

# Physical flow accounts, 2011 (final)

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## Physical flows by final demand category

Personal expenditure by households (46%) and international export (35%) remained the dominant sources of energy use in Canada, accounting for four-fifths of energy consumption in 2011. The final demand perspective allocates physical flows to the end-user of goods and services, rather than the producer. Personal expenditure by households yields both direct and indirect energy use, water use, and greenhouse gas (GHG) emissions. An example of direct energy use is the gasoline required by households to drive their car, whereas an example of indirect energy use is the energy required by refineries and other industries to produce the gasoline the household purchased.

Correlated with energy use, emissions of GHGs in the country were largely from direct and indirect demand caused by personal expenditure by households (42%). In addition, almost 40% of the GHG emissions in 2011 were a result of the production of goods and services for international export—the same proportions observed in 2009 and 2010.

The largest quantity of water use was a result of household needs. This category accounted for 54% of total water use in 2011, followed by the production of goods and services for export, at 28%. The large share in the use of water by households is explained by their electricity consumption, which requires large quantities of water intake for thermal-electric power generation.

**Table 1**  
**Physical flows by final demand category, 2011**

	Energy use <sup>1</sup>		Greenhouse gas emissions		Water use <sup>2</sup>	
	terajoules	% of total	kilotonnes	% of total	thousands of cubic metres	% of total
Personal expenditure (households) <sup>3</sup>	4 965 688	46.1	310 336	42.3	19 220 080	54.4
Non-profit institutions serving households' consumption expenditure	121 665	1.1	5 900	0.8	524 918	1.5
Government net current expenditure	841 656	7.8	45 642	6.2	2 937 261	8.3
Gross fixed capital formation	1 093 907	10.1	82 693	11.3	2 626 545	7.4
International exports	3 757 526	34.9	288 356	39.3	10 042 109	28.4

1. Energy use is expressed on a net basis to avoid double-counting of electrical energy generated from fossil fuels.

2. The estimate for water use does not include the use of water for hydro-electricity production.

3. The category "Personal expenditure" includes direct household emissions, energy use, and water use in addition to the industrial amounts required to satisfy household demand for goods and services.

Source(s): CANSIM table [153-0129](#).

## Physical flows by industry and households

From 2010 to 2011, total energy use by industries and households in Canada increased 2.2%, while emissions of GHGs rose 0.7%. These changes took place as economic growth, as measured by gross domestic product, grew 3.0%.

Households were the largest users of energy in 2011, accounting for 23.0% of national energy use, up from 22.6% in 2010. The increase in overall household energy use was driven by a slightly more than 6% increase in use for heating, lighting and appliances, along with a more modest 1.6% increase in household energy use of motor fuels and lubricants.

The mining, quarrying, and oil and gas extraction industries were the largest source of GHG emissions, accounting for 20.2% of the national total. These industries are more prominent in terms of GHG emissions than in energy use because of fugitive emissions from oil and gas extraction. The agriculture, forestry, fishing and hunting industries are similarly pushed higher from the contribution of emissions from crop and animal production.



Water use was the heaviest in utilities and construction, owing to the electric power generation, transmission and distribution industry, which accounted for two-thirds of water use in Canada. The decrease in water use by this industry represents four-fifths of the total decline in water use between 2009 and 2011. Agriculture (-16.8%) and manufacturing (-6.3%) also experienced decreased water use.

**Table 2**  
**Energy use, greenhouse gas emissions, and water use in Canada, 2011**

	Energy use			Greenhouse gas emissions <sup>1</sup>			Water use <sup>2</sup>		
	terajoules	% of total	2010 to 2011 % change	kilotonnes	% of total	2010 to 2011 % change	thousands of cubic metres	% of total	2009 to 2011 % change
<b>Total, industries and households</b>	<b>11 270 959</b>	<b>100.0</b>	<b>2.2</b>	<b>732 927</b>	<b>100.0</b>	<b>0.7</b>	<b>35 350 913</b>	<b>100.0</b>	<b>-9.0</b>
Agriculture, forestry, fishing and hunting	309 156	2.7	7.4	80 446	11.0	-1.0	1 769 928	5.0	-23.9
Mining, quarrying, and oil and gas extraction	1 781 146	15.8	2.6	147 733	20.2	2.1	778 576	2.2	5.8
Utilities and construction	1 583 720	14.1	-2.8	105 182	14.4	-6.8	24 420 518	69.1	-10.2
Manufacturing	2 343 190	20.8	1.1	129 547	17.7	2.7	3 678 628	10.4	-6.3
Wholesale and retail trade	340 577	3.0	3.7	17 973	2.5	2.4	115 816	0.3	21.2
Transportation and warehousing	939 682	8.3	1.3	67 303	9.2	0.7	54 384	0.2	45.3
Other services and public administration	1 380 423	12.2	5.2	54 231	7.4	4.4	960 017	2.7	13.2
Households	2 593 064	23.0	4.1	130 512	17.8	3.1	3 573 040	10.1	-2.8

1. Physical flow accounts estimates for greenhouse gas emissions differ from those in Environment Canada's National Inventory Report because of differences in the methodology used to produce the estimates. See survey number [5115](#) for more information.
2. The estimate for water use does not include the use of water for hydro-electricity production.

Source(s): CANSIM tables [153-0113](#), [153-0114](#) and [153-0116](#).

### Note to readers

Statistics Canada's physical flow accounts record the annual flows of natural resources, products and residuals between the Canadian economy and the environment. Data are presented to reflect the activities of industries, households and governments, and follow the classification system used in Statistics Canada's input-output accounts. These data are available only at the national level.

Revised data for 2011 from the physical flow accounts are now available for energy use, water use, and greenhouse gas (GHG) emissions. Data from 2009 and 2010 for energy use and GHG emissions were reclassified to reflect a change in the input output industry structure and updated with revised source data. Physical flow accounts for 2012 energy use and GHG emissions will be available with the next physical flow accounts release in summer 2015 when final administrative data files for 2012 become available.

Energy use and GHG emissions intensities per industry are now available for 2011. Data from 2009 and 2010 were reclassified to reflect a change in the input output industry structure.

A new table for 2009 to 2011 for energy use and GHG emissions by final demand category data is now available. Also available in this new table is 2009 and 2011 water use per final demand category data.

Environment Canada is responsible for producing Canada's National Inventory Report on Greenhouse Gas Sources and Sinks. 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. The reporting requirements of the UNFCCC differ from the methodological guidelines of the United Nations System of Environmental-Economic Accounting used to create the Greenhouse Gas Account described here. These differences are described in survey number [5115](#).

Available in CANSIM: tables [153-0113 to 153-0116](#) and [153-0129](#).

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

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