

Physical flow accounts: Intensities and demand-based measures, 2013

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Personal expenditure by households (46.1%) and international export (36.5%) continued to be the prevailing triggers for energy use in Canada in 2013, changing slightly from their 2012 shares of 46.0% and 35.7% respectively.

Demand-based measures allocate industrial inputs and residuals (wastes) to the end-user of goods and services, rather than to the producer. Personal expenditure by households is a category of demand that yields both direct and indirect energy use, water use and greenhouse gas (GHG) emissions. For energy, an example of direct energy use is the gasoline required by households to drive their car, while an example of indirect energy use is the energy required by refineries and other industries to produce the gasoline the household purchased.

Greenhouse gas emissions

Correlated with energy use, GHG emissions in the country were largely attributable to direct and indirect emissions resulting from household expenditures, unchanged from their 2012 proportion at 42.7%. The purchase and use of motor gasoline accounted for just over one-quarter of the emissions linked to this category of demand (27.1%), followed by natural gas (11.0%) and electricity (10.4%).

Over 40% of GHG emissions in 2013 were attributable to the production of goods and services for international export. More than one-quarter (28.7%) of the emissions associated with exports resulted from the production and delivery of crude oil and crude and diluted bitumen to foreign markets, followed by wood pulp (4.8%) and natural gas (3.6%).

Water use

As with energy use, households (52.6%) were the main source of direct and indirect water use in 2013, down from 53.5% in 2011. At the same time, production and delivery of goods and services for international export accounted for 30.4% of water use in Canada in 2013, up from 29.7% in 2011.

Table 1
Physical flows by final demand category, 2013

	Energy use ¹		Greenhouse gas emissions		Water use ²	
	terajoules	% of total	kilotonnes	% of total	thousands of cubic metres	% of total
Personal expenditure (households) ³	5 201 193	46.1	326 540	42.7	19 939 314	52.6
Non-profit institutions serving households' consumption expenditure	111 455	1.0	5 444	0.7	577 398	1.5
Government net current expenditure	723 958	6.4	39 426	5.2	2 772 187	7.3
Gross fixed capital formation	1 137 666	10.1	85 186	11.1	3 083 907	8.1
International exports	4 116 602	36.5	307 548	40.2	11 519 199	30.4

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](#).



Intensities

In 2013, the average industrial direct plus indirect energy use intensity was 5.61 gigajoules of energy use per \$1,000 (current dollars) of production. The average direct plus indirect GHG emissions intensity was 0.40 tonnes emitted per \$1,000 of production.

Intensities provide a measure of the economy-wide effect on energy consumption or GHG emissions brought about by a change in the demand for an industry's output. These include both direct and indirect effects. Direct effects measure the inputs or wastes required for an extra dollar's worth of output of a given industry. Indirect effects measure the upstream changes required to produce the additional output (each product produced will, in turn, require the production of various goods and services from other industries, yielding indirect effects in the process).

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. Since they follow the classification system used in Statistics Canada's supply and use tables, it is possible to link these data to gross production and final demand to produce the data presented here. These data are currently available at the national level only.

Estimates of energy use (153-0113), water use (153-0116), and greenhouse gas (GHG) emissions (153-0114) for 2009 to 2013 were revised following revisions to their source data. Data for 2014 will be revised with the dissemination of 2015 estimates.

Data on physical flows by final demand category for 2009 to 2012 were revised following revisions to the physical flow accounts (153-0113, 153-0114 and 153-0116).

Data on energy intensity and GHG emissions intensity by industry for 2009 to 2012 were revised following revisions to the physical flow accounts (153-0113 and 153-0114).

The data on intensities by industry provide a measure of the interdependence between an industry, the rest of the economy, and the use of inputs or production of wastes. They should only be considered on a single-year basis (rather than as time series) since they are based on gross output in current dollars.

Environment and Climate Change 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. For more information on these differences, see the physical flow accounts survey page (5115).

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

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) or Media Relations (613-951-4636; STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca).