting	2	0.2	-61.0
Mining, quarrying, and oil and gas extraction	695	45.4	32.9
Utilities and construction	104	6.8	-19.8
Manufacturing	2	0.3	-62.1

**Table 2 - continued**  
**Greenhouse gas emissions in Canada, 2017**

	2017		2016 to 2017
	kilotonnes	% of total	% change
Wholesale and retail trade	21	1.4	-71.2
Transportation and warehousing	423	27.6	-24.0
Other services and public administration	159	10.5	-60.7
Households	122	7.9	-19.9
<b>Nunavut</b>			
<b>Total, industries and households</b>	<b>614</b>	<b>100.0</b>	<b>1.8</b>
Agriculture, forestry, fishing and hunting	0	0.0	3.0
Mining, quarrying, and oil and gas extraction	312	50.7	2.2
Utilities and construction	149	24.5	1.2
Manufacturing	0	0.0	-2.1
Wholesale and retail trade	4	0.5	3.0
Transportation and warehousing	72	11.8	4.3
Other services and public administration	23	3.8	-2.5
Households	53	8.6	0.4

**Note(s):** Data from the physical flow accounts on greenhouse gas emissions differ from those in Environment and Climate Change Canada's *National Inventory Report on Greenhouse Gas Sources and Sinks* because of differences in the methodology used to produce them. See the physical flow accounts survey page (5115) for more information.

**Source(s):** Table 38-10-0097-01.

**Available tables:** [38-10-0010-01](#) and [38-10-0096-01](#) to [38-10-0098-01](#) .

**Definitions, data sources and methods:** survey number [5115](#).

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; [STATCAN.infostats-infostats.STATCAN@canada.ca](mailto:STATCAN.infostats-infostats.STATCAN@canada.ca)) or Media Relations (613-951-4636; [STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca](mailto:STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca)).