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# Human Activity and the Environment: Annual Statistics

2009



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# Human Activity and the Environment: Annual Statistics

2009

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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0<sup>s</sup> value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published

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# ***Table of contents***

<b>Overview</b>	<b>5</b>
<b>Related products</b>	<b>7</b>
<b>Section 1 Food in Canada</b>	<b>11</b>
1.1 Introduction	11
1.2 Historical perspective on farming and fishing	16
1.3 Economy	20
1.4 Environment	24
1.5 Society	37
<b>Section 2 Annual statistics: Canada's physical environment</b>	<b>47</b>
2.1 Physical geography	47
2.2 Climate	47
<b>Section 3 Annual statistics: Pressures on Canada's environment</b>	<b>65</b>
3.1 Driving forces	65
3.2 Population	65
3.3 Economy	65
3.4 Transportation	65
3.5 Natural resources	67
3.6 Ecosystems	70
<b>Section 4 Annual statistics: Socio-economic response to environmental conditions</b>	<b>151</b>
4.1 Legislation	151
4.2 Protected areas	151
4.3 Environmental protection expenditures	151
4.4 Environmental practices	151
4.5 Environment industry	152
4.6 Research and development	152
<b>Data quality, concepts and methodology</b>	
Abbreviations and equivalences	165

# Overview

## Human Activity and the Environment publication

Canadians recognize the importance of a clean and healthy environment. We understand that the capacity of the environment to supply materials and absorb wastes is finite. But to be effective at reducing our collective impact on the environment we need systematic, accessible and relevant information. Without this basic information, we are unable to understand and respond to environmental change.

The annual **Human Activity and the Environment** (HAE) publications meet this need with a collection of environmental statistics brought together from many sources. The goal is to paint a statistical portrait of Canada's environment with special emphasis on human activity and its relationship to natural systems—air, water, soil, plants and animals.

Each annual issue of **Human Activity and the Environment** begins with a feature article (Section 1) covering a current environmental issue of concern to Canadians. The in-depth article provides data and analysis which complement the information presented in the *Annual statistics* compendium that follows.

The Annual statistics compendium of the **Human Activity and the Environment** report serves as a general reference for environmental statistics in Canada, pointing readers to available data on environment-human interactions. Divided into three sections, the compendium is organized using the state-pressure-response framework, in which information is classified as measuring the state of the physical environment at a point in time, the pressure placed on the environment by human activities, or the socio-economic response to environmental conditions. The current report includes 101 data tables, 14 charts and 7 maps, along with data highlights that briefly describe notable developments in relation to human activity and the environment to help the reader navigate through the data holdings.

## Feature article

### Section 1: Food in Canada

The feature article, Food in Canada, begins with a brief historical perspective on fishing and farming in Canada and moves on to explore the impact of the food system on the economy, environment and society. It illustrates how the contribution of the food system to gross domestic product and employment has shifted over the past forty years, and investigates the impact of primary food production on land, water, air and climate. The article concludes with a characterization of what is on the Canadian table, and the greenhouse gas emissions and energy-use associated with household food purchases.

### Highlights

- Spending on food and non-alcoholic beverages from stores resulted in production of almost 46,000 kilotonnes of greenhouse gases, equivalent to 6.4% of total greenhouse gas emissions in Canada in 2003.
- Almost one-quarter (23%) of these food-related greenhouse gas (GHG) emissions was attributable to the production of fresh and frozen meat, while fish products contributed 2%.
- In 1964, the food system was responsible for 9% of gross domestic product (GDP) and 12% of employment. By 2004 this had decreased to 4% of GDP and 5% of employment

- In 1964, primary production from agriculture and fisheries contributed 28% to food-related GDP. By 2004 this share had decreased to 13%. In contrast the relative contribution of services, including transportation, food services, food retail, and marketing, increased from 38% to 56%.
- In 2006, spending on fuel per hectare by farmers who used no tillage was about one-third that of spending by farmers who used conventional tillage. This reduction in fuel use also reduces air pollution and GHG emissions.
- While there are many requirements that must be followed, in general organic agriculture avoids the use of chemical fertilizers and synthetic pesticides. In 2006, over 15,500 farms, or 6.8% of all farms in Canada, produced organically grown food products.
- In 2007, an estimated 38% of solid food available for retail sale was wasted, the equivalent of 183 kilograms per person. A decrease in food waste would reduce negative environmental impacts associated with food production, processing, distribution and services.

## **Annual statistics: an environmental data compendium**

### **Section 2: Canada's physical environment**

This section presents information and statistics on Canada's physiography and climate. Physiography, or physical geography, is the study of the physical features of the earth's surface. This section covers two of the key elements that make up Canada's physiography: land cover and hydrology.

Climate can be defined as the average weather that occurs in a specific area over a period of time. Humans rely heavily on the regularity of climate patterns for almost all of their activities. Climate is measured using various weather elements as indicators. These are presented in this section of the compendium.

### **Section 3: Pressures on Canada's Environment**

This section begins by presenting information on the driving forces that shape the relationship between human activities and the environment—namely population, economic conditions and transportation. The section then examines one of the main sources of impacts on the environment—natural resource consumption—by presenting data and highlights on agriculture, fisheries, forestry, minerals and energy. The section concludes by looking at the impacts human activities have on ecosystems, focusing on air, land, water and wildlife statistics.

### **Section 4: Socio-economic response to environmental conditions**

This section explores the way governments, businesses and households try to respond and adapt as environmental conditions change. This chapter describes activities and practices aimed at minimizing or reducing the harmful effects of human activity on the environment.



## ***Related products***

### **Selected publications from Statistics Canada**

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11-509-X	Human Activity and the Environment
11-526-X	Households and the Environment
16-002-X	EnviroStats
16-251-X	Canadian Environmental Sustainability Indicators
16-253-X	Canadian Environmental Sustainability Indicators: Socio-economic Information
16-254-X	Canadian Environmental Sustainability Indicators: Air Quality Indicators: Data Sources and Methods
16-255-X	Canadian Environmental Sustainability Indicators: Greenhouse Gas Emissions Indicator: Data Sources and Methods
16-256-X	Canadian Environmental Sustainability Indicators: Freshwater Quality Indicator: Data Sources and Methods
16-257-X	Environment Accounts and Statistics Product Catalogue
16-401-X	Industrial Water Use
16F0006X	Environmental Protection Expenditures in the Business Sector
16F0008X	Environment Industry: Business Sector
16F0023X	Waste Management Industry Survey: Business and Government Sectors
21-020-X	Food Statistics
51-004-X	Aviation
52-216-X	Rail in Canada
53-222-X	Trucking in Canada
57-202-X	Electric Power Generation, Transmission and Distribution

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### **Selected CANSIM tables from Statistics Canada**

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153-0001	Value of established natural gas reserves, annual
153-0002	Value of established crude oil reserves, annual

153-0003	Value of recoverable subbituminous coal and lignite reserves, annual
153-0004	Value of recoverable bituminous coal reserves, annual
153-0005	Value of established crude bitumen reserves, annual
153-0006	Value of proven and probable potash reserves, annual
153-0007	Value of proven and probable gold reserves from gold mines, annual
153-0008	Value of proven and probable iron reserves, annual
153-0010	Value of proven and probable reserves of miscellaneous minerals, annual
153-0011	Value of timber stocks (methods I and II), annual
153-0012	Established crude bitumen reserves, annual
153-0013	Established crude oil reserves, annual
153-0014	Established natural gas reserves, annual
153-0015	Established reserves of natural gas liquids, annual
153-0016	Established sulphur reserves, annual
153-0017	Recoverable reserves of bituminous coal, annual
153-0018	Recoverable subbituminous coal and lignite reserves, annual
153-0019	Recoverable uranium reserves, annual
153-0020	Proven and probable copper reserves, annual
153-0021	Proven and probable gold reserves from gold mines, annual
153-0022	Proven and probable iron reserves, annual
153-0023	Proven and probable lead reserves, annual
153-0024	Proven and probable molybdenum reserves, annual
153-0025	Proven and probable nickel reserves, annual
153-0026	Proven and probable potash reserves, annual
153-0027	Proven and probable silver reserves, annual
153-0028	Proven and probable zinc reserves, annual
153-0029	Timber assets (area), annual
153-0030	Timber assets (volume), annual
153-0031	Direct plus indirect energy intensity, by industry, annual
153-0032	Energy use, by sector, annual

153-0033	Direct plus indirect greenhouse gas emissions intensity, by industry, annual
153-0034	Greenhouse gas emissions (carbon dioxide equivalents), by sector, annual
153-0035	Land cover by category, Canada, major drainage areas and sub-drainage areas
153-0041	Disposal of waste, by source, Canada, provinces and territories, biennial
153-0042	Materials prepared for recycling, by source, Canada, provinces and territories, biennial
153-0043	Materials prepared for recycling, by type, Canada, provinces and territories, biennial
153-0044	Business sector characteristics of the waste management industry, Canada, provinces and territories, biennial
153-0045	Local government characteristics of the waste management industry, Canada, provinces and territories, biennial
153-0046	Direct and indirect household energy use and household greenhouse gas emissions, annual
153-0052	Capital and operating expenditures on environmental protection, by North American Industry Classification System (NAICS) and type of activity, Canada, biennial
153-0053	Capital and operating expenditures on environmental protection, by type of activity, Canada, provinces and territories, biennial
153-0054	Distribution of capital expenditures on pollution abatement and control (end-of-pipe) and pollution prevention, by North American Industry Classification System (NAICS) and type of environmental medium, Canada, biennial
153-0055	Distribution of capital expenditures on pollution abatement and control (end-of-pipe) and pollution prevention, by type of environmental medium, Canada, provinces and territories, biennial
153-0056	Capital and operating expenditures on environmental protection, by type of activity and establishment size, Canada, biennial
153-0057	Selected population characteristics, Canada, ecozones and ecoregions with population, every 5 years
153-0058	Selected agricultural activities, Canada, ecozones and ecoregions with agriculture, every 5 years
153-0059	Households and the environment survey, use of energy-saving lights, Canada and provinces, biennial
153-0060	Households and the environment survey, use of thermostats, Canada and provinces, biennial
153-0061	Households and the environment survey, radon awareness and testing, Canada and provinces, biennial
153-0062	Households and the environment survey, dwelling's main source of water, Canada and provinces, biennial

153-0063	Households and the environment survey, primary type of drinking water consumed, Canada and provinces, biennial
153-0064	Households and the environment survey, use of fertilizer and pesticides, Canada and provinces, biennial
153-0065	Households and the environment survey, awareness of air quality advisories and their influence on behaviours, Canada and provinces, biennial
153-0066	Households and the environment survey, treatment of drinking water, Canada and provinces, biennial

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### **Selected surveys from Statistics Canada**

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1209	Environment Industry Survey
1736	Waste Management Industry Survey: Government Sector
1903	Survey of Environmental Protection Expenditures
2009	Waste Management Industry Survey: Business Sector
3475	Food Statistics in Canada
3881	Households and the Environment Survey
5114	Canadian System of Environmental and Resource Accounts - Natural Resource Stock Accounts
5115	Canadian System of Environmental and Resource Accounts - Material and Energy Flow Accounts
5120	Industrial Water Survey
7525	Land Cover Statistics from Natural Resources Canada
8012	Census of Agriculture: Environmental Geography Aggregations of Census Farm Units

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# Section 1

## Food in Canada



### 1.1 Introduction

Food is much more than a commodity to be bought and sold. We can't live without it and it plays a significant role in our culture and daily lives.

Canadians represent about 0.5% of the global population,<sup>1</sup> produce about 1.5% of the food in the world, and consume about 0.6% of world food production.<sup>2</sup> In 2004, Canada ranked 8<sup>th</sup> in the world for production of cereals, including wheat, barley and oats; 10<sup>th</sup> in meat production; and 19<sup>th</sup> in fisheries and aquaculture production (Table 1.1). As the global population increases, the interdependency of food,

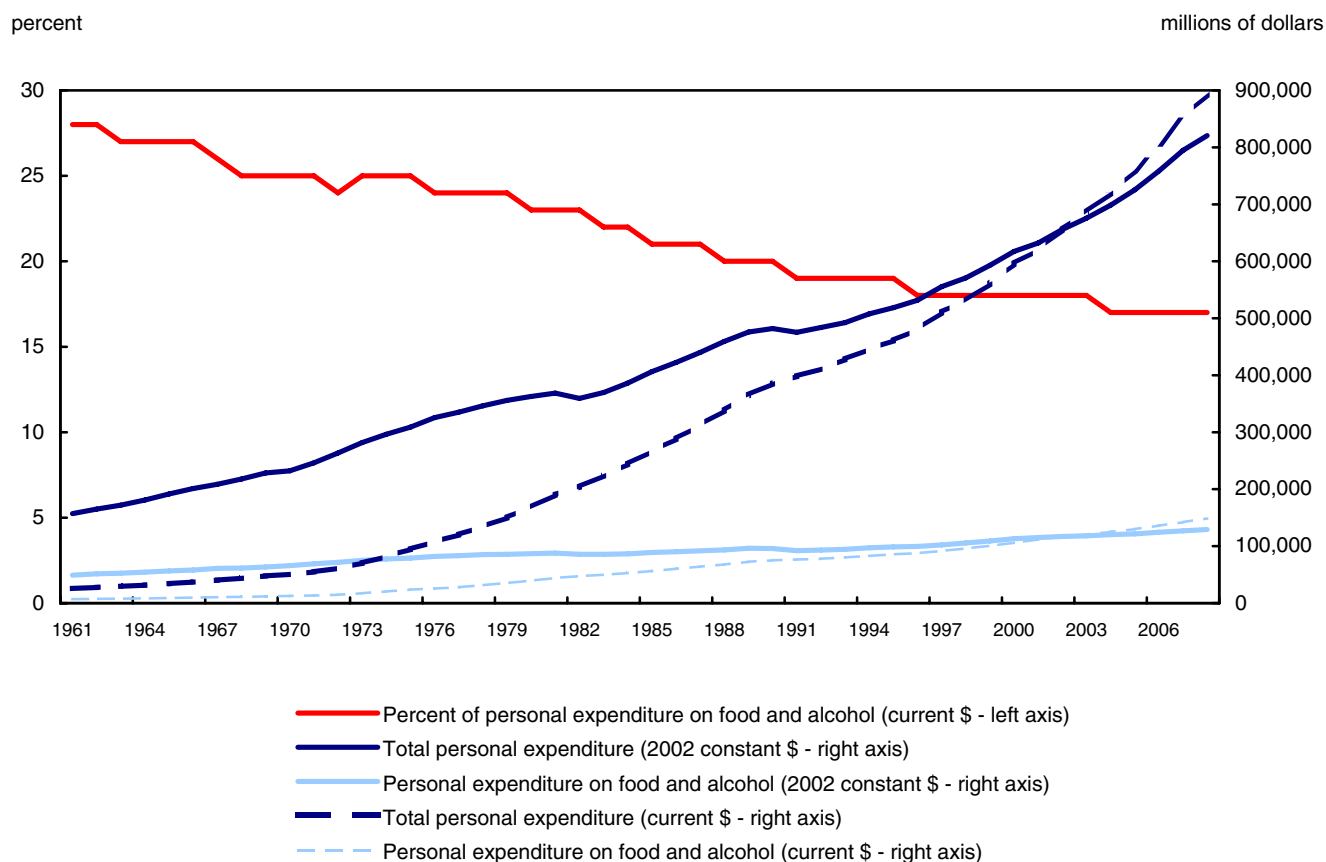
See note(s) at the end of the section.

energy, water, land and biological resources becomes more apparent.

As a commodity, food is an important component of Canada's national economy. In 2007, \$92 billion was spent on food and beverages in stores for household use,<sup>3</sup> and an additional \$50 billion in restaurants and bars.<sup>4</sup> More than 70% of the food bought in Canadian stores in 2007 was produced domestically.<sup>5</sup> The United States is the source of more than half (57%) of imported food, and similarly 55% of domestic food exports from Canada are directed to the United States.<sup>6</sup> While the amount spent on food and alcohol is increasing, it is not keeping pace with expenditures on other goods and services. In 1961 Canadians dedicated 28% of their personal expenditures to food, whereas by 2007 this amount had decreased to 17% (Chart 1.1).

Chart 1.1

Personal spending in Canada on food and alcohol as a percent of total personal spending, 1961 to 2008



**Source(s):** Statistics Canada, Income Expenditure and Accounts Division, 2008, special tabulation.

Canadians are not only spending more on food, but they are also buying more calories.<sup>7,8</sup> Between 1976 and 2007 the number of calories available per person increased 9% from 3,118 to 3,384 kilocalories. Some of this food however is wasted, and it is estimated that in 2007 only 71% of the calories purchased were consumed.<sup>9</sup> Food that was not consumed includes waste or spoilage in stores, households, institutions and restaurants, and losses during preparation.

A common image associated with agricultural food production is the small mixed farm, but over the years farms have become more specialized and average

farm size has increased. Between 1931 and 2006, the total farm area in Canada increased slightly, while the number of farms in operation decreased almost 70% from 728,623 to 229,373.<sup>10</sup> In addition to crop and animal production the commercial fisheries are an important source of food. In 2005, more than 16,500 marine vessels in Canada landed more than 1 million tonnes of seafood worth more than \$2 billion.<sup>11</sup>

See note(s) at the end of the section.

**Table 1.1**  
**Food production in selected countries, 2004**

	Cereals			Meat			Fisheries and aquaculture <sup>1</sup>		
	Production	Share in world	Rank	Production	Share in world	Rank	Production	Share in world	Rank
	thousands of tonnes	percent		thousands of tonnes	percent		thousands of tonnes	percent	
Australia	31,520	1.4	16	3,769	1.4	13	267	0.3	49
Brazil	63,812	2.8	7	19,919	7.7	3	1,016	1.1	22
Canada	52,684	2.3	8	4,592	1.8	10	1,319	1.5	19
China	413,166	18.2	1	74,306	28.6	1	48,907	54.3	1
France	70,534	3.1	5	6,255	2.4	5	841	0.9	28
Mexico	32,751	1.4	15	5,040	1.9	8	1,539	1.7	17
United Kingdom	22,030	1.0	25	3,270	1.3	15	860	1.0	27
United States of America	389,066	17.1	2	38,891	15.0	2	5,566	6.2	6

1. Includes capture and aquaculture of freshwater fish, diadromous fish, marine fish and other aquatic animals.

**Source(s):** Food and Agriculture Organization of the United Nations, 2006, *FAO Statistical Yearbook 2005-2006*, [www.fao.org/statistics/yearbook/vol\\_1\\_1/index.asp](http://www.fao.org/statistics/yearbook/vol_1_1/index.asp) (accessed March 2, 2008).

Food production is much more than just agriculture and fisheries however. After food is produced or caught it might be handled by wholesalers, processed, packaged, sold, prepared, repackaged and resold. Many of these steps include transportation, retail, or advertising services. The type, magnitude and spatial distribution of these integrated activities is integral to understanding the impact of food production and services on the environment. Decisions regarding durable goods, like cars, are made only occasionally: decisions about what non-durable goods to purchase, like food, are made daily. Typically food goods are produced using energy-intensive processes whereas services, provided by retail outlets and restaurants, are less energy-intensive.<sup>12,13</sup>

There has been considerable interest in the global diversion of corn from the food system to produce biofuels. In 2006 Canada contributed almost 600 million litres, or just over 1% of the global production of 51 billion litres of ethanol.<sup>14</sup> In Canada, ethanol is made from wheat in the western provinces, and from corn in Ontario and Quebec. Production of ethanol in Canada in 2006 required about 0.5 Mt of wheat and 1.0 Mt of corn.<sup>15</sup> This represents 2% of the total production of 25.3 Mt of wheat and 11% of the total production of 9 Mt of corn for grain.<sup>16</sup>

See note(s) at the end of the section.

### 1.1.1 The Canadian food system

The Canadian food system includes all the products produced and the processes and activities carried out to put food on tables at home, in restaurants and to provide food products for export. Data collected primarily for economic reasons can be used to provide insight into the potential impact the food system has on the Canadian environment (**Text box: Important terms**).

#### Primary sector: agriculture and fisheries

Agriculture and fisheries make up the primary food sector, and activities are carried out in crop production, animal production, aquaculture, and commercial fisheries. Only about 7% of the total land area in Canada is used for agriculture, and soil and climate conditions are such that most agricultural land is concentrated in the southern portion of the country. Almost 70% of Canada's agricultural land is suitable for growing crops (arable land). In Australia, a country that supports large herds of grazing animals, only about 11% of their total agricultural land is arable land. Globally Canada ranks 7<sup>th</sup> in the world for total amount of arable land (Table 1.2).

Food grown in home gardens, or harvested from the wild for personal use, is a small, but culturally significant, source of food that also belongs in the primary sector (**Text box: Non-commercial food sources**). These foods are not bought and sold in the economy, and data on them are limited.

**Table 1.2**  
**Global availability of agricultural and arable land, 2005**

	Total land area	Land used for agriculture	Arable land <sup>1</sup>	Percentage of land used for agriculture	Percentage of agricultural land that is arable land <sup>1</sup>	Global rank for arable land area
	thousands of hectares			percent		
<b>World</b>	<b>13,013,475</b>	<b>4,967,580</b>	<b>1,421,169</b>	<b>38</b>	<b>29</b>	
Australia	768,230	445,149	49,402	58	11	6
Brazil	845,942	263,600	59,000	31	22	5
Canada	909,351	67,500	45,660	7	68	7
China	932,749	556,328	103,397	60	19	4
France	55,010	29,569	18,507	54	63	16
Mexico	194,395	107,500	24,800	55	23	11
United Kingdom	24,193	16,956	5,729	70	34	37
United States	916,192	414,778	174,448	45	42	1

1. Arable land refers to land under temporary crops (double-cropped areas are counted only once), temporary meadows for mowing or pasture, land under market and kitchen gardens and land temporarily fallow (less than five years).

**Source(s):** Food and Agriculture Organization of the United Nations, 2008, FAOSTATS, <http://faostat.fao.org/site/377/DesktopDefault.aspx?PageID=377#ancor> (accessed September 18, 2008).

### Secondary sector: food-related manufacturing

The set of activities that are involved in food-related manufacturing make up the secondary food sector. These activities involve the production of goods from raw materials, and include food and beverage manufacturing, fertilizer and pesticide manufacturing, and agricultural machinery manufacturing.

In 2007, food-related manufacturing accounted for 12.1% of total manufacturing sales, a share that has remained consistent over the last decade.<sup>17</sup> This corresponded to \$74.2 billion in sales,<sup>17</sup> and employment of over 219,000 people.<sup>18</sup>

### Tertiary sector: food-related services

The tertiary food sector includes the set of activities related to the provision of food-related services. It includes for example, transportation, food services, food retail, wholesale trade of crops and livestock, and marketing.

See note(s) at the end of the section.



### Important terms

Appreciation of how the following terms are defined in this article will facilitate the discussion of the environmental complexities that surround the production, processing and distribution of food in Canada.

**Agricultural land:** land suitable for agriculture.

**Arable land:** land that can be used for growing crops.

**Canadian food system:** includes all the products produced and the processes and activities carried out to put food on tables at home, in restaurants and to provide food for export. It also includes the activities associated with imported foods once they have entered the country.

**Employment:** employment figures in this article come primarily from the Labour Force Survey (LFS). According to the LFS, employed persons are those who, during the survey reference week did any work for pay or profit, or had a job and were absent from work. This survey reports employment by industry and occupation based on details related to the main job of the respondent.

**Energy-intensity:** the amount of energy consumed per unit of economic activity.

**Farm:** the area of land used for farming activities such as growing crops and rearing animals. This includes land occupied by farm-buildings.

**Farm area:** the total area of land on a farm.

**Farmland:** includes cropland, summerfallow and pasture lands.

**Food-related employment:** direct and indirect employment related to the Canadian food system.

**Food-related gross domestic product (GDP):** the value contributed to the economy (GDP) by the activities of the Canadian food system, including direct and indirect effects of expenditures on food.

**Greenhouse gas emission intensity:** the volume of greenhouse gasses (GHGs) emitted per unit of economic activity.

### Non-commercial food sources

Gardening, hunting, fishing and harvesting wild foods such as mushrooms, nuts, and berries are activities carried out by many Canadians. These activities contribute food to our food system that is typically not captured by our statistical measures. Recent surveys however, have collected data on the use of country food by the Inuit. The Inuit are the Indigenous peoples of the Arctic who live mostly in coastal communities in the North.

In 2005, 68% of Inuit adults in the Canadian Arctic harvested country food. In two-thirds of Inuit households, at least half the meat and fish eaten was of country origin. The tradition of food sharing remains strong in the North: in 2005 eight in ten Inuit households shared harvested food with others.

Caribou, seals, ducks, whale, fish and berries are examples of country foods that have been harvested from the wild by Inuit for thousands of years. The harvesting and sharing of country food is a valuable activity that reinforces the importance of family and community.

In the North, store-bought food, usually originating in the South, is often expensive due to high storage and transportation costs. The Revised Northern Food Basket, which monitors the cost of a nutritious diet for a family of four for one week, cost between \$350 and \$450 in northern isolated communities such as Repulse Bay, Nunavut or Old Crow, Yukon, in 2006 or 2007. During the same time period, this food basket cost between \$195 and \$225 in southern Canadian cities, such as Ottawa or Edmonton. In addition, foods transported in from the South are not always fresh, and country food offers a more nutritious alternative. Country foods are healthy, rich in essential nutrients and low in sugars and unhealthy fats. The most recent version of the Canada Food Guide included a guide for First Nations, Inuit and Métis integrating traditional food from the land and sea.

### Source(s):

Health Canada, 2007, *Eating Well with Canada's Food Guide: First Nations, Inuit and Métis*, [www.hc-sc.gc.ca/fn-an/pubs/fnim-pnim/index-eng.php](http://www.hc-sc.gc.ca/fn-an/pubs/fnim-pnim/index-eng.php) (accessed December 8, 2008).

Indian and Northern Affairs Canada, 2008, *Revised Northern Food Basket – Highlights of Price Survey Results for 2006 and 2007*, 2008 [www.ainc-inac.gc.ca/nth/fon/fc/hpsr0607-eng.asp](http://www.ainc-inac.gc.ca/nth/fon/fc/hpsr0607-eng.asp) (accessed December 15, 2008).

Tait, Heather, 2008, "Inuit Health and Social Conditions," *Aboriginal Peoples Survey, 2006*, Statistics Canada Catalogue no. 89-637-X, no. 001.



## 1.2 Historical perspective on farming and fishing

The history of food in Canada begins with the hunting and gathering, fishing and farming lifestyles of First Nations peoples. In Eastern Canada, Aboriginal communities farmed corn, beans and squash around the Great Lakes and the St. Lawrence, and nomadic groups hunted and gathered throughout the Boreal forest. Bison were central to life on the plains and salmon to life on the Pacific Coast.

In the 16<sup>th</sup> century, Europeans started fishing for cod off of Newfoundland. Though records exist on the fish catch back to 1874, comparisons to the modern day are difficult since records were kept differently. In 1899, dried cod, dried hake, canned salmon, fresh herring, and fresh lobster made up the bulk of the commercial catch.<sup>19</sup>

French settlers began farming in Acadia and New France in the 1600s. In the west, settlers started farming at the Red River Colony after 1812. Agriculture took off throughout the Prairies after Confederation since incoming settlers received title to a quarter section<sup>20</sup> of land if they built a home and cultivated a fifth of the area within three years.

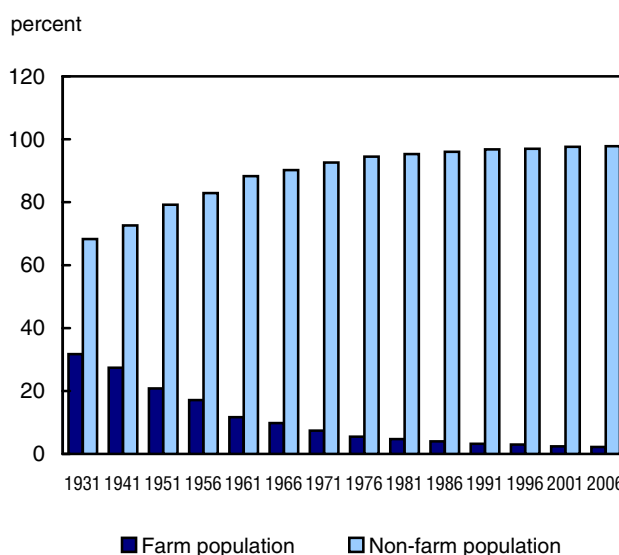
### 1.2.1 Farming

In 1921, Canada was largely a rural country, with half of Canadians living in rural areas,<sup>21</sup> compared to less than a fifth of the population in 2006.<sup>22</sup> The number of

See note(s) at the end of the section.

people living on the farm has also declined since the early 20<sup>th</sup> century. Almost a third of Canadians lived on farms in 1931, compared to 2% in 2006 (Chart 1.2).

**Chart 1.2**  
Farm and non-farm population in Canada, 1931 to 2006

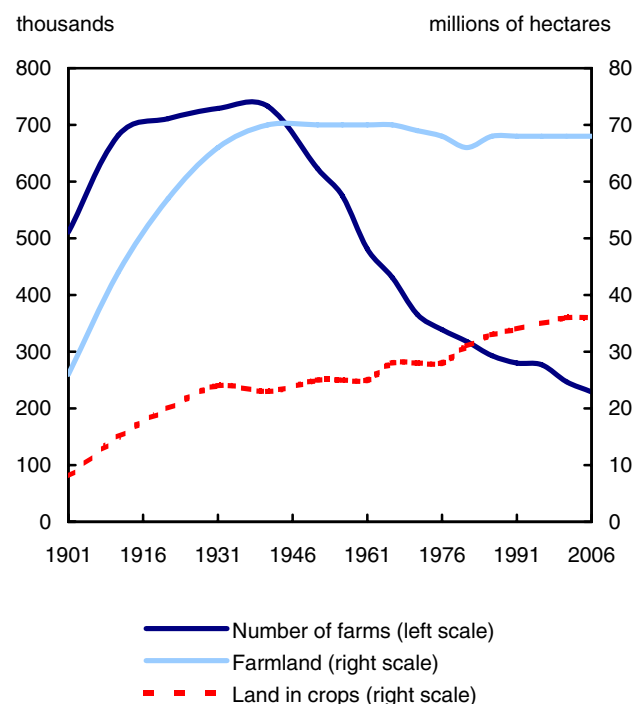


**Source(s):** Statistics Canada, 2008, *Agriculture-Population Linkage Data for the 2006 Census*, Catalogue no. 95-633-X.  
Statistics Canada, 2003, *2001 Census of Agriculture - Agriculture-Population linkage data*, Catalogue no. 95F0303X1.

In 1921, agriculture was the single most common occupation, employing 1,041,618 Canadians and accounting for 33% of all jobs, followed by manufacturing (17%), trade (10%) and transportation (8%).<sup>23</sup> In comparison, 346,400 Canadians were primarily employed in agriculture in 2006, accounting for 2% of total employment.<sup>24</sup>

In 1921, 711,090 farms covered 57.0 million hectares (ha) of land, with 20.2 million ha of cropland. Since then, the number of farms has decreased while farm area and the total area of cropland have increased (Chart 1.3). Production of many crops, including wheat, barley, grain corn, field peas, flaxseed, and dry beans has experienced large growth from 1908 to 2008 (Chart 1.4). As well, many new crops, including canola, soybeans and fodder corn are now grown extensively in Canada.

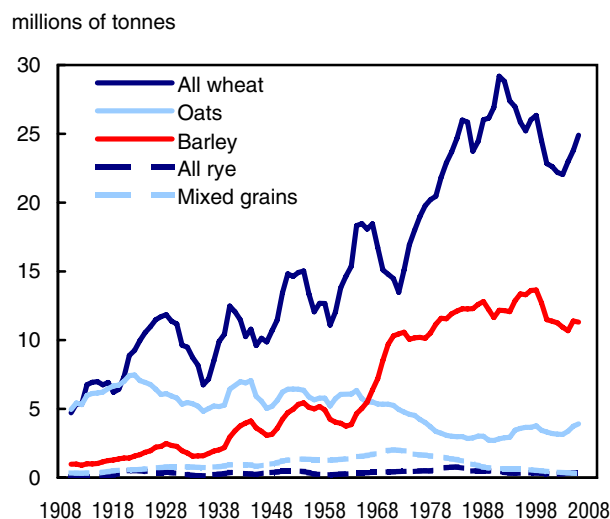
**Chart 1.3**  
Number of farms, farm area and land in crops, 1901 to 2006



**Note(s):** Data for farmland in 1901 and 1911 includes all improved land.  
**Source(s):** Statistics Canada, *Selected Historical Data from the Census of Agriculture*, Catalogue no. 95-632-X, table 1.1 and 1961 Census of Canada, Agriculture, Bulletin 5.1 – 1, Catalogue no. 96-530-X (Vol. V – Part 1).

Agricultural productivity improved over this time period as well—increased use of fertilizers, pesticides, better seed varieties and improved agricultural practices and technology resulted in increases in the average yield per hectare. For example, over the past century, the average yield of wheat, oats, barley, and grain corn all more than doubled.<sup>25</sup>

**Chart 1.4**  
Production of major small grains, 1908 to 2008



**Note(s):** Data from 1908 to 2008 are used to create the five-year averages.  
**Source(s):** Statistics Canada, CANSIM table 001-0010.

As farms specialized, the number of livestock produced in Canada increased. From 1921 to 2006, the total number of cattle and calves on farms grew 88% to 15.8 million. Over the same period, the number of pigs rose from 3.3 million to 15.0 million, while the number of chickens rose from 41.1 million to 125.3 million.<sup>10</sup>

With mechanization, farms switched from horse power to tractors. The number of horses on farms declined from a peak of 3.5 million in 1921 to less than 454 thousand in 2006.<sup>10</sup> Horses were generally kept as work animals, but are now used more for recreational pursuits. Tractor use is now the norm—there were 733,182 tractors on farms in 2006 and 92% of farms had at least one tractor. In comparison only 6% of farms had a tractor in 1921.<sup>10</sup>

In 2006, 327,070 farmers operated 229,373 farms.<sup>26</sup> Farming is still mainly a family business in Canada. In addition, the most economically successful farms are increasingly larger and more specialized. Gross farm receipts were \$42.2 billion in 2005, up 10% from 2000.<sup>27</sup> The number of farms with over a million dollars in receipts has risen in recent decades, with the proportion of million dollar farms rising from 0.3% in 1980 to 2.6% in 2005.<sup>10</sup> These large farms accounted for 40% of total farm receipts and are more likely to be

See note(s) at the end of the section.

profitable—86% of farms with receipts over a million dollars covered their operating costs in 2005 compared to 56% of all farms.<sup>28</sup>

Agriculture, whether it occurs on small or large farms, can result in environmental impacts. Many practices have been developed that reduce potential negative environmental impacts from agricultural activities. For example, instead of leaving fields bare, farmers often retain crop residue on the soil surface by reducing tillage. The residue cover protects the soil from erosion and increases the organic matter content of the soil. In addition, careful management of manure storage and application controls odours and minimizes run-off, protecting water quality. These two examples of beneficial management practices demonstrate ways to farm while minimizing risks to the environment.

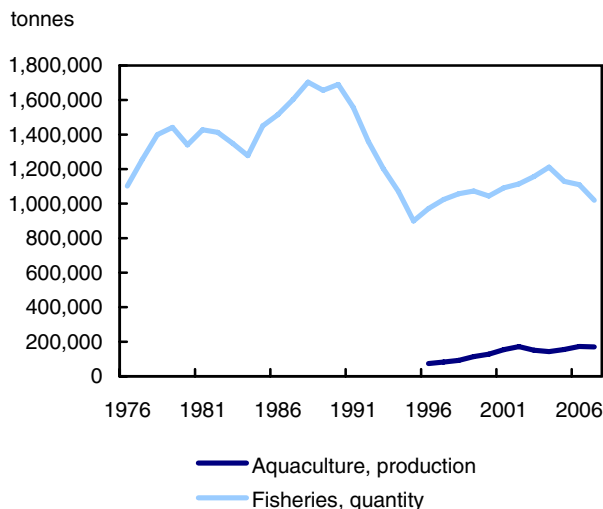
### 1.2.2 Fishing

In 1921, 29,292 people reported fishing or trapping as their chief occupation or trade, 0.9% of total employment. Historically, fishing and fish processing contributed heavily to employment in coastal communities, with many fishers seasonally engaged in fishing. However, the collapse of cod and other ground fish stocks off the East Coast in the 1990s resulted in lower employment in the industry. Fishing, aquaculture and seafood processing employed 70,300 people in 1990, representing 0.5% of total employment.<sup>29</sup> By 2006, this figure had declined to 52,100, accounting for 0.3% of total employment.

Following the decline in the early 1990s, the commercial fish catch has remained relatively stable in recent years. In 2007, over 1 million tonnes of fish and shellfish, valued at almost \$2 billion, were harvested.<sup>30</sup> Shrimp, herring, hake, scallop, mackerel and lobster made up the bulk of commercial landings.<sup>31</sup>

Commercial aquaculture dates back to the 1950s. It was not until the 1980s, however, that production really began to develop.<sup>32</sup> Aquaculture production grew from 73,187 tonnes in 1996 to 172,374 tonnes in 2006, a 136% increase (Chart 1.5).

**Chart 1.5**  
Commercial fishery and aquaculture yields in Canada, 1976 to 2007



**Source(s):** Fisheries and Oceans Canada, Statistical services, 2008, *Commercial landings*, [www.dfo-mpo.gc.ca/communic/statistics/commercial/landings/sum0407\\_e.htm](http://www.dfo-mpo.gc.ca/communic/statistics/commercial/landings/sum0407_e.htm) (accessed January 6, 2009). Statistics Canada, CANSIM table 003-0001 (accessed January 6, 2009).

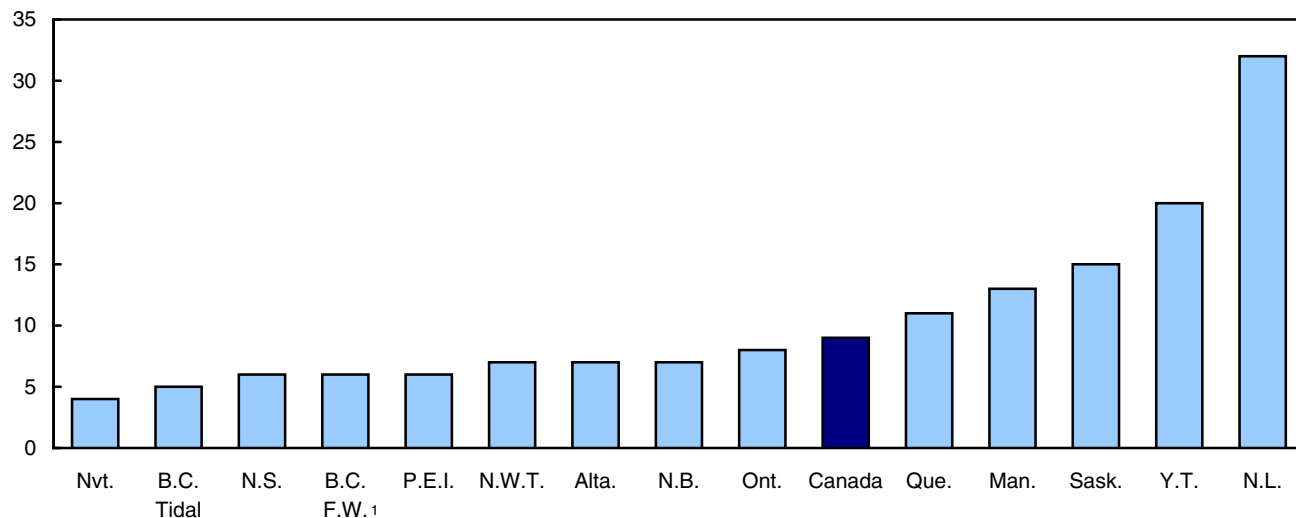
Many Canadians also enjoy fishing for recreation. Overall, 2.4 million adult Canadian residents fished in 2005, down from 3.3 million in 1995. The popularity of recreational fishing varies in different regions of the country. About one in ten adults fished for fun in 2005, though this proportion rose to one in three in Newfoundland and Labrador (Chart 1.6).

See note(s) at the end of the section.

Chart 1.6

Percent of Canadian population that fished recreationally, by province and territory, 2005

percent



1. F.W. represents British Columbia's freshwater anglers.

**Note(s):** Includes adult resident anglers. Adult anglers are those 16 years of age and older (18 years of age in Newfoundland and Labrador, Quebec and Ontario). Corresponding criteria were used to determine the adult population.

**Source(s):** Fisheries and Oceans Canada, 2007, *Survey of Recreational Fishing in Canada, 2005*, Catalogue no. Fs23-522/2005E, Ottawa. Statistics Canada, CANSIM table 051-0001 (accessed April 15, 2009).

Catch-and-release sport fishing has become more popular among recreational fishers. Resident anglers kept one third of their catch in 2005, down from almost

three-quarters in 1985. Tourists were more likely than residents to participate in catch-and-release fishing.





### 1.3 Economy

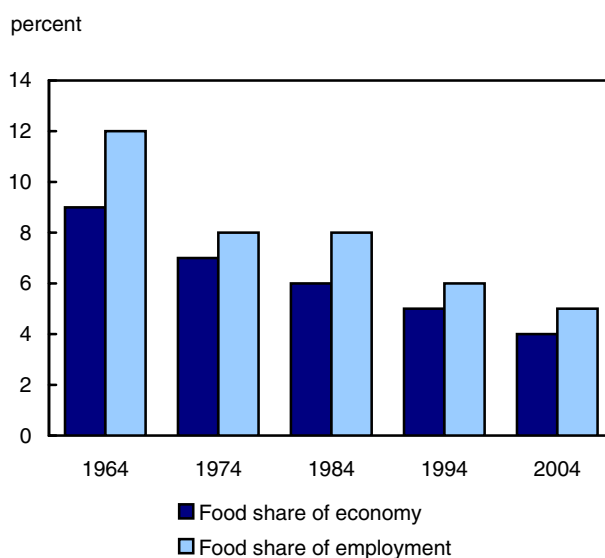
The Canadian food system includes all the products produced and the processes and activities carried out to put food on tables at home, in restaurants and to provide goods for export. This includes the activities of industries in the primary, secondary and tertiary sectors of the economy related to food production and distribution. While still a multi-billion dollar industry, the relative contribution of the Canadian food system to gross domestic product (food-related GDP) and employment has been decreasing (Chart 1.7). This is corroborated by the trend shown in Chart 1.1 that total personal spending has increased relatively more than spending on food and alcohol since 1961. Canadians are also consuming more overall, and spending a smaller portion of their income on food than citizens of many other countries (Table 1.3).

Even though the relative contribution of the food system to employment in Canada has decreased, the number of people employed in this area did increase slightly over the past four decades. In 1964, 7.1 million people were employed in Canada, and about 12% of these, or about 820,000 people, worked in some aspect of the food system. By 2004 this group had grown to about 860,000 workers (5% of the total 16.2 million employed).<sup>33</sup> In 2004 the food system

contributed \$52 billion to the \$1.2 trillion gross domestic product (GDP).<sup>34</sup>

Chart 1.7

**Contribution of the Canadian food system to gross domestic product and employment**



**Note(s):** this includes both direct and indirect effects of expenditures on food.  
**Source(s):** Statistics Canada, Industry Accounts Division, 2008, special tabulation.

See note(s) at the end of the section.

### Input-output tables at Statistics Canada

The input-output component of the Canadian System of National Accounts at Statistics Canada represents the chain of industrial activities related to production and final expenditures. This consists of three tables:

- gross output of commodities (goods and services), by producing industries;
- industry use of commodities and primary inputs; and
- final expenditures of households, business investment, governments and foreign consumers, by commodity.

Together these tables provide a detailed account of the commodities produced by industry and of commodities purchased by industry or the final demand sector. The measures may be used to tie together commodity sales by industry with industry purchases of those commodities to reveal the extent to which industries are interdependent. It also shows the extent to which an industry is primarily serving intermediate or final demand. Typically this information is used in economic analysis, but it can also be used to show how our activities impact the environment.

To illustrate, of the 303 industries included in these tabulations, 10 are responsible for two-thirds of the inputs (measured in dollars) into the Bakery and Rolls Industry. Five of these 10 industries supply food product inputs, including flour and sugar, and account for 48% of total inputs. Other industries, including the Plastic Film, Sheet and Bag Manufacturing (6% of inputs), and the Electric Power Generation, Transmission and Distribution (2%) are also in the top ten.

Since the Input-Output tables show the costs of production of goods and services plus the value of imports, this financial relationship can be used to gain insight into the environmental implications of economic activities. For example, sales of bread in 2004 totalled \$2.6 billion. From the tables described above the relationship between this demand for bread and the industry activities that produce plastic bags, advertising, electricity, and a suite of other products is known. Energy use and greenhouse gas emissions can then be related to total industrial production: energy use and emissions caused by final expenditures on selected products and services can be estimated.

**Source(s):** Statistics Canada, 2008, *Guide to the Income and Expenditure Accounts*, Catalogue no. 13-017-X.

**Table 1.3**  
**International comparison of personal consumption expenditure on food, by country, 2005**

	Spending of total income on food
	percent
Australia	17.3
Brazil	20.7
Canada	15.0
China	40.7
France	24.0
Mexico	27.3
United Kingdom	19.0
United States of America	16.1

**Source(s):** Worldsalaries.org, 2008, *Personal Consumption Expenditure - International Comparison*, [www.worldsalaries.org/personal-consumption-expenditure.shtml](http://www.worldsalaries.org/personal-consumption-expenditure.shtml) (accessed March 13, 2009).

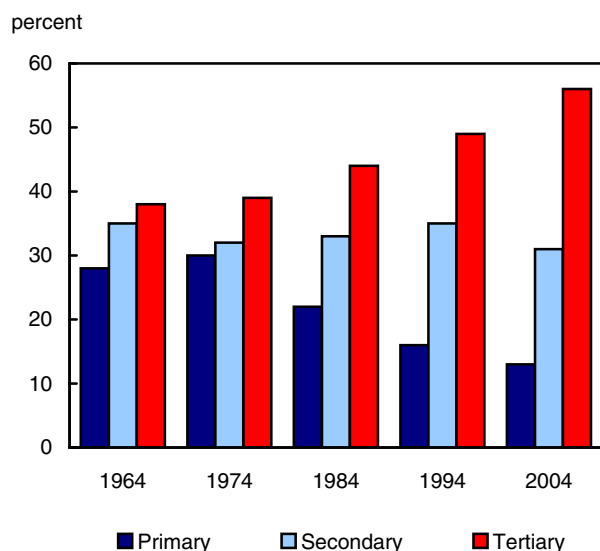
The information in this section is derived from Canada's input-output tables, a statistical representation of the interrelation between the various sectors of the economy. The main feature of simulations based upon these tables is their ability to estimate the total effects<sup>35</sup> of spending by consumers, including the

effects of spending that occurred in earlier stages of goods and services production. Use of the input-output tables also allows us to classify inputs to the Canadian food system based on whether they come from the primary, secondary or tertiary sector of the economy. This analysis does not include the foreign production stimulated by imported goods and services.

### 1.3.1 Food contributions to gross domestic product

The distribution of food-related GDP across the economy has shifted in recent decades (Chart 1.8). In 1964, primary production from agriculture and fisheries contributed 28% to food-related GDP. By 2004 this share had decreased to 13%. In contrast the relative contribution of services (the tertiary sector) increased from 38% to 56%. This increase is consistent with the general trend in Canada. Gradually, the proportion of the total economy stemming from services has been increasing, growing from 65% in 1984 to 69% in 2004.<sup>36</sup>

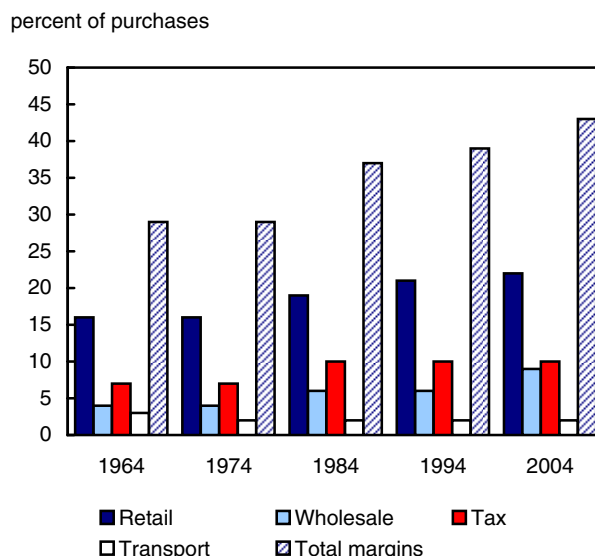
**Chart 1.8**  
Sector contributions to food-related gross domestic product in Canada



**Note(s):** This includes both direct and indirect effects of expenditures on food.  
**Source(s):** Statistics Canada, Industry Accounts Division, 2008, special tabulation.

For all products, including food, there is a difference between the price paid by the consumer and the price received by the producer. This difference, or margin, is added by wholesalers, retailers, taxes on products, and companies that transport the goods. In total, margins accounted for 29% of food costs in 1964, whereas in 2004 they were responsible for 43%. Retail margins increased the most, going from 16% of total purchases in 1964 to 22% in 2004 (Chart 1.9). Wholesale margins also increased, rising from 4% in 1964 to 9% in 2004. Transportation margins have not increased noticeably over the period, but transportation services provided by producers, wholesalers and retailers of food for their own needs are not included in the figures for transportation margins. There is very little information on this type of transportation.

**Chart 1.9**  
Contribution of margins to food purchases in Canada



**Note(s):** This includes both direct and indirect effects of expenditures on food.  
**Source(s):** Statistics Canada, Industry Accounts Division, 2008, special tabulation.

Since margins are services (rather than goods), their relative increase has contributed to the shift of food-related GDP to the services sector (Chart 1.8). Another cause of this shift is the increased share of imports in food purchases. Imports went from 18% of total food expenditures in 1964 to 25% in 2004. Margins on food imports contribute to Canada's GDP, but the production of the imported food contributes to the GDP of the countries from which food is imported. Imported food does have a small indirect effect on the GDP of Canada's primary and manufacturing sectors, but mostly it affects the services sector.

Food processing and other activities that increase the number of steps between the producer and the consumer add economic value to the product. As the value added to a product increases, the relative contribution of the production of the food to the final value decreases. However, the overall environmental impact increases when intermediate steps are added.

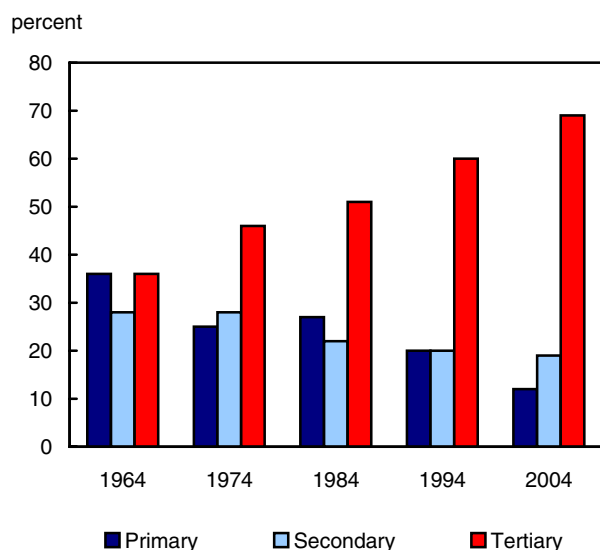
The contribution of the secondary or manufacturing sector to food GDP has remained relatively constant over the 1964 to 2004 time period (Chart 1.8).



### 1.3.2 Food contributions to employment

The proportion of Canada's workforce involved with the production of food for the Canadian food system has decreased in recent decades (Chart 1.10). In 1964 approximately equal numbers of workers were employed in primary sector food production as were involved in providing transportation, retail and restaurant services for the tertiary sector. By 2004, the relative share of people engaged in producing food relative to those providing food-related services had declined. Increased mechanization, increased use of fertilizers and pesticides, and improved management techniques in recent decades have resulted in fewer people involved in primary sector food production.

**Chart 1.10**  
Sector contributions to food-related employment in Canada



**Note(s):** This includes both direct and indirect effects of expenditures on food.

**Source(s):** Statistics Canada, Industry Accounts Division, 2008, special tabulation.

People employed in the secondary sector of the food system work in food processing, and in industries that manufacture pesticides, fertilizers, agricultural equipment, packaging and other food-related products. The proportion of people employed in this sector has decreased from 28% to 19% over this time period, whereas its contribution to food GDP only decreased from 35% to 31%.

From 1984 to 2004, the proportion of the total labour force that worked in the service industries increased from 70% to 75%.<sup>36</sup> This trend was even more marked for food system workers, as the proportion of them in the service industries increased from 51% to 69% over this same time period (Chart 1.10). This reflects the fact that a greater diversity of food services are available, including catering and prepared meals to take home. People are spending a greater portion of their money eating outside the home, and imported foods increase activities more in the service (tertiary) sector than in the manufacturing (secondary) sector.



## 1.4 Environment

Putting food on the table and preparing food for export puts pressure on water, land, climate and air. All three components of the food system—primary, secondary and tertiary—have environmental impacts.

Some agricultural activities can result in the depletion of soil and water resources—for example, the current rate at which water resources are used and soil is eroded puts pressure on the environment. However, other agricultural management practices can sequester carbon in soils, protect water quality and provide wildlife habitat. Fisheries can alter ocean and freshwater ecosystems through over-fishing and introduction of non-native species. While aquaculture can provide an alternative to traditional fisheries, it contributes to nutrient pollution from fish waste and the depletion of natural fish stocks to feed farmed fish.

### 1.4.1 Distribution of agricultural land

Appropriate soil and climate conditions are essential for successful farming and most of Canada's land is not suitable for agriculture. According to the Canada Land Inventory, Canada has 45.7 million hectares

of dependable land that are suitable for long-term annual crop production, representing about 5% of the total land area of Canada. Most of this dependable land is farmed, with the exception of that which has been paved over or built on. In addition, 72.4 million hectares of land are suitable for tame and native grassland, and may be used for grazing livestock and cutting hay, but are either marginal or unsuitable for annual crop production.<sup>37</sup> In 2006, Canada's total area on farms covered 67.6 million hectares,<sup>38</sup> or 7% of Canada's land base. With a limited supply of land suitable for long-term crop production, increasing the area of cropland can result in a greater reliance on marginal lands.

Canada can be divided into 15 terrestrial ecozones sharing common ecological characteristics (Map 1.1). Ecozones cross administrative boundaries and represent large and generalized ecological units with homogeneous hydrographic, climatic, ecological and topographic characteristics. Ecozones are further broken down into 194 ecoregions, characterized by distinctive regional ecological factors, including climate, physiography, vegetation, soil, water, fauna, and land use (Table 1.4).

See note(s) at the end of the section.

**Table 1.4**  
**Biophysical characteristics of terrestrial ecozones**

Ecoregions	Land area		Landforms	Vegetation	Climate and oceanographic characteristics
	number	square kilometres			
Arctic Cordillera	4	245,000	Mountains	Mainly unvegetated; some shrub-herb tundra	Extremely cold; dry; continuous permafrost
Northern Arctic	23	1,523,000	Plains; hills	Herb-lichen tundra	Very cold; dry; continuous permafrost
Southern Arctic	18	852,000	Plains; hills	Shrub-herb tundra	Cold; dry; continuous permafrost
Taiga Plains	17	658,000	Plains; some foothills	Open to closed mixed evergreen-deciduous forest	Cold; semiarid to moist; discontinuous permafrost
Taiga Shield	16	1,393,000	Plains; some hills	Open evergreen-deciduous trees; some lichen-shrub tundra	Cold, moist to semi-arid; discontinuous permafrost
Boreal Shield	28	1,921,000	Plains; some hills	Evergreen forest; mixed evergreen-deciduous forest	Cold; moist
Atlantic Maritime	15	203,000	Hills and coastal plains	Mixed deciduous-evergreen forest stands	Cool; wet
Mixed Wood Plains	4	168,000	Plains; some hills	Mixed deciduous-evergreen forest	Cool to mild; moist
Boreal Plains	10	744,000	Plains; some foothills	Mixed evergreen-deciduous forest	Cold; moist
Prairies	7	466,000	Plains; some hills	Grass; scattered deciduous forest (aspen parkland)	Cold; semiarid
Taiga Cordillera	7	267,000	Mountains	Shrub-herb-moss-lichen tundra	Very cold winters; cool summers, minimal precipitation
Boreal Cordillera	12	467,000	Mountains; some hills	Largely evergreen forest; some tundra; open woodland	Moderately cold; moist
Pacific Maritime	13	205,000	Mountains; minor coastal plains	Coastal evergreen forest	Mild; temperate; very wet to cold alpine
Montane Cordillera	17	487,000	Mountains; interior plains	Evergreen forest; alpine tundra; interior grassland	Moderately cold; moist to arid
Hudson Plains	3	376,000	Plains	Wetlands; some herb-moss-lichen tundra; evergreen forest	Cold to mild; semiarid; discontinuous permafrost

**Source(s):** Environment Canada, 1996, *The State of Canada's Environment Part II: Canadian Ecozones*, [www.ec.gc.ca/soer-ree/English/SOER/1996report/Doc/1-1.cfm](http://www.ec.gc.ca/soer-ree/English/SOER/1996report/Doc/1-1.cfm) (accessed June 3, 2008). Statistics Canada, 2009, *Human Activity and the Environment*, Catalogue no. 16-201-X, Table 2.1. Wiken, E.B. et al., 1996, *A Perspective on Canada's Ecosystems: An Overview of the Terrestrial and Marine Ecozones*, Canadian Council on Ecological Areas, Occasional paper, no.14.

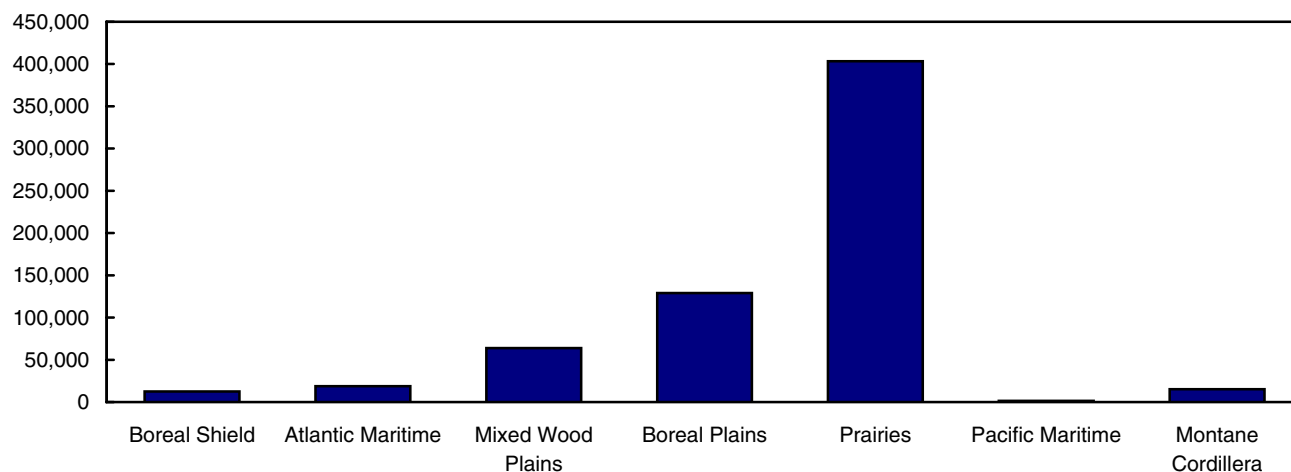
Seven of Canada's 15 ecozones have a significant level of agricultural activity: Boreal Shield, Atlantic Maritime, Mixed Wood Plains, Boreal Plains, Prairies, Pacific Maritime and Montane Cordillera. However, farms are not distributed evenly among these ecozones. In 2006, 63% of Canada's farm area was found in the Prairies, 20% in the Boreal Plains and 10% in the Mixed Wood Plains, with the remaining 7% in the other ecozones (Chart 1.11).

The Prairie ecozone (86.6%) and the Mixed Wood Plains ecozone (38.0%) had the greatest proportion

of their land in agriculture (Table 1.5; Map 1.2). Canada's growing population is putting pressure on some of Canada's most productive farmland: between 1971 and 2006, population increased by 56% in the Prairie ecozone (Table 1.5). Generally the greatest use of farmland in each ecozone is for field crops. The Montane Cordillera, which has a large focus on beef production, is an exception with the majority of its land in pasture.

**Chart 1.11**  
**Farm area in Canada, by ecozone, 2006**

square kilometres



**Source(s):** Agriculture and Agri-Food Canada and Statistics Canada, customized tabulations, Census of Agriculture, Census Geographic Component Base 2006. Statistics Canada, CANSIM table 153-0058 (accessed April 27, 2009).

**Table 1.5**  
**Farm area in Canada by ecozone, 1971 and 2006**

	Ecozone area	Farm area		Farm area 1971 to 2006	Proportion of ecozone in farm area		Population		Farm area per thousand people	
		1971	2006		1971	2006	1971	2006	1971	2006
		square kilometres		percent change	percent		number		square kilometres per thousand people	
Boreal Shield	1,921,000	18,948	12,595	-33.5	1.0	0.7	2,525,809	2,886,412	7.5	4.4
Atlantic Maritime	203,000	28,061	18,774	-33.1	13.8	9.2	2,274,692	2,554,089	12.3	7.4
Mixed Wood Plains	168,000	75,048	63,922	-14.8	44.7	38.0	11,041,670	16,611,643	6.8	3.8
Boreal Plains	744,000	123,113	128,997	4.8	16.5	17.3	561,553	811,956	219.2	158.9
Prairies	466,000	413,413	403,325	-2.4	88.7	86.6	2,916,253	4,514,106	141.8	89.3
Pacific Maritime	205,000	1,481	1,504	1.5	0.7	0.7	1,653,827	3,215,775	0.9	0.5
Montane Cordillera	487,000	12,057	15,182	25.9	2.5	3.1	508,705	873,559	23.7	17.4

**Source(s):** Agriculture and Agri-Food Canada and Statistics Canada, customized tabulations, Census of Agriculture, Census Geographic Component Base 2006 and Census of Agriculture Regular Base 1971. Statistics Canada, CANSIM tables 153-0057 and 153-0058 (accessed April 27, 2009). Statistics Canada, 2009, *Human Activity and the Environment*, Catalogue no. 16-201-X, Table 2.1.

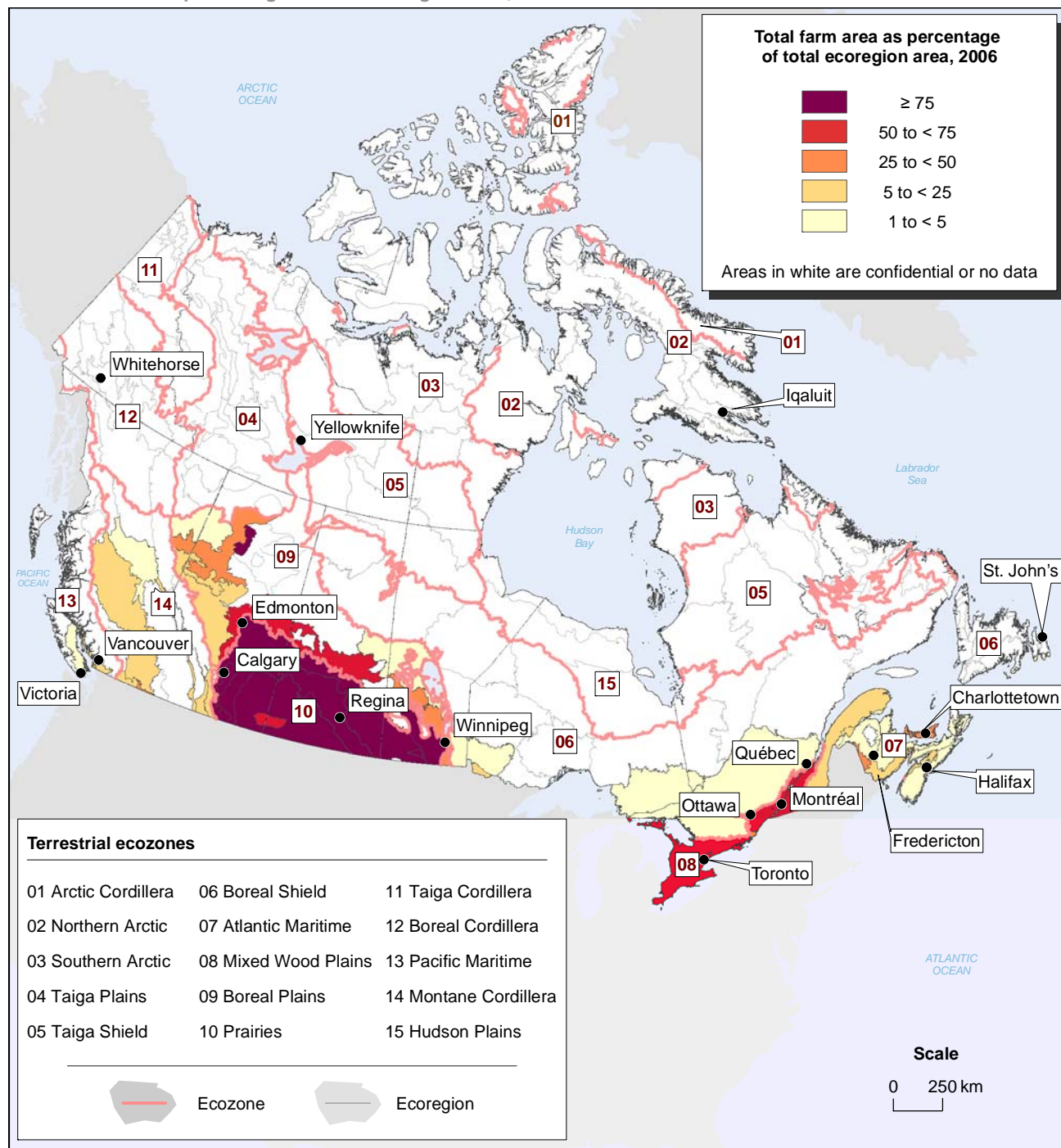
Map 1.1  
Terrestrial ecozones



**Source(s):** Wiken, E.B. et al., 1996, *A Perspective on Canada's Ecosystems: An Overview of the Terrestrial and Marine Ecozones*, Canadian Council on Ecological Areas, Occasional Paper, No. 14, Ottawa.



Map 1.2  
Total farm area as percentage of total ecoregion area, 2006



Source(s): Statistics Canada, Environment Accounts and Statistics Division, 2009, special tabulation.

### 1.4.2 Impacts on land

The productive capacity of Canada's farmland is vital to support its population and to contribute to global food production. Proper land management can increase soil fertility, serving to preserve and enhance farmland, but some agricultural practices can have negative impacts.

#### Wildlife use of agricultural habitat

Agro-ecosystems, which include cropland, grazing land, wetlands, woodlands and natural grasslands, support many species. In fact, over 500 species of birds, mammals, reptiles and amphibians are known to use land on Canadian farms. Of the terrestrial vertebrates listed as species at risk in 2004 by the Committee on the Status of Endangered Wildlife in Canada, approximately half were found on farms. Changes in agro-ecosystems can therefore impact biodiversity, and agricultural producers can play a significant role in sustaining biodiversity.<sup>39</sup>

Measuring the impacts of agricultural land-use changes on wildlife is of interest to researchers and policy analysts alike (**Text box: National Agri-Environmental Health Analysis and Reporting Program**). Suitable wildlife habitat must contain specific components that are critical for wildlife survival—food, water, shelter and space, and also provide for needs such as reproduction, dispersal and migration. One study has shown that from 1981 to 2001, there was a 5% decrease in wildlife habitat capacity on Canada's farms. This decrease was associated with an expansion in cropland from 47% to 54% of total farm area and a decline in species-rich natural pasture from 25% to 23%. The Prairie Provinces saw a small decline in habitat capacity while greater decreases occurred in Eastern Canada. Saskatchewan was the only province in which an increase in habitat capacity occurred between 1981 and 2001.<sup>40</sup>

Many management practices benefit species habitat. Conserving natural land, such as grasslands, wetlands and woodlands, protecting riparian areas (buffer zones) bordering streams and rivers and delayed haying and grazing until after most songbirds and waterfowl have left the nest, are a few examples.<sup>39</sup>

<sup>39</sup> See note(s) at the end of the section.

#### National Agri-Environmental Health Analysis and Reporting Program

In 1993, Agriculture and Agri-Food Canada (AAFC) established a set of agri-environmental indicators with the goal of assessing the impacts of agricultural policies on the environment. These indicators determined how environmental conditions within agriculture were changing over time, and how such changes could be explained. The National Agri-Environmental Health Analysis and Reporting Program (NAHARP) builds on this initial work. The program's purpose is to strengthen departmental capacity to develop and continuously enhance agri-environmental indicators and tools to integrate these indicators with policy development. NAHARP uses three complementary approaches: agri-environmental indicators; integrated economic/environmental modeling and forecasting; and agri-environmental valuation.

In addition to agricultural indicators, the following three indicators for the food and beverage industry are under development by NAHARP: energy use and greenhouse gas emissions, water use and effluent generation, and organic solid residues and packaging wastes.

**Source(s):** Agriculture and Agri-Food Canada, 2007, *NAHARP Summary*, [www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1182778580398&lang=e](http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1182778580398&lang=e) (accessed October 9, 2008).

#### Tillage

Tillage is the preparation of soil for planting or seeding by plowing and cultivating. Conventional tillage incorporates or buries most of the previous year's crop residue into the soil. Conservation tillage retains most of the crop residue on the surface and involves minimal tillage. No-till involves direct seeding into crop residue, avoiding any mechanical tillage of the soil.<sup>41</sup>

The type of tillage used depends on specific conditions such as climate, soil and crop type. Cereal grains, oil seeds and beans are easily grown using conservation or no-till practices. Potatoes, however, are generally grown using conventional tillage. While conventional tillage can increase porosity and loosen soil, it breaks up soil structure, making it more subject to compaction, which reduces water infiltration, air exchange and root penetration. It also leaves soil more vulnerable to wind and water erosion and accelerates the decomposition of organic matter. Reduced tillage conserves moisture, soil structure and organic matter, and minimizes the risk of erosion. No-till seeding involves fewer passes with

machinery through fields, resulting in fuel and labour savings.

In Canada, land prepared for seeding using conventional tillage decreased from 69% in 1991 to 28% in 2006 (Table 1.6). Land prepared for seeding using conservation tillage remained relatively stable, rising slightly from 24% to 26% and no-till increased from 6% to 46%. No-till practices were most common in the Prairie ecozone, where 53% of the land prepared for seeding was prepared using no-till practices in 2006, up from 8% in 1991.

Reduced tillage results in economic and environmental benefits. Total fuel expenses for farmers that used no-till seeding, on average, were \$39/ha seeded. Farmers that used conventional tillage however, on average, spent \$110/ha seeded on fuel.<sup>42</sup> This reduction in fuel use also reduces air pollution and greenhouse gas emissions.

### Soil erosion

Soil erosion, the movement of soil from one area to another, removes nutrient rich topsoil and contributes to the breakdown of soil structure, affecting soil fertility and the movement of water into and from the soil surface. Erosion can also have 'off-site' impacts on the environment, including transport and deposit of soil particles to new locations and the release of nutrients, pesticides, pathogens and toxins.<sup>43</sup> In addition, aquatic habitats are affected by sedimentation.<sup>44</sup>

See note(s) at the end of the section.

**Table 1.6**  
**Tillage practices in Canada by ecozone, 1991 and 2006**

	1991				2006			
	Total area seeded			Total area prepared for seeding	Total area seeded			Total area prepared for seeding
	Conventional tillage	Conservation tillage	No-till		Conventional tillage	Conservation tillage	No-till	
	percent			hectares	percent			hectares
<b>Total</b>	<b>69</b>	<b>24</b>	<b>6</b>	<b>28,541,798</b>	<b>28</b>	<b>26</b>	<b>46</b>	<b>28,322,008</b>
Boreal Shield	83	14	3	191,241	62	30	7	213,386
Atlantic Maritime	90	8	2	285,007	72	22	6	319,491
Mixed Wood Plains	80	17	3	3,096,730	48	26	26	3,479,133
Boreal Plains	80	18	1	5,102,600	31	29	40	4,425,799
Prairies	64	28	8	19,777,086	23	25	53	19,797,802
Pacific Maritime	86	5	8	28,331	71	21	8	29,753
Montane Cordillera	85	14	1	60,803	61	26	14	56,362

**Source(s):** Agriculture and Agri-Food Canada and Statistics Canada, customized tabulations, Census of Agriculture, Census Geographic Component Base 2006.

Soil erosion can occur by wind and water action, which can be influenced by agricultural activities such as tillage. Water-induced soil erosion is usually the result of rainfall and snowmelt surface run-off events. In addition to sedimentation of streams, rivers and lakes, the eroded soil can carry crop nutrients, pesticides and bacteria, which affect water quality and reduce habitat for fish and other aquatic organisms. According to the National Agri-Environmental Health Analysis and Reporting Program report, 86% of cropland had a very low risk of water erosion in 2001. The risk declined in most provinces between 1981 and 2001, with a decrease of 8% nationally. Practices that help control water erosion include: using reduced tillage and managing crop residues; planting row crops across the slope or following the land's contours; strip cropping; winter cover cropping where soils are at risk of erosion by winter run-off; and including forages such as hay and alfalfa in crop rotations.<sup>43</sup>

The risk of wind-induced soil erosion is greatest in the dry Prairie Provinces where expanses of cultivated land have little protection from the wind. The risk of wind erosion decreased 40% between 1981 and 2001, with the proportion of land in the low to very low risk classes increasing from 84% in 1981 to 92% in 2001. The risk of wind erosion in the Prairies declined steadily between 1981 and 2001 because of changes in cropping systems and tillage practices.<sup>43</sup> The most notable changes include a 50% reduction in the amount of summerfallow—land left unsown to conserve moisture in the soil; a doubling of forage area; and a dramatic increase in reduced-tillage systems.



### 1.4.3 Impacts on water

Technologies involving mechanization, genetics, nutrient science and irrigation have fostered increases in crop and livestock production. Likewise, technologies used in fisheries and aquaculture have also resulted in increased yields. However, use of some of these technologies can impact water quality and availability. In addition, food manufacturing is dependent on water. In 2005, total water intake by Canadian manufacturing industries was 7,779 million cubic metres. Food industries accounted for 17.6%, or 1,367 million cubic metres, of this water.<sup>45</sup>

#### Nutrients and pesticides

Commercial fertilizers and livestock manure provide nutrients essential to plant growth, such as nitrogen and phosphorus. When applied under ideal conditions and at optimum rates, fertilizers and manure have minimal water quality impacts. However, care must be taken to ensure that they are applied correctly to minimize runoff and leaching, which typically occur during episodes of intense rainfall and spring snowmelt.<sup>32</sup>

When applied improperly, nutrients in fertilizer and manure can run off into surface water bodies and leach into groundwater. Nitrogen and phosphorus can encourage excessive aquatic plant growth. When

these plants die and decompose, dissolved oxygen is removed from the water—a process known as eutrophication—making it uninhabitable for fish and other forms of aquatic life.<sup>46</sup>

Between 1971 and 2006, there was an increase in the amount of fertilized area in each of the seven ecozones with significant agricultural activity (Table 1.7). The greatest increases were observed in the Prairies ecozone (381%) and the Montane Cordillera ecozone (201%).

Livestock manure is rich in nutrients and organic matter, making it a valuable fertilizer for crop production. It can however also be a source of odours and pathogens.<sup>47</sup> Proper management can make the difference between a valuable resource and a pollutant.

In 2006, livestock produced 168 million tonnes of manure (Table 1.8), a 12% increase since 1981.<sup>48</sup> Manure production was concentrated in central and southern Alberta, located in the Prairies ecozone, as well as in south-western Ontario, and south-eastern Quebec, both located in the Mixed Wood Plains ecozone. Beef cattle were responsible for the largest proportion of manure produced in Alberta, whereas a wide range of animals, including poultry, beef cattle, milk cows and pigs, contributed to manure production in Ontario and Quebec.<sup>49</sup>

See note(s) at the end of the section.

**Table 1.7**  
**Fertilized land area in Canada by ecozone, selected years, 1971 to 2006**

	1971	1981	1991	2001	2006	Percentage change 1971 to 2006
	square kilometres					percent
Boreal Shield	931.4	2,360.1	2,077.8	2,231.7	2,266.4	143.3
Atlantic Maritime	2,623.7	5,443.3	4,309.5	4,168.6	4,065.7	55.0
Mixed Wood Plains	14,981.7	31,168.3	28,923.6	28,742.0	30,359.6	102.6
Boreal Plains	14,814.2	35,097.6	43,764.5	41,419.5	41,502.6	180.2
Prairies	34,794.7	106,550.1	132,093.6	157,135.4	167,516.7	381.4
Pacific Maritime	301.6	634.2	543.4	539.6	549.3	82.1
Montane Cordillera	484.7	1,363.7	1,312.2	1,457.5	1,457.7	200.7

**Source(s):** Agriculture and Agri-Food Canada and Statistics Canada, customized tabulations, Census of Agriculture, Census Geographic Component Base 2001, 2006 and Census of Agriculture Regular Base 1971, 1981, 1991. Statistics Canada, CANSIM table 153-0058 (accessed February 2, 2009).

Table 1.8

## Livestock manure production and selected nutrients per farm area, by ecozone in Canada, 2006

	Total manure	Nitrogen	Phosphorus	Potassium
	tonnes	kilograms per hectare of farm area		
<b>Total</b>	<b>168,087,022</b>			
Boreal Shield	4,340,365	20.7	5.4	12.0
Atlantic Maritime	9,207,967	29.3	7.9	16.6
Mixed Wood Plains	39,338,114	38.7	10.9	21.3
Boreal Plains	29,358,559	13.5	3.7	8.3
Prairies	78,789,588	11.6	3.2	7.1
Pacific Maritime	2,736,448	130.1	34.8	63.9
Montane Cordillera	4,313,351	16.9	4.5	10.4

**Note(s):** Any differences between the results published here and data in other Statistics Canada products is due to data suppression to protect confidentiality. See Statistics Canada, 2008, *Census of Agriculture: Environmental Geography Aggregations of Census Farm Units* (survey no. 8012) (accessed December 17, 2008) for further details.

**Source(s):** Agriculture and Agri-Food Canada and Statistics Canada, customized tabulations, Census of Agriculture, Census Geographic Census Base 2006.

This manure contained 1 million tonnes of nitrogen, 279 thousand tonnes of phosphorus and 602 thousand tonnes of potassium. The Pacific Maritime ecozone had the highest nutrient production from manure per farm area (Table 1.8) due to substantial poultry, egg and dairy production relative to the amount of farmland in the region. However, not all of this manure is spread in the ecozone—it can be transported to other farms or dried and bagged for sale.<sup>50</sup> The total quantity of manure alone is not an indication of its environmental impact as each type of livestock manure has specific nutrient and odour characteristics.

Considerable effort is required to handle such a large volume of manure. Collecting, transporting and spreading all require time and energy. Manure can be used in place of chemical fertilizers, reducing costs. However, care must be taken to avoid environmental impacts. Several provinces have strict legislation with

regards to manure handling and nutrient management. Soil and manure nutrient testing prior to application is the best way to determine the right amount to apply since different crops have different nutrient demands.

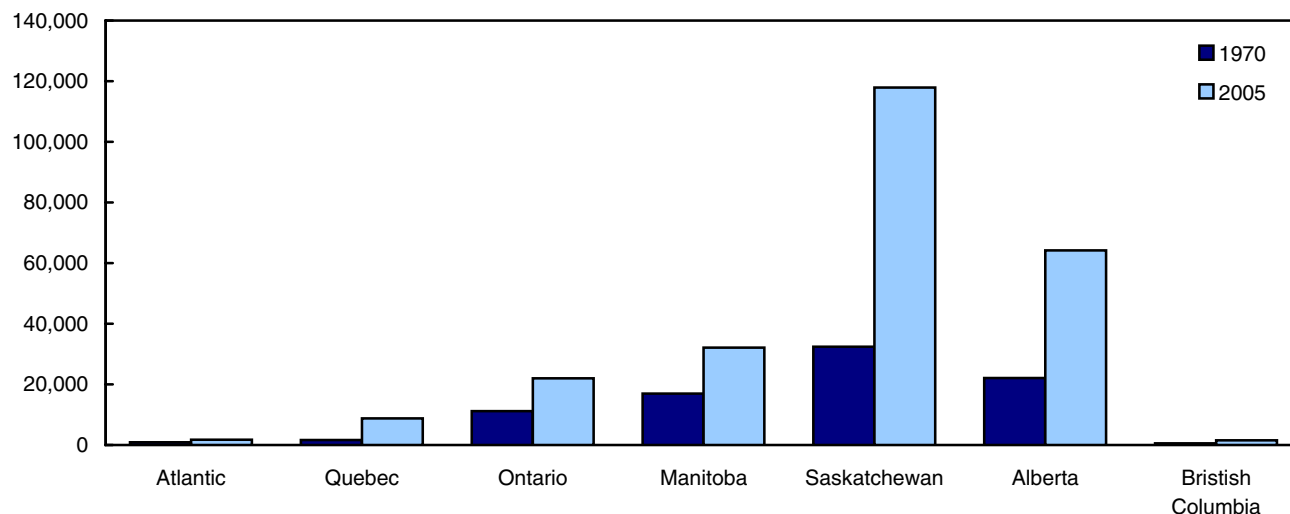
Pesticides are applied to agricultural crops to control weeds, insects and other pests. While pesticides can help maintain crop yields and quality, they also have the potential to contaminate water through runoff and infiltration into groundwater. In 2005, the herbicide application area on farms was 190% higher compared to 1970. In 2005, the largest land area with herbicide application was found in Saskatchewan, followed by Alberta and Manitoba (Chart 1.12). Herbicide use has allowed a move to reduced summerfallow and increased no-till planting with the associated environmental benefits of that practice. Between 1971 and 2006, farmers in the Boreal Plains and Prairies ecozones had the greatest increase in expenditures per land area on chemical products (Table 1.9).

<sup>50</sup> See note(s) at the end of the section.

Chart 1.12

## Area of farmland in Canada treated with herbicides, by province, 1970 and 2005

square kilometres



**Note(s):** As in previous censuses, the area of land on which herbicides, insecticides and fungicides were applied is under-reported.

**Source(s):** Statistics Canada, 2006 Census of Agriculture, *Farm Data and Farm Operator Data*, Catalogue no. 95-629-XWE. Statistics Canada, Agriculture Division, 2008, special tabulation.

Table 1.9

## Chemical product expenses per land area by ecozone, selected years, 1971 to 2006

	1971	1981	1991	2001	2006	Percentage change 1971 to 2006
	1992 constant dollars per square kilometre					percent
Boreal Shield	1.55	2.50	3.59	4.97	5.14	232.4
Atlantic Maritime	8.72	11.54	12.51	21.66	19.63	125.1
Mixed Wood Plains	59.60	91.46	103.41	142.27	131.00	119.8
Boreal Plains	8.62	36.47	59.94	85.43	79.27	819.5
Prairies	31.46	141.69	216.39	396.16	379.70	1,106.9
Pacific Maritime	2.34	3.23	4.40	5.43	6.97	198.2
Montane Cordillera	3.69	3.67	3.46	4.32	4.27	15.7

**Note(s):** Chemical product expenses include herbicides, insecticides, fungicides and other products.

**Source(s):** Agriculture and Agri-Food Canada and Statistics Canada, customized tabulations, Census of Agriculture, Census Geographic Component Base 2001, 2006 and Census of Agriculture Regular Base 1971, 1981, 1991. Statistics Canada, CANSIM table 153-0058 (accessed May 14, 2009). Statistics Canada, 2009, *Human Activity and the Environment*, Catalogue no. 16-201-X, Table 2.1.

Farmers are also using a number of non-chemical alternative methods of pest control. In 2006, the most common method was rotating crops, accounting for 33% of all alternative methods of pest control across Canada. Other common methods include tillage (16%) and use of pest resistant plants (13%).<sup>51</sup>

### Water use

Water is essential to crop and livestock production. In 2001, agricultural water use to irrigate crops, water livestock, spray pesticides and wash machinery in Canada was estimated at 4.8 billion cubic metres.<sup>52</sup> The majority (92%) of this water was used for irrigation. Different climate conditions and crop requirements mean that agricultural water use varies from one region to another. Agricultural water use in Alberta,

Saskatchewan and British Columbia accounted for 92% of the national total in 2001.

Seven percent of Canadian farms reported irrigation in 2005. Of the total land area irrigated in Canada in 2005, 64% was in Alberta and an additional 14% was in British Columbia.<sup>27</sup> In 2007, 91% of Canadian irrigators reported using one or more practices to conserve water and energy.<sup>53</sup> Of farmers that were known to irrigate, 60% used water to clean farm buildings or equipment, and 54% used water to spray pesticides or fertilizers (Table 1.10).

Water consumption by industry, calculated as water intake minus water discharge, provides an indication of the amount of water lost during production, most commonly through the incorporation of water into the products or through evaporation. In 2005, water consumption for manufacturing industries was estimated at 1,051.1 million cubic metres or 13.5% of the total water intake of 7,778.9 million cubic metres.<sup>54</sup> Food industries were the largest consumers of water, consuming 272.7 million cubic metres or 25.9% of the total.<sup>45</sup>

### Commercial fisheries

Commercial fisheries face several environmental issues, including overfishing, bycatch and habitat damage. Overexploitation became an increasing concern in the late 1980s. In the Atlantic provinces, over-fishing caused many groundfish stocks to decline severely and the federal government imposed moratoria on cod and other fisheries. Similarly, on the West Coast a marked decline in salmon stocks was noted beginning in 1995. The decline in salmon landings has been attributed in part to habitat destruction stemming from logging activities, road

construction, industrial pollution, agricultural run-off and urbanization.<sup>32</sup>

In addition to a reduction in overall biomass of commercially exploited fish, there has been a decrease in the size structure of several species.<sup>55</sup> Larger, more valuable fish are targeted by fishing activities, reducing the average size of fish in the population. As a result, reproductive capacity is affected because smaller fish produce fewer eggs.<sup>56,57</sup>

Bycatch, the capture of non-target species while fishing, can include fish that are unmarketable, undersized or endangered. It is estimated that the trawl fisheries of the Scotian Shelf catch 50 to 400 species in addition to targeted species.<sup>55</sup> Most bycatch is discarded. The type of fishing gear used can affect the likelihood and amount of bycatch and some gear can cause habitat damage. For example, trawling and dredging cause changes in ocean floor communities and reduce the productivity of their habitats.<sup>57,58</sup>

### Aquaculture

Aquaculture is the farming of fish, shellfish, and other aquatic animals or plants, in fresh or salt water. These products can be grown inland in freshwater facilities, ponds, freshwater lakes and bays, or in the open ocean.<sup>58</sup> As demand for seafood increases, the use of aquaculture as a complement to traditional fisheries may remove pressure from wild stocks. Aquaculture contributes a growing proportion of fish production, rising from 7% in 1996 to 14% in 2007 (by weight).<sup>59</sup> There is concern however about the environmental impacts of aquaculture.

See note(s) at the end of the section.

Table 1.10

Water use for selected agricultural activities of Canadian farm operations that used irrigation, 2007

	Spraying fungicide, herbicide, insecticide or fertilizer	Cleaning farm buildings or equipment	Reducing salinity of the soil	Cooling of produce	Frost protection	Harvesting	Processing and packaging	Watering livestock	Other
	percent								
<b>Canada</b>	<b>53.7</b>	<b>59.7</b>	<b>3.9</b>	<b>4.8</b>	<b>8.0</b>	<b>5.7</b>	<b>12.6</b>	<b>40.7</b>	<b>11.5</b>
Atlantic region	59.7	66.0	F	F	19.1	F	25.7	35.4	13.1 <sup>E</sup>
Ontario and Quebec	67.7	69.1	2.9 <sup>E</sup>	7.4	16.2	8.8	26.5	12.9	8.7
Prairies	44.4	49.9	5.7 <sup>E</sup>	2.9 <sup>E</sup>	2.2 <sup>E</sup>	3.6 <sup>E</sup>	4.1 <sup>E</sup>	63.5	13.9
British Columbia	51.4	62.1	3.3 <sup>E</sup>	4.3 <sup>E</sup>	6.1 <sup>E</sup>	5.5 <sup>E</sup>	8.3 <sup>E</sup>	39.0	11.0

**Note(s):** The surveyed population includes agricultural operations with sales of at least \$10,000 that, according to the 2006 Census of Agriculture, reported irrigation activities or owned irrigation equipment.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, Agricultural Water Use Survey 2007.

Fish wastes from aquaculture can be problematic if the receiving waters are unable to assimilate them and become polluted as a result. Organic wastes include nitrates and phosphates. These wastes can impact coastal ecosystems and habitats<sup>60</sup> by stimulating local algal blooms, resulting in waters with inadequate oxygen. They can also cause sedimentation under net pens.<sup>61</sup>

Aquaculture also has the potential to impact aquatic ecosystem biodiversity. Some farmed fish are fed a diet derived from wild fish stocks and they can spread pathogens to native populations. Fish may escape from aquaculture pens to the wild where they can prey on native fish species and compete for limited resources.<sup>61</sup>

Inland, closed-system farms for species such as rainbow trout, tilapia, channel catfish, sturgeon and Arctic char may have fewer environmental impacts than open-ocean farms or pens in bays and inlets. These inland systems are not in contact with wild fish populations and therefore avoid harm through habitat damage and degradation, pollution and disease outbreaks.<sup>62</sup>

#### 1.4.4 Impacts on climate

##### GHG emissions

According to the *National Inventory Report 1990-2006*, greenhouse gas (GHG) emissions from agriculture,

not including energy use, increased 12.4 Mt, or 25%, between 1990 and 2006 (Table 1.11). Agriculture contributed 62 Mt or 8.6% of Canada's total GHG emissions in 2006.<sup>63</sup> Agricultural emissions related to the use of fossil fuels for energy—including driving tractors and heating and drying grain—are reported under energy production and use. In 2006, the net storage of GHGs in cropland was 1.4 Mt. The continued adoption of no-till and reduced tillage practices, and the reduction of summerfallow, have resulted in a trend of increasing removals of GHGs to cultivated soils.<sup>63</sup>

In 2006, 56% of the GHG emissions from agriculture were from nitrous oxide (N<sub>2</sub>O) and 44% were from methane (CH<sub>4</sub>).<sup>63</sup> Both N<sub>2</sub>O and CH<sub>4</sub> are stronger GHGs than carbon dioxide (CO<sub>2</sub>). The emission sources from the agricultural sector include livestock digestive processes (CH<sub>4</sub>), manure (N<sub>2</sub>O and CH<sub>4</sub>), fertilizers (N<sub>2</sub>O) and crop production (N<sub>2</sub>O). Contributing factors to the increase in GHG emissions from the agricultural sector include the expansion of the beef cattle and swine industries, and increases in the use of nitrogen fertilizers.<sup>63</sup>

While the *National Inventory Report* tracks the amount of GHG emitted, it is also possible to compare GHG emission intensities for various industries.<sup>64</sup> For example, crop and animal production emitted 3.1 tonnes of CO<sub>2</sub> equivalent emissions per thousand current dollars of production (T CO<sub>2</sub> eq/\$1000) in 2004.

See note(s) at the end of the section.

Table 1.11

##### Greenhouse gas emissions from agriculture in Canada, selected years, 1990 to 2006

	1990	1995	2000	2005	2006	Percentage change 1990 to 2006
	megatonnes carbon dioxide equivalent					percent
<b>Total <sup>1</sup></b>	<b>592.0</b>	<b>642.0</b>	<b>718.0</b>	<b>734.0</b>	<b>721.0</b>	<b>21.7</b>
<b>Agriculture</b>	<b>49.0</b>	<b>56.0</b>	<b>60.0</b>	<b>63.0</b>	<b>62.0</b>	<b>25.0</b>
Enteric fermentation	18.0	21.0	22.0	25.0	24.0	34.4
Manure management	6.1	6.9	7.5	8.2	8.0	32.4
Agricultural soils	25.0	28.0	30.0	29.0	30.0	16.5
Direct sources	14.0	15.0	15.0	15.0	15.0	..
Pasture, range, and paddock						
manure	2.6	3.2	3.5	3.9	3.8	..
Indirect sources	9.0	10.0	10.0	10.0	10.0	..

1. National totals exclude all GHGs from the land use, land-use change and forestry sector.

**Note(s):** Classification according to United Nations Framework Convention on Climate Change. Totals may not add up due to rounding. Percent change calculations are based on non-rounded values. Agriculture emissions related to burning of fossil fuels for energy—including driving tractors, heating and drying grain—are reported under energy production and use.

**Source(s):** Environment Canada, Greenhouse Gas Division, 2008, *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006*, [www.ec.gc.ca/pdb/ghg/inventory\\_report/2006/tdm-toc\\_eng.cfm](http://www.ec.gc.ca/pdb/ghg/inventory_report/2006/tdm-toc_eng.cfm) (accessed March 18, 2009).

GHGs are also emitted during food-related manufacturing. With emissions of 4.0 T CO<sub>2</sub> eq/\$1000, Pesticides, fertilizer and other agricultural chemical manufacturing industry had the highest emission intensity of the 56 secondary industries. Seven of the 12 food or beverage manufacturing industries ranked in the top 20: Meat product manufacturing was fifth at 1.9 T CO<sub>2</sub> eq/\$1000 and Dairy product manufacturing was seventh with emissions of 1.7 T CO<sub>2</sub> eq/\$1000. Overall, emissions intensity has declined since 1990—49 of the 56 industries in this sector decreased their GHG emission intensity in 2004 relative to 1990 levels.<sup>65</sup>

#### 1.4.5 Impacts on air

Criteria air contaminants (CACs) are a group of pollutants that cause smog, acid rain and other environmental problems. Agriculture is a significant source of two CACs—ammonia (NH<sub>3</sub>) and particulate matter (PM). Ammonia is a gas that is irritating to the eyes, nose and throat when inhaled in low concentrations. It also interacts with sulfates and

nitrates to form secondary fine particulate matter (PM<sub>2.5</sub>) which can have harmful effects on both human health and the environment.<sup>66</sup>

Agriculture is the main source of atmospheric NH<sub>3</sub> emissions. In 2006, agriculture was responsible for 90% of total ammonia emissions in Canada.<sup>67</sup> These emissions are attributed to both livestock and poultry waste management and to pesticide and fertilizer application.

Particulate matter consists of airborne particles in liquid or solid form. Particulate matter has been linked to a number of cardiac and respiratory diseases and to various forms of heart disease. It can also have adverse effects on vegetation and structures, and contribute to reduced visibility and poor air quality.<sup>68</sup> In 2006, agriculture was the third largest source of particulate matter emissions. It was responsible for 12% of total emissions, following construction operations (20%) and dust from roads (62%).<sup>67</sup>

See note(s) at the end of the section.



## 1.5 Society

Food is intertwined with culture, traditions and family. Canada's diverse food choices reflect history and immigration patterns. Canadians have embraced both traditional foods such as salmon, roast beef and tourtière to foods introduced more recently, including pizza, chow mein, perogies, curries and pita.

The Canadian diet has changed considerably from the country's early history when the majority of food needs were met locally. Canadians are confronted by an ever-increasing variety of foods. There are now dozens of breakfast cereals to choose from and fresh fruits and vegetables that were once considered exotic are now available throughout the year.<sup>69</sup> For example, between 1960 and 2007 the total fruit available per person increased from 88.3 kg to 137.4 kg. Mangoes and guavas were first recorded as contributing to this total in 1980, and by 2007 they contributed 1.3 kg per person per year.<sup>70</sup>

Food is also important from an employment perspective—it affects not only the farmers and fishers who produce it, but also those involved in transporting, warehousing and selling, and those involved in preparing and serving it.

The impact of human activities on the environment is complex. In an effort to facilitate communication of these impacts, use of concepts of virtual or embedded resources is increasing (**Text box: Embedded energy**

**and virtual water**). While these measures are approximations, the fact that they provide a common measure of the relative environmental cost of activities is informative.

All the processes involved in food production, manufacturing, distribution, and retailing require energy: most result in the emission of greenhouse gases, other pollution and waste. In 2006, the food industry spent \$317.9 million in operating expenses for environmental protection, with an additional \$123.8 million on capital expenditures. Most of these funds were dedicated to waste management and sewerage services, pollution abatement and control processes and pollution prevention processes.<sup>71</sup>

### Embedded energy and virtual water

Embedded energy refers to the quantity of energy that is needed to produce and deliver a product, or a service, to its consumer. It is sometimes also referred to as 'virtual' or 'hidden' energy. Similarly, virtual water refers to the water used in the production of a good or a service, and is the sum of the water used in the various steps of the production chain.

The concept of virtual or embedded resources helps us become conscious of how much water and energy is needed to produce goods and to provide services, and it offers insight into the environmental impact of these activities. Furthermore, this information is applicable when goods and services are traded between countries that may have different resource availabilities.

See note(s) at the end of the section.

### 1.5.1 What is on the Canadian table?

The Canada Food Guide recommends the number of food servings Canadians should eat each day depending on age and sex.<sup>72</sup> For example, women aged 19 to 50 should have 7 to 8 servings of vegetables and fruit, 6 to 7 servings of grain products, 2 servings of milk and alternatives, and 2 servings of meat and alternatives on a daily basis.

Since 1976, the average number of calories available per person from Canada's food supply has increased 9% from 3,118 kcal to 3,384 kcal (Chart 1.13).<sup>8</sup>

Not all this food is eaten—wastage occurs from spoilage and other losses in stores, in restaurants and in the home. In 2007, loss of solid food was estimated at over 6.0 million tonnes between retail level and the plate—the equivalent of 183 kg per person.<sup>7,9</sup> Another 2.8 billion litres of liquids including milk and milk products, coffee, tea, pop and juices were also wasted. These losses do not include losses at the production level or during food processing.

Waste food can be composted, but often ends up as landfill or down the drain. Food waste also represents a waste of other resources, as considerable water,

energy, and greenhouse gas emissions are involved in producing, transporting, and preparing food.

Over 70% of the food Canadians buy is produced domestically, including 80% of meat and dairy products and 76% of breads and cereals. Imports account for 40% of all fish and fruit and vegetables.<sup>5</sup>

In 2007, about \$24 billion worth of food was imported into Canada from 198 different countries.<sup>6</sup> The top ten countries provided 80% of the value of food imports: countries outside of North America provided 40% (Table 1.12).

**Table 1.12**  
Imports of food into Canada by country, 2007

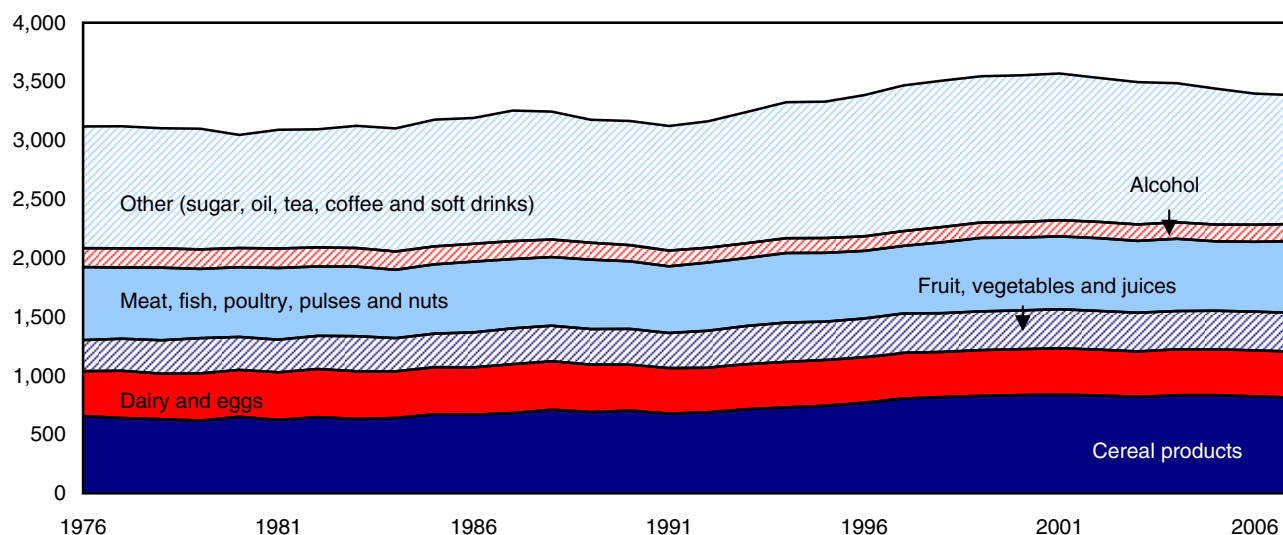
	Imports	Total food imports	
	millions of dollars	percent	rank
<b>World</b>	<b>23,729.0</b>	<b>100.0</b>	
United States	13,542.5	57.1	1
Mexico	906.6	3.8	2
China	799.0	3.4	3
Italy	691.6	2.9	4
France	686.0	2.9	5
Brazil	665.1	2.8	6
Chile	523.1	2.2	7
Thailand	483.1	2.0	8
Australia	441.8	1.9	9
United Kingdom	393.6	1.7	10

**Source(s):** Statistics Canada, 2008, International Trade Division, special tabulation.

See note(s) at the end of the section.

**Chart 1.13**  
Energy available from the Canadian food supply, per person, per day, 1976 to 2007

kilocalories



**Source(s):** Statistics Canada, 2008, *Canada Food Stats Database*, Catalogue no. 23F0001X, version 1.12 June 2008.



Canadians spend less proportionately on food today than they did in the past. In 1913, in 60 cities, staple foods made up more than half a family's weekly budget.<sup>73</sup> Since then, food has become relatively less expensive, and spending on other goods and services has increased. In 1961, spending on food, including restaurant meals and alcoholic beverages made up 28% of total consumer spending in Canada. By 2007, this figure had declined to 17% (Chart 1.1).

Canadians spent \$75 billion on food and non-alcoholic beverages from stores in 2007. The largest shares were spent on meat and fish products and fruits and vegetables (16% each). Bread and cereals and dairy products (including eggs) were next at 12% each.<sup>5</sup> Spending on beer, wine and liquor bought from stores totalled \$17 billion.

Buying organic food is becoming a popular practice. In 2007, 45% of households reported that they often or sometimes bought organic food products, and 5% bought organic food all of the time.<sup>74</sup> Forty-eight percent of households rarely or never bought organic.

Organic food products are grown or produced using organic production methods. While there are many requirements that must be followed, in general organic agriculture avoids the use of chemical fertilizers, synthetic pesticides and veterinary drugs, genetically modified organisms and certain food processing and preservation substances.<sup>75</sup> Organic producers are also required to keep strict records to document organic integrity. Canada's organic principles emphasize the importance of protecting the environment, minimizing soil degradation, erosion and pollution, optimizing biological productivity, and ensuring the humane treatment of animals.

<sup>5</sup> See note(s) at the end of the section.

Over 15,500 farms, or 6.8% of all farms in Canada, produced organically grown food products in 2006. The highest proportion was found in British Columbia, where 16.3% produced food using organic methods (Table 1.13). Not all farms were certified organic—meaning that their organic production methods and products were verified by a certification body. Just over 3,500 farms were fully certified in 2006 and 640 farms were making the transition to full organic certification.

Certain provinces require goods carrying the label 'organic' to be certified. The new national *Organic Products Regulations*, which come into force June 30, 2009, require that all organic products imported, exported or sold in other provinces be certified by an accredited certification body. While only farms that are certified will be able to use the term 'organic,' other farmers may choose to follow some or all of the organic principles for stewardship or business reasons, and must follow an array of regulations safeguarding health, the environment and animal welfare.

Eating out in restaurants or calling for take-out is a regular social activity for many. In 2007, Canadians spent \$41 billion on restaurant meals and \$9 billion on alcoholic beverages in licensed establishments, the equivalent of over \$1,500 per person.<sup>76</sup> In 2007, 95% of households bought food from restaurants.<sup>77</sup>

Cooking at home and eating out in restaurants are not highly polluting activities. However, the broader impacts of these activities, resulting from energy use, greenhouse gas emissions, food waste and other garbage which must be disposed of, should be recognized.

**Table 1.13**  
**Production of organic food in Canada, 2006**

	Total farms	Farms producing organic products	Farms classified by certification status of organic products		
			Certified organic products	Transitional organic products	Uncertified organic products
			number of farms reporting		
<b>Canada</b>	<b>229,373</b>	<b>15,511</b>	<b>3,555</b>	<b>640</b>	<b>11,937</b>
Newfoundland and Labrador	558	52	4	1	49
Prince Edward Island	1,700	80	31	11	49
Nova Scotia	3,795	359	61	14	294
New Brunswick	2,776	239	42	2	196
Quebec	30,675	2,323	765	126	1,500
Ontario	57,211	3,591	593	148	2,989
Manitoba	19,054	809	196	55	600
Saskatchewan	44,329	2,197	1,181	184	1,088
Alberta	49,431	2,629	230	26	2,405
British Columbia	19,844	3,232	452	73	2,767

**Source(s):** Statistics Canada, 2007, 2006 Census of Agriculture, *Farm Data and Farm Operator Data*, Catalogue no. 95-629-XWE.

### 1.5.2 Energy and greenhouse gas emissions involved in the production of food for households

From 1990 to 2003, household activities led directly or indirectly to between 45% and 50% of the total greenhouse gas (GHG) emissions produced in Canada each year. About one-third of household emissions resulted directly from motor fuel use and fuel use in the home. The other two-thirds came indirectly from the production of the goods and services that households purchased.<sup>78</sup>

In 2003, Canadians spent \$63.5 billion on food and non-alcoholic beverages purchased from stores.<sup>4</sup> These purchases resulted in production of 45,687 kilotonnes of greenhouse gases, equivalent to 14% of all the direct and indirect greenhouse gas emissions attributable to households.<sup>79</sup>

Numerous steps are required to put food on the table, and many of these steps require energy and result in GHG emissions. Fuel is used to till land and sow crops; fertilizers and pesticides are manufactured and applied, food is harvested and shipped to processing plants, and electricity is used to wash and package food.

The analysis presented in this section makes use of data from the national Input-Output tables (**Text**

#### **box: Input-output tables at Statistics Canada).**

Analysis done with these tables permits calculation of energy use and GHG emissions related to any of 719 categories of goods and services, including food products. The results include the energy use and GHG emissions associated with foreign production of imported food products (**Text box: A note on methodology**).

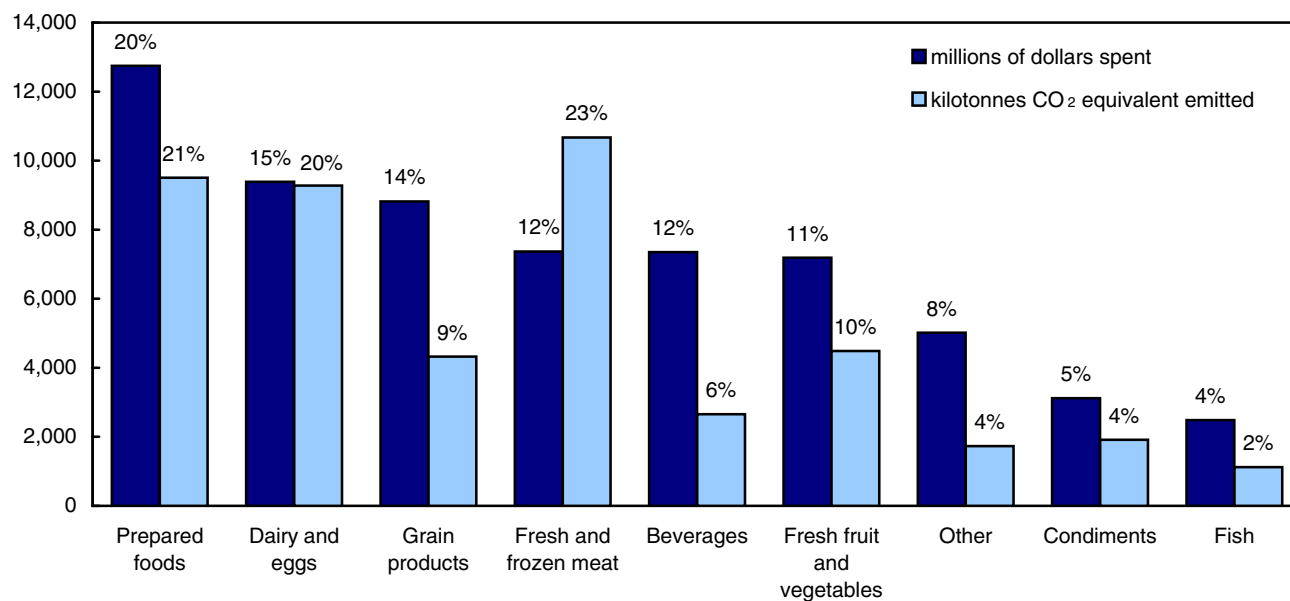
Almost one quarter of all food-related GHG emissions in 2003 were attributable to the production of fresh and frozen meat, while fish products contributed the least (2%). Prepared foods and dairy and eggs each contributed about 20% to food-related GHG emissions in 2003 (Chart 1.14). Significant sources of GHG emissions from food production include the use of fertilizers (N<sub>2</sub>O), manure management (N<sub>2</sub>O and CH<sub>4</sub>), and livestock digestive processes (CH<sub>4</sub>).

Looking at the amount of energy required to produce food shows another dimension of the environmental impact of the food system (Chart 1.15). Energy use is more evenly distributed across the food categories than GHG emissions, but the top three categories are the same. More energy was used in the production of prepared foods than other food groups (19%), reflecting the energy inputs required for processing these foods. Dairy and eggs accounted for 18% of the energy use and fresh and frozen meat accounted for 14%.

See note(s) at the end of the section.

Chart 1.14

## Greenhouse gas emissions associated with total household spending on food in 2003

millions of dollars/kilotonnes CO<sub>2</sub> equivalent

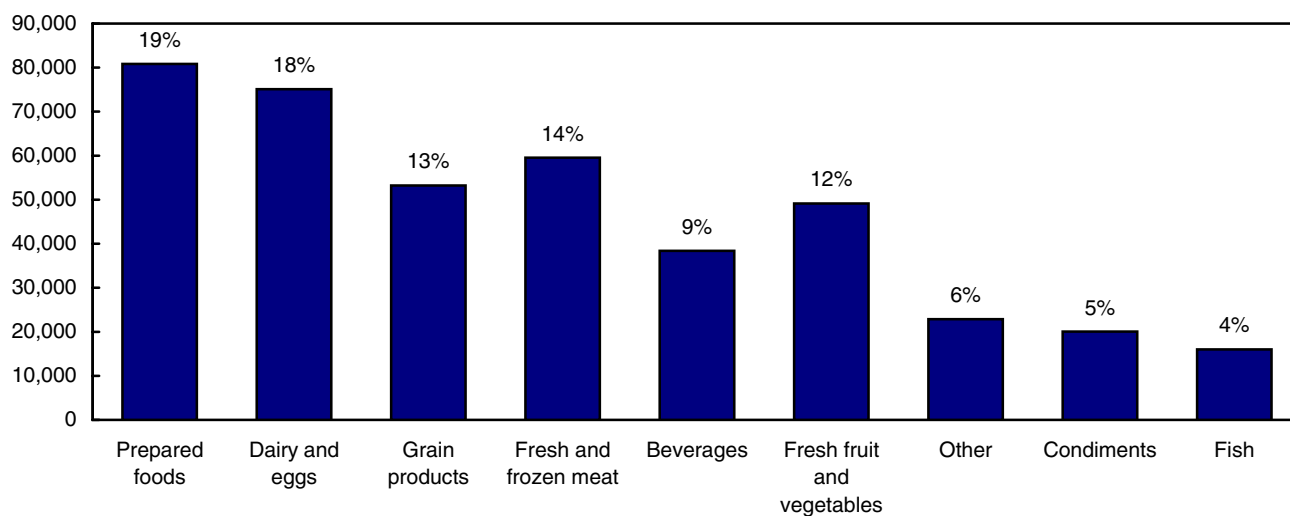
**Note(s):** Percentages indicate contribution of food category to total greenhouse gas emissions, or to total spending.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, special tabulation. Statistics Canada, Industry Accounts Division, 2008, special tabulation.

Chart 1.15

## Energy use associated with total household spending on food in 2003

terajoules



**Note(s):** Percentages indicate contribution of food category to total energy use.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, special tabulation.

### A note on methodology

The data used in the section, 'Energy and greenhouse gas emissions' involved in the production of food for households' are derived from Statistics Canada's *Material and Energy Flow Accounts* (MEFA). These accounts integrate environmental data with the economic data from Canada's System of National Accounts (CSNA). The CSNA is the source of a number of Statistics Canada's most important indicators of economic activity, including gross domestic product (GDP). One of the main components of the CSNA are the Input-Output (I/O) accounts which produce highly detailed production and consumption statistics for 303 industries, 719 goods and services and 170 categories of final demand.

The MEFA follow the I/O accounting framework to track the use of energy and the generation of emissions by each industry and final demand sector. The flows are linked through the common industrial and commodity classification of the I/O tables. This linkage allows analysis of the interplay between economic activity and greenhouse gas emissions.

The accounts used for this analysis only include the three main greenhouse gases, namely carbon dioxide, methane, and nitrous oxide, and do not include emissions from the decomposition or incineration of waste.

Emissions factors from Environment Canada are applied to Statistics Canada's energy use account data, which are also based on the CSNA industry and commodity frameworks. The energy use data come mainly from Statistics Canada's Industrial Consumption of Energy Survey, transportation surveys, the Report on Energy Supply-Demand in Canada and Natural Resources Canada's Census of Mines.

**Direct household emissions** are the greenhouse gases that are emitted when people drive their vehicles for personal use and use fossil fuels to heat their homes.

**Indirect household emissions** are the greenhouse gases that are emitted when industries produce the goods and services that people purchase for household use.

Table 1.14

**Greenhouse gas emissions and energy used in Canada as a result of spending on selected individual food commodities, 2003**

	Greenhouse gas emissions	Energy used	Contribution to total food	
	kilotonnes CO <sub>2</sub> equivalent	terajoules	Greenhouse gas emissions	Energy used
			percent	
<b>Total</b>	<b>45,686.8</b>	<b>415,177.2</b>	<b>100.0</b>	<b>100.0</b>
Beef	7,063.1	28,180.8	15.5	6.8
Pork	975.9	7,569.4	2.1	1.8
Poultry	2,430.4	22,326.3	5.3	5.4
Fish	1,119.9	15,985.1	2.5	3.9
Cheese	3,507.0	28,847.4	7.7	6.9
Eggs	581.5	4,784.4	1.3	1.2
Fluid milk	2,568.6	19,989.9	5.6	4.8
Other	27,440.4	287,494.0	60.1	69.2

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, special tabulation.

In 2003, spending on seven individual commodities accounted for 40% of GHG emissions and 31% of total energy use related to food (Table 1.14). Beef and cheese ranked first and second for percent contributions to both total GHG emissions and total

energy use. While similar amounts of energy were used to produce these foods in 2003, overall spending on beef resulted in more than double the GHG emissions.

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76. Statistics Canada, Industry Accounts Division, 2008, special tabulation.
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79. Statistics Canada, Environment Accounts and Statistics Division, 2008, special tabulation, including an estimate for imported foods that are also produced in Canada.



# Section 2

## *Annual statistics: Canada's physical environment*

### 2.1 Physical geography

Physical geography is the study of the physical features of the earth's surface. This section covers two of the key elements that make up Canada's physical geography: land cover and hydrology.

#### 2.1.1 Land cover

Land cover represents the surface properties of the land. Land cover information is a basic requirement for the determination of land use and, ultimately, of land value. Canada's land area totals nearly 10 million km<sup>2</sup>. The two most extensive land cover types in Canada are evergreen forest (26%) and low vegetation and barren land (29%), representing just over half of Canada's land cover.

Map 2.1 shows the distribution of 10 different land cover types across Canada. Land cover types and areas are presented by ecozone in Table 2.1.

#### 2.1.2 Ecozones

The desire for a national approach to ecosystem classification and mapping in Canada led to the development of a hierarchical ecological classification framework. The objective of this approach was to delineate, classify and describe ecologically distinct areas of the earth's surface at different levels of generalization. The ecological framework was developed by identifying distinct areas of non-living (abiotic) and living (biotic) factors that are ecologically related. From the broadest to the smallest, the hierarchical classification consists of seven levels of generalization: ecozones, ecoprovinces, ecoregions, ecodistricts, ecosections, ecosites and ecoelements.

See note(s) at the end of the section.

Map 2.2 illustrates the boundary delineations of the country's 15 terrestrial ecozones.

### 2.1.3 Hydrology

Hydrologists identify 11 major drainage areas and 164 sub-drainage areas in Canada. A sub-drainage area is composed of one or more river basins, also called watersheds. A watershed is an area where all surface waters, including streamflow and runoff from precipitation, share the same outlet. Map 2.3 and Table 2.2 outline Canada's major drainage areas and sub-drainage areas.

An estimated 12% of Canada, or 1.2 million km<sup>2</sup>, is covered by lakes and rivers (Table 2.3). While many provinces have a substantial amount of water in comparison with their population, only 3% of the area covered by water in Canada is located in inhabited regions.<sup>1</sup> The drainage regions of Canada and their water resource characteristics are outlined in Map 2.4 and Table 2.3 respectively. Table 2.4 shows the distribution of streamflow, water area and population for each province and territory.

### 2.2 Climate

Climate can be defined as the average weather that occurs in a specific area over a period of time. Humans rely heavily on the regularity of climate patterns for almost all of their activities. Climate is measured using various weather elements as indicators. The two essential indicators, temperature and precipitation, are measured systematically at a site over time, accumulating an archive of observations from which climatic summaries can be derived for that location. Daily stations provide readings once or twice daily for temperature and precipitation while principal stations provide hourly readings of more detailed weather information for forecasting purposes.

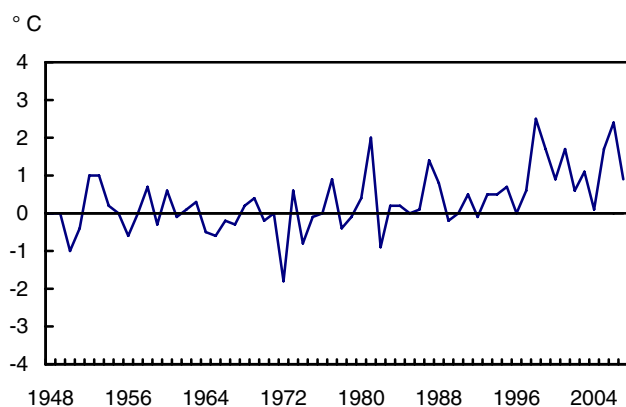
Table 2.5 lists some of the more extreme weather events that affected areas of Canada in 2008.

## 2.2.1 Temperature

Drastic changes in temperature signal the change from one season to the next in Canada. Although winters can be bitterly cold, summers can be hot and dry, or hot and humid, depending on the region. Table 2.6 summarizes the mean daily temperatures by month as recorded at selected weather stations across Canada and averaged over the period 1971 to 2000.

Chart 2.1 shows the trend in average air temperature in Canada over the last half-century. In recent years, Canada appears to be experiencing warmer average temperatures. Table 2.7 presents temperature trends and departures for the climate regions shown in Map 2.5.

**Chart 2.1**  
Annual national temperature departures



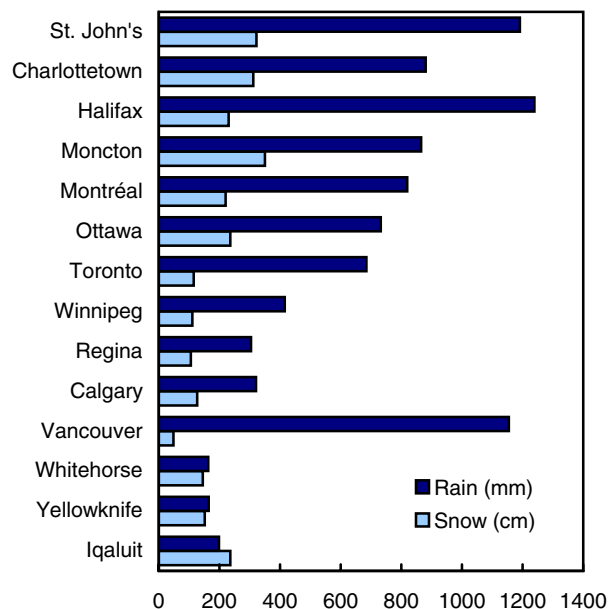
**Note(s):** Departures from 1951 to 1980 temperature average.

**Source(s):** Environment Canada, Meteorological Service of Canada, Climate Research Branch, 2009, *Climate Trends and Variations Bulletin for Canada, Annual 2008*, [www.msc.ec.gc.ca/ccrm/bulletin/archive\\_e.cfm](http://www.msc.ec.gc.ca/ccrm/bulletin/archive_e.cfm) (accessed January 12, 2009).

## 2.2.2 Precipitation

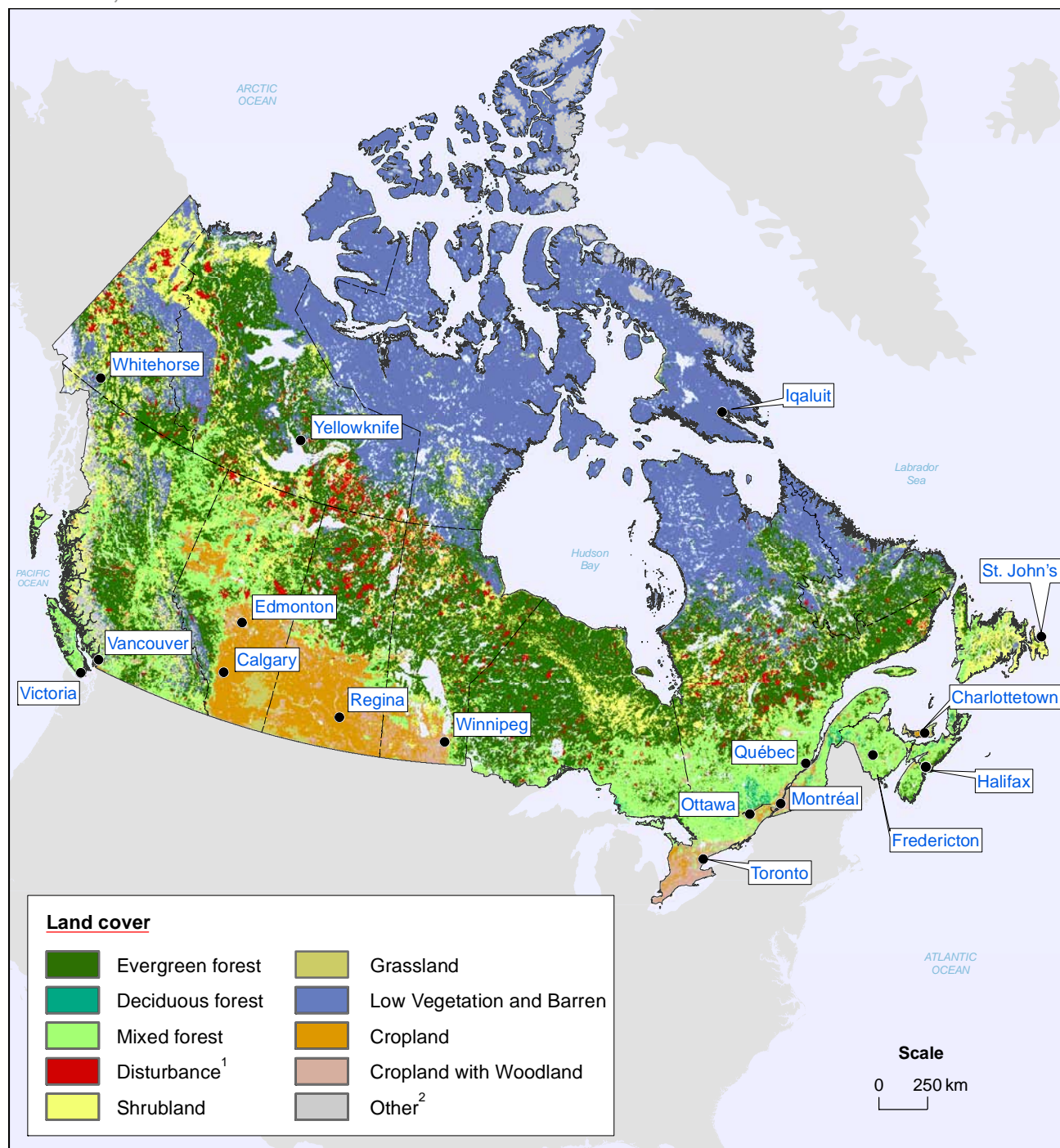
Some 5,500 km<sup>3</sup> of precipitation falls on Canada every year, mainly in the form of rain and snow.<sup>1</sup> Air masses that carry this precipitation generally circulate from west to east (Map 2.6). Chart 2.2 shows the average annual precipitation as recorded at selected weather stations.

**Chart 2.2**  
Average annual precipitation, 1971 to 2000



**Source(s):** Environment Canada, 2004, *Canadian Climate Normals and Averages 1971-2000*, [www.climate.weatheroffice.ec.gc.ca/climate\\_normals/index\\_e.html](http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html) (accessed December 15, 2008).

Map 2.1  
Land cover, 2005

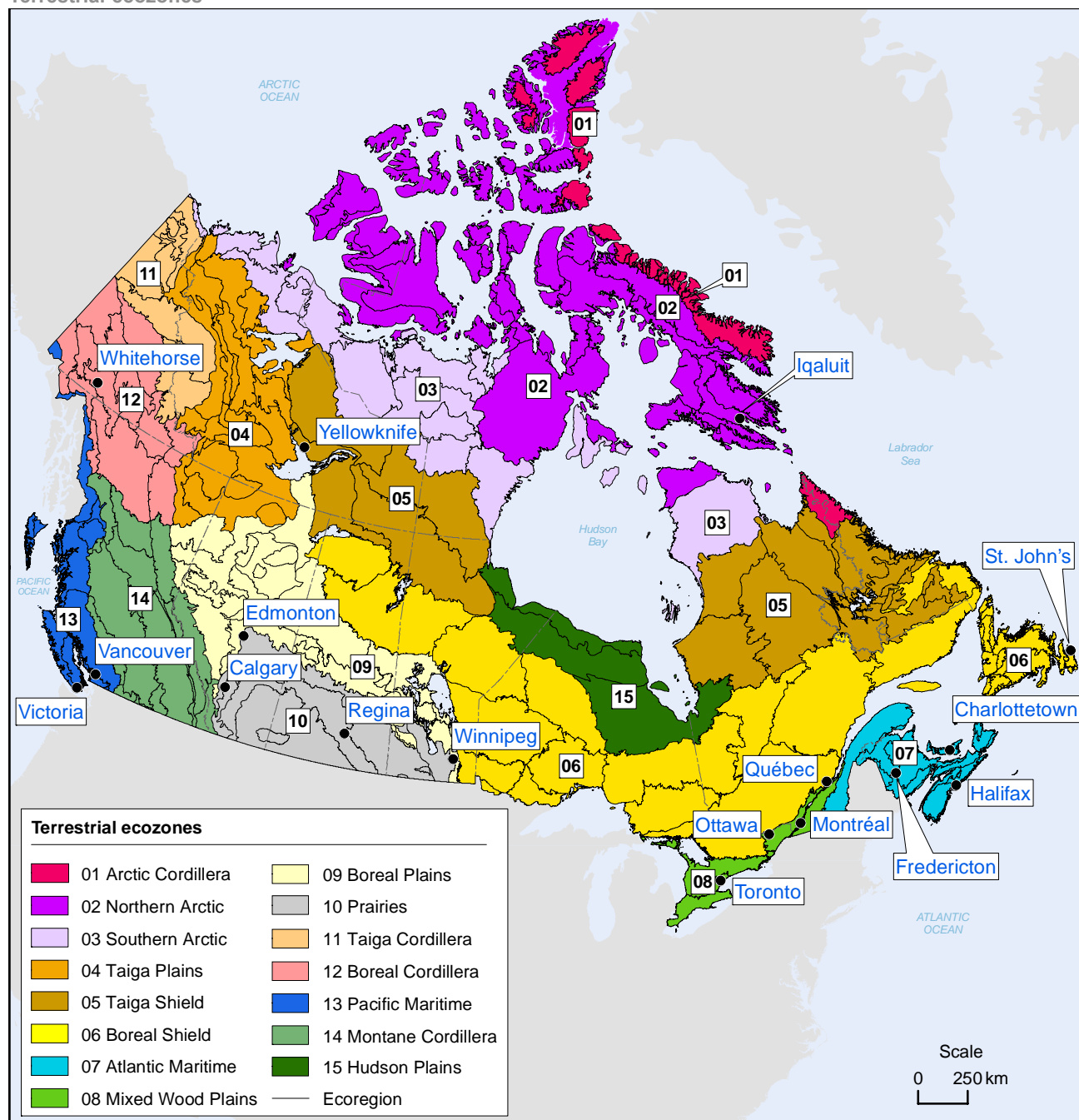


1. 'Disturbance' area category refers to forest disturbance, which can be caused by changes in forest structure or composition resulting from natural events such as fire, flood or wind; mortality caused by insect or disease outbreaks; or human-caused events such as forest harvesting.

2. 'Other' consists of water; snow and ice; urban and built-up land and statistical error.

**Source(s):** Latifovic, Rasim and Darren Pouliot, 2005, "Multi-temporal land cover mapping for Canada: Methodology and Products," Canadian Journal of Remote Sensing, Vol. 31, no. 5, p. 347-363. Natural Resources Canada, Canada Centre for Remote Sensing. Agriculture and Agri-Food Canada and Environment Canada, 2003, Framework Data - National Resolution - Ecological Units, [http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis\\_data.html](http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis_data.html) (accessed December 5, 2007). Statistics Canada, Environment Accounts and Statistics Division.

Map 2.2  
Terrestrial ecozones



**Source(s):** Wiken, E.B. et al., 1996, *A Perspective on Canada's Ecosystems: An Overview of the Terrestrial and Marine Ecozones*, Canadian Council on Ecological Areas, Occasional Paper, No. 14, Ottawa.



Map 2.3  
Major drainage areas and sub-drainage areas



**Note(s):** The sub-drainage area codes on this map are used in Table 2.2.

**Source(s):** Natural Resources Canada, 2003, National Scale Frameworks Hydrology – Drainage Areas, Canada, Version 5.0, [www.geogratis.cgdi.gc.ca](http://www.geogratis.cgdi.gc.ca) (accessed September 16, 2003).  
Statistics Canada, Environment Accounts and Statistics Division, Spatial Environmental Information System.

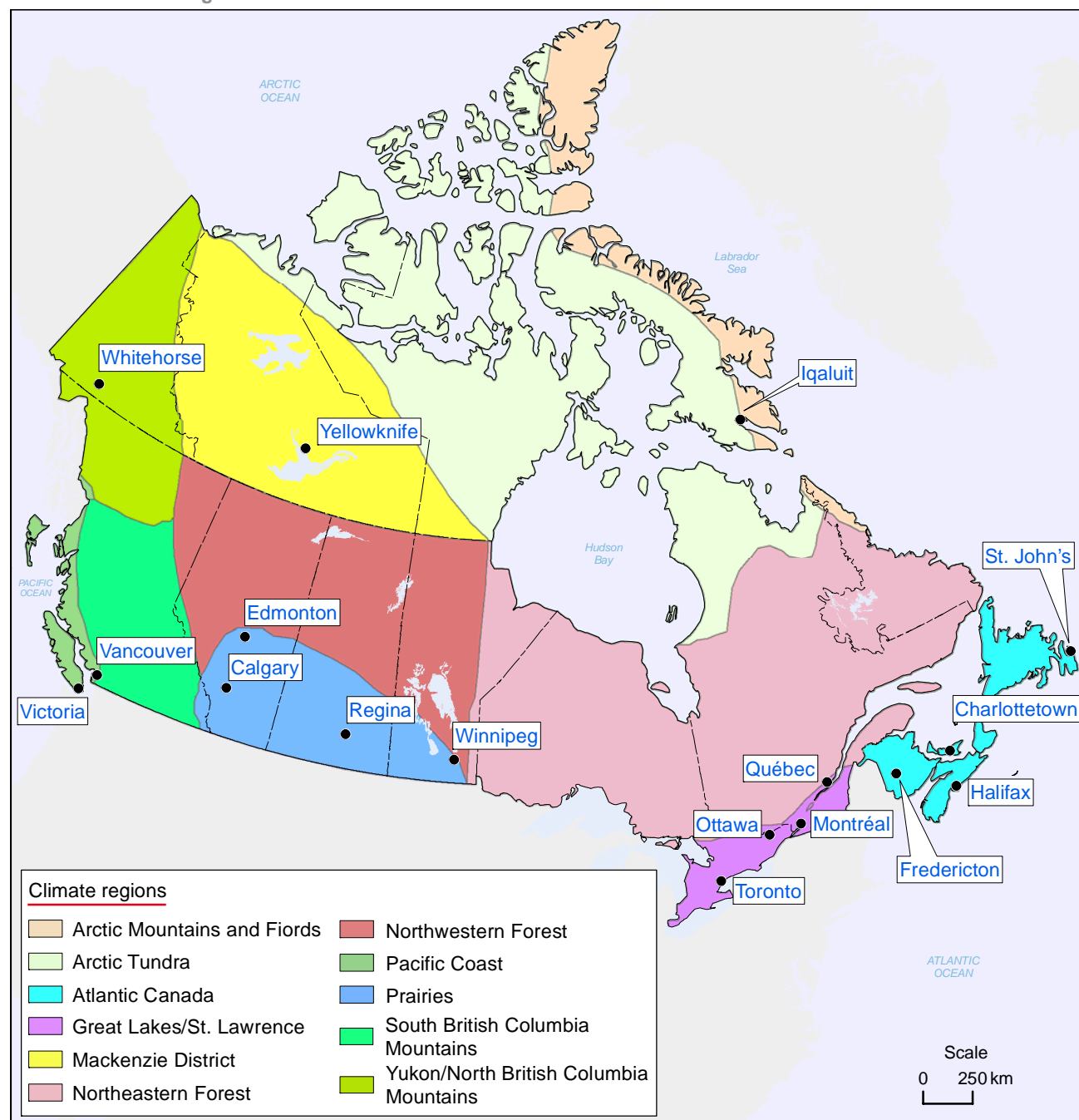
Map 2.4  
Drainage regions



**Note(s):** The drainage region codes in this map are used in Tables 2.3, 3.5 and 3.57.

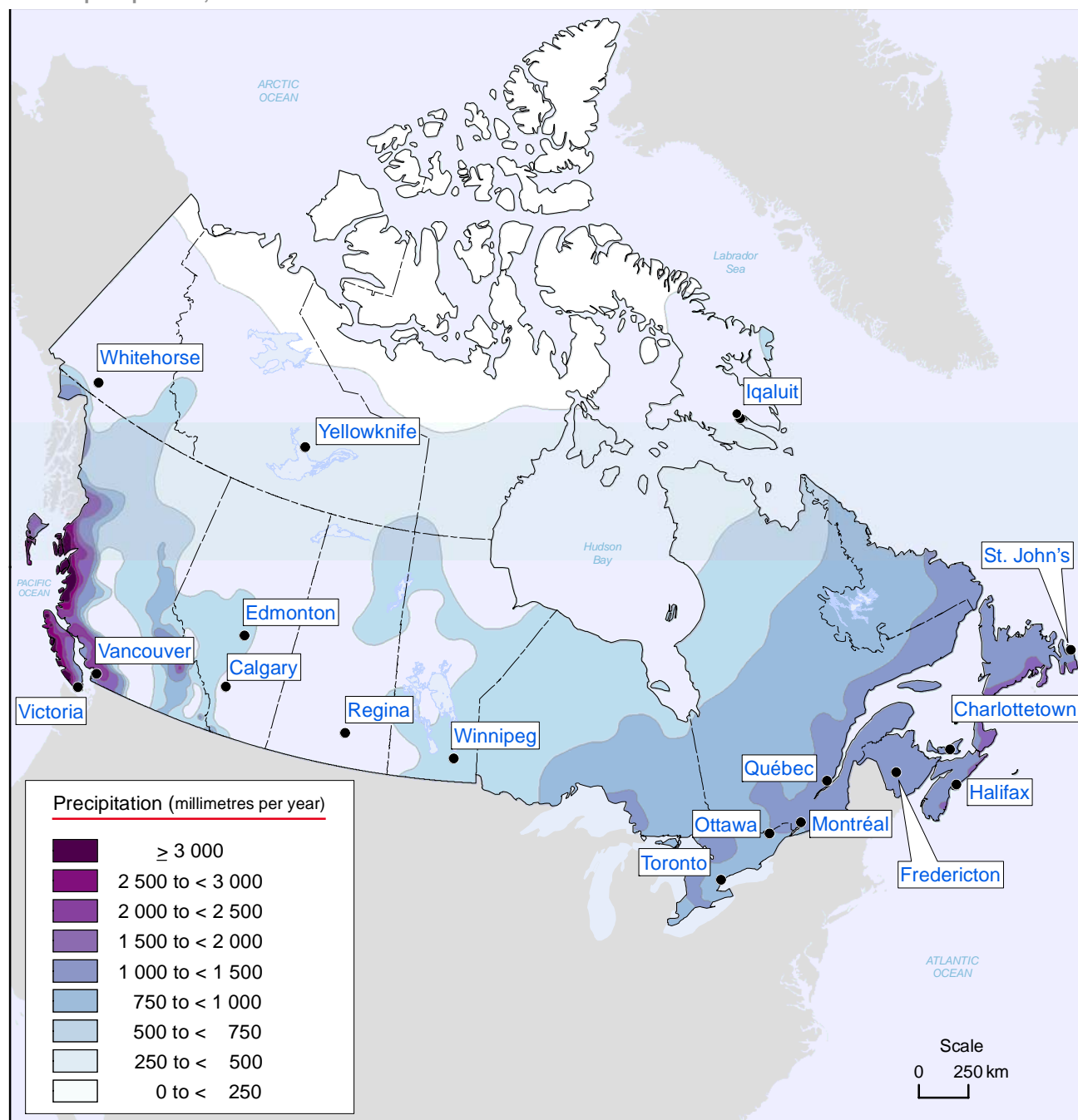
**Source(s):** Pearse, P.H., F. Bertrand and J.W. MacLaren, 1985, *Currents of Change: Final Report of the Inquiry on Federal Water Policy*, Environment Canada, Ottawa.  
Statistics Canada, Environment Accounts and Statistics Division, Spatial Environmental Information System.

Map 2.5  
Canadian climate regions



**Source(s):** Environment Canada, Atmospheric Environment Service, Climate Research Branch, 1998, *Climate Trends and Variations Bulletin for Canada*, Ottawa.

Map 2.6  
Normal precipitation, 1971 to 2000



**Note(s):** The data for this map were estimated using a two-pass inverse distance-weighted interpolation of the 1971 to 2000 normal precipitation data from the Meteorological Service of Canada, using the Albers Equal Area Conic projection.

**Source(s):** Environment Canada, Meteorological Service of Canada, special tabulation.  
Statistics Canada, Environment Accounts and Statistics Division, special tabulation.



# Notes

1. Statistics Canada, 2003, "Fresh Water Resources," *Human Activity and the Environment*, Catalogue no. 16-201-X.

**Table 2.1**  
**Land cover by ecozone, 2005**

	Evergreen forest	Deciduous forest	Mixed forest	Disturbance <sup>1</sup>	Shrubland	Grassland	Low vegetation and barren	Cropland	Cropland with woodland	Other <sup>2</sup>	Total
thousands of square kilometres											
<b>Total</b>	<b>2,552</b>	<b>35</b>	<b>1,122</b>	<b>267</b>	<b>1,006</b>	<b>49</b>	<b>2,857</b>	<b>419</b>	<b>237</b>	<b>1,432</b>	<b>9,976</b>
Arctic Cordillera	0 <sup>s</sup>	0	0	0 <sup>s</sup>	0	0	101	0	0	143	245
Northern Arctic	2	0	0	0 <sup>s</sup>	9	0	1,322	0	0	191	1,523
Southern Arctic	52	0	0 <sup>s</sup>	1	38	0	612	0	0	150	852
Taiga Plains	305	1	68	28	122	0	43	0 <sup>s</sup>	1	89	658
Taiga Shield	497	0	1	73	123	0	429	0	0 <sup>s</sup>	271	1,393
Boreal Shield	862	13	456	86	183	0 <sup>s</sup>	33	2	8	278	1,921
Atlantic Maritime	20	11	137	1	3	0 <sup>s</sup>	0 <sup>s</sup>	8	12	10	203
Mixed Wood Plains	0	1	25	0 <sup>s</sup>	4	0 <sup>s</sup>	0 <sup>s</sup>	17	56	65	168
Boreal Plains	181	5	220	24	84	1	2	92	62	72	744
Prairies	0	0 <sup>s</sup>	4	0 <sup>s</sup>	4	46	0 <sup>s</sup>	297	90	25	466
Taiga Cordillera	21	0	3	9	82	0	140	0	0	13	267
Boreal Cordillera	172	0 <sup>s</sup>	19	18	136	0	93	0	0	30	467
Pacific Maritime	18	3	70	3	48	0	15	1	1	47	205
Montane Cordillera	185	1	118	11	75	2	55	2	5	34	487
Hudson Plains	236	0	2	12	95	0	14	0	0 <sup>s</sup>	16	376

1. 'Disturbance' refers to forest disturbance, which can be caused by changes in forest structure or composition resulting from natural events such as fire, flood or wind; mortality caused by insect or disease outbreaks; or human-caused events such as forest harvesting.

2. 'Other' consists of water; snow and ice; urban and built-up land; and statistical error.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Agriculture and Agri-Food Canada and Environment Canada, 2005, *A National Ecological Framework for Canada*, [http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis\\_data.html](http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis_data.html) (accessed January 13, 2009). Latifovic, Rasim and Darren Pouliot, 2005, "Multi-temporal land cover mapping for Canada: Methodology and Products," *Canadian Journal of Remote Sensing*, Vol. 31, no. 5, pages 347 to 363. Statistics Canada, Environment Accounts and Statistics Division, 2007, special tabulation.

**Table 2.2**  
**Major drainage and sub-drainage area names and areas**

	Drainage area code		Area
	code		square kilometres
<b>Maritime Provinces</b>	1		
Saint John and Southern Bay of Fundy, New Brunswick	01A		41,987
Gulf of St. Lawrence and Northern Bay of Fundy, New Brunswick	01B		60,653
Prince Edward Island	01C		5,943
Bay of Fundy and Gulf of St. Lawrence, Nova Scotia	01D		21,499
Southeastern Atlantic Ocean, Nova Scotia	01E		23,222
Cape Breton Island	01F		10,685
<b>Maritime Provinces total</b>	...		<b>163,990</b>
<b>St. Lawrence</b>	2		
Northwestern Lake Superior	02A		51,541
Northeastern Lake Superior	02B		61,283
Northern Lake Huron	02C		45,421
Wanapitei and French, Ontario	02D		19,669
Eastern Georgian Bay	02E		28,778
Eastern Lake Huron	02F		33,728
Northern Lake Erie	02G		35,302
Lake Ontario and Niagara Peninsula	02H		39,336
Upper Ottawa	02J		50,670
Central Ottawa	02K		40,753
Lower Ottawa	02L		54,719
Upper St. Lawrence	02M		6,139
Saint-Maurice	02N		42,251
Central St. Lawrence	02O		35,600
Lower St. Lawrence	02P		37,780
Northern Gaspé Peninsula	02Q		13,383
Saguenay	02R		88,072
Betsiamites, coast	02S		27,473
Manicouagan and aux Outardes	02T		65,221
Moisie and St. Lawrence Estuary	02U		39,589
Gulf of St. Lawrence, Romaine	02V		36,416
Gulf of St. Lawrence, Natashquan	02W		53,841
Petit Mécatina and Strait of Belle Isle	02X		50,320
Northern Newfoundland	02Y		66,153
Southern Newfoundland	02Z		44,441
<b>St. Lawrence total</b>	...		<b>1,067,879</b>
<b>Northern Quebec and Labrador</b>	3		
Nottaway, coast	03A		67,938
Broadback and Rupert	03B		77,195
Eastmain	03C		45,930
La Grande, coast	03D		112,203
Grande rivière de la Baleine, coast	03E		62,753
Eastern Hudson Bay	03F		46,383
Northeastern Hudson Bay	03G		100,054
Western Ungava Bay	03H		78,208
Aux Feuilles, coast	03J		63,722
Koksoak	03K		45,542
Caniapiscau	03L		90,094
Eastern Ungava Bay	03M		106,790
Northern Labrador	03N		92,911
Churchill Newfoundland and Labrador	03O		95,003
Central Labrador	03P		35,678
Southern Labrador	03Q		37,889
<b>Northern Quebec and Labrador total</b>	...		<b>1,158,292</b>
<b>Southwestern Hudson Bay</b>	4		
Hayes, Manitoba	04A		109,482
Southwestern Hudson Bay	04B		28,384
Severn	04C		99,533
Winisk, coast	04D		79,224
Ekwana, coast	04E		50,484
Attawapiskat, coast	04F		57,243
Upper Albany	04G		64,914
Lower Albany, coast	04H		42,345
Kenogami	04J		52,370
Moose, Ontario	04K		17,949
Missinaibi and Mattagami	04L		60,593
Abitibi	04M		29,291
Harricanaw, coast	04N		43,509
<b>Southwestern Hudson Bay total</b>	...		<b>735,320</b>

Table 2.2 – continued

## Major drainage and sub-drainage area names and areas

	Drainage area code	Area
	code	square kilometres
<b>Nelson River</b>	5	
Upper South Saskatchewan	05A	46,410
Bow	05B	25,628
Red Deer	05C	50,315
Upper North Saskatchewan	05D	27,983
Central North Saskatchewan	05E	42,275
Battle	05F	30,241
Lower North Saskatchewan	05G	49,652
Lower South Saskatchewan	05H	55,268
Qu'Appelle	05J	74,589
Saskatchewan	05K	81,194
Lake Winnipegosis and Lake Manitoba	05L	82,719
Assiniboine	05M	51,259
Souris	05N	39,591
Red	05O	25,266
Winnipeg	05P	55,104
English	05Q	52,550
Eastern Lake Winnipeg	05R	63,642
Western Lake Winnipeg	05S	41,819
Grass and Burntwood	05T	42,390
Nelson	05U	49,119
<b>Nelson River total</b>	...	<b>987,015</b>
<b>Western and Northern Hudson Bay</b>	6	
Beaver, Alberta and Saskatchewan	06A	49,940
Upper Churchill, Manitoba	06B	44,288
Central Churchill, upper, Manitoba	06C	45,892
Reindeer	06D	67,357
Central Churchill, lower, Manitoba	06E	51,295
Lower Churchill, Manitoba	06F	54,799
Seal, coast	06G	75,970
Western Hudson Bay, Southern	06H	73,301
Thelon	06J	85,479
Dubawnt	06K	68,952
Kazan	06L	70,690
Chesterfield Inlet	06M	67,783
Western Hudson Bay, central	06N	63,743
Western Hudson Bay, northern	06O	54,523
Hudson Bay, Southampton Island	06P	48,764
Foxe Basin, Southampton Island	06Q	13,285
Foxe Basin, Melville Peninsula	06R	59,727
Foxe Basin, Baffin Island	06S	211,083
Hudson Strait, Baffin and Southampton Islands	06T	46,342
<b>Western and Northern Hudson Bay total</b>	...	<b>1,253,213</b>
<b>Great Slave Lake</b>	7	
Upper Athabasca	07A	34,856
Central Athabasca, upper	07B	40,496
Central Athabasca, lower	07C	57,030
Lower Athabasca	07D	29,942
Williston Lake	07E	72,362
Upper Peace	07F	67,824
Smoky	07G	51,508
Central Peace, upper	07H	35,412
Central Peace, lower	07J	59,401
Lower Peace	07K	36,510
Fond-du-Lac	07L	70,913
Lake Athabasca, shores	07M	39,560
Slave	07N	19,009
Hay	07O	51,405
Southern Great Slave Lake	07P	38,067
Great Slave Lake, east arm, south shore	07Q	103,895
Lockhart	07R	27,124
Northeastern Great Slave Lake	07S	74,222
Marian	07T	24,262
Western Great Slave Lake	07U	41,056
<b>Great Slave Lake total</b>	...	<b>974,853</b>
<b>Pacific</b>	8	

Table 2.2 – continued

## Major drainage and sub-drainage area names and areas

	Drainage area code	Area
	code	square kilometres
Alsek	08A	31,192
Northern coastal waters, British Columbia	08B	22,767
Stikine, coast	08C	49,997
Nass, coast	08D	29,036
Skeena, coast	08E	55,751
Central coastal waters, British Columbia	08F	54,658
Southern coastal waters, British Columbia	08G	41,986
Vancouver Island	08H	34,882
Nechako	08J	47,332
Upper Fraser	08K	67,088
Thompson	08L	55,777
Lower Fraser	08M	61,880
Columbia	08N	102,925
Queen Charlotte Islands	08O	10,049
Skagit	08P	1,027
<b>Pacific total</b>	...	<b>666,349</b>
<b>Yukon River</b>	9	
Headwaters Yukon	09A	94,018
Pelly	09B	50,485
Upper Yukon	09C	44,206
Stewart	09D	51,360
Central Yukon	09E	29,820
Porcupine	09F	61,566
Tanana	09H	1,470
Copper	09M	4,112
<b>Yukon River total</b>	...	<b>337,036</b>
<b>Arctic</b>	10	
Upper Liard	10A	61,858
Central Liard	10B	72,031
Fort Nelson	10C	54,771
Central Liard and Petitot	10D	30,563
Lower Liard	10E	55,571
Upper Mackenzie, Mills Lake	10F	51,042
Upper Mackenzie, Camsell Bend	10G	57,858
Central Mackenzie, Blackwater Lake	10H	67,210
Great Bear	10J	158,140
Central Mackenzie, The Ramparts	10K	46,736
Lower Mackenzie	10L	77,259
Peel and Southwestern Beaufort Sea	10M	107,693
Southern Beaufort Sea	10N	99,387
Amundsen Gulf	10O	91,087
Coppermine	10P	50,741
Coronation Gulf and Queen Maud Gulf	10Q	174,679
Back	10R	135,956
Gulf of Boothia	10S	114,752
Southern Arctic Islands	10T	373,180
Baffin Island, Arctic drainage	10U	299,813
Northern Arctic Islands	10V	424,812
<b>Arctic total</b>	...	<b>2,605,138</b>
<b>Mississippi River</b>	11	
Missouri	11A	27,097
<b>Mississippi River total</b>	...	<b>27,097</b>
<b>Canada total</b>	...	<b>9,976,182</b>

Source(s): Natural Resources Canada, GeoAccess Division, 2003, *National Scale Frameworks Hydrology - Drainage Areas, Canada, Version 5.0*, Ottawa.

**Table 2.3**  
**Water resource characteristics by drainage region**

	Drainage region	Total area <sup>1</sup>	Water area <sup>2</sup>			
			Total	As a share of total	Per capita 2006	
	code	square kilometres		percent	square metres	
Canada	...	9,978,904	1,174,452	11.8	37,151	
Pacific Coastal	1	334,452	15,041	4.5	10,464	
Fraser - Lower Mainland	2	233,105	9,015	3.9	4,203	
Okanagan - Similkameen	3	15,603	650	4.2	2,131	
Columbia	4	87,321	2,482	2.8	15,810	
Yukon	5	332,906	9,329	2.8	324,984	
Peace - Athabasca	6	485,146	16,725	3.4	44,596	
Lower Mackenzie	7	1,330,481	176,937	13.3	3,278,250	
Arctic Coast - Islands	8	1,764,279	177,906	10.1	9,690,925	
Missouri	9	27,097	1,129	4.2	127,297	
North Saskatchewan	10	150,151	7,245	4.8	5,116	
South Saskatchewan	11	177,623	6,243	3.5	3,195	
Assiniboine - Red	12	190,705	9,098	4.8	6,574	
Winnipeg	13	107,654	20,599	19.1	243,036	
Lower Saskatchewan - Nelson	14	360,883	67,612	18.7	314,102	
Churchill	15	313,572	51,858	16.5	585,054	
Keewatin - Southern Baffin Island	16	939,568	161,438	17.2	12,173,893	
Northern Ontario	17	691,811	55,952	8.1	406,020	
Northern Quebec	18	940,194	148,986	15.8	1,413,516	
Great Lakes - Ottawa - St. Lawrence	19,20,21	582,945	134,928	23.1	7,188	
North Shore - Gaspé	22	369,094	37,363	10.1	73,539	
Saint John - St. Croix	23	41,904	1,800	4.3	4,471	
Maritime Coastal	24	122,056	6,728	5.5	4,501	
Newfoundland and Labrador	25	380,355	55,388	14.6	109,304	
	Drainage region	Total area <sup>1</sup>	Mean annual streamflow <sup>3</sup>			
			Rate	Total	Per unit area	As a share of total
	code	square kilometres	cubic metres per second	cubic kilometres	thousands of cubic metres per square kilometre	percent
Canada	...	9,978,904	105,135	3,315.50	332	100.0
Pacific Coastal	1	334,452	16,390	516.9	1,545	15.6
Fraser - Lower Mainland	2	233,105	3,972	125.3	537	3.8
Okanagan - Similkameen	3	15,603	74	2.3	150	0.1
Columbia	4	87,321	2,009	63.4	726	1.9
Yukon	5	332,906	2,506	79	237	2.4
Peace - Athabasca	6	485,146	2,903	91.5	189	2.8
Lower Mackenzie	7	1,330,481	7,337	231.4	174	7.0
Arctic Coast - Islands	8	1,764,279	8,744	275.8	156	8.3
Missouri	9	27,097	12	0.4	14	0.0
North Saskatchewan	10	150,151	234	7.4	49	0.2
South Saskatchewan	11	177,623	239	7.5	42	0.2
Assiniboine - Red	12	190,705	50	1.6	8	0.0
Winnipeg	13	107,654	758	23.9	222	0.7
Lower Saskatchewan - Nelson	14	360,883	1,911	60.3	167	1.8
Churchill	15	313,572	701	22.1	70	0.7
Keewatin - Southern Baffin Island	16	939,568	5,383	169.8	181	5.1
Northern Ontario	17	691,811	5,995	189.1	273	5.7
Northern Quebec	18	940,194	16,830	530.8	565	16.0
Great Lakes - Ottawa - St. Lawrence	19,20,21	582,945	7,197	227	389	6.8
North Shore - Gaspé	22	369,094	8,159	257.3	697	7.8
Saint John - St. Croix	23	41,904	779	24.6	586	0.7
Maritime Coastal	24	122,056	3,628	114.4	937	3.5
Newfoundland and Labrador	25	380,355	9,324	294	773	8.9

See notes at the end of the table.

Table 2.3 – continued

## Water resource characteristics by drainage region

Drainage region	Total area <sup>1</sup>	Mean annual precipitation <sup>4</sup>		Dams		
		Rate	Volume	Number	Generating capacity <sup>5</sup>	
	code	square kilometres	millimetres	cubic kilometres	units	megawatts
Canada	...	9,978,904	545	5,451	1,462	67,411
Pacific Coastal	1	334,452	1,354	451	50	1,648
Fraser - Lower Mainland	2	233,105	670	156	24	848
Okanagan - Similkameen	3	15,603	466	7	3	594
Columbia	4	87,321	776	68	56	5,153
Yukon	5	332,906	346	115	10	76
Peace - Athabasca	6	485,146	497	241	17	3,427
Lower Mackenzie	7	1,330,481	365	486	18	83
Arctic Coast - Islands	8	1,764,279	189	333	0	0
Missouri	9	27,097	390	11	2	13
North Saskatchewan	10	150,151	443	67	6	504
South Saskatchewan	11	177,623	419	74	21	310
Assiniboine - Red	12	190,705	450	86	3	168
Winnipeg	13	107,654	683	74	98	905
Lower Saskatchewan - Nelson	14	360,883	508	183	60	4,941
Churchill	15	313,572	480	151	12	119
Keewatin - Southern Baffin Island	16	939,568	330	310	0	0
Northern Ontario	17	691,811	674	466	60	1,116
Northern Quebec	18	940,194	698	656	66	15,238
Great Lakes - Ottawa - St. Lawrence	19,20,21	582,945	957	556	623	12,515
North Shore - Gaspé	22	369,094	994	367	129	10,785
Saint John - St. Croix	23	41,904	1,147	48	54	1,864
Maritime Coastal	24	122,056	1,251	153	60	411
Newfoundland and Labrador	25	380,355	1,030	392	90	6,693

1. Area includes the Canadian portion of the Great Lakes.

2. Water area figures are calculated from the Canada-wide 1 km water fraction derived from National Topographic Database maps.

3. Basins at the US-Canada border exclude inflow from U.S. portion of basin region.

4. Precipitation has been estimated from an Inverse Distance Weighted interpolation of the 1971 to 2000 normals.

5. The generating capacity refers to the maximum power capability from hydro plants. The survey coverage for those plants is limited to those utilities and companies that have at least one plant with a total generating capacity of over 500 kilowatts.

**Note(s):** These drainage regions and associated flow measures are adapted from Pearse (1985) (see full reference below). Some of these river basin aggregates have more than one outflow.

**Source(s):** Environment Canada, Meteorological Service of Canada, 2003, *Canadian Climate Normals, 1971 to 2000*, [http://climate.weatheroffice.ec.gc.ca/climate\\_normals/index\\_e.html](http://climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html) (accessed February 23, 2005). Fernandes, R., G. Pavlic, W. Chen and R. Fraser, 2001, *1-km Water Fraction From National Topographic Data Base Maps, Canada*, Natural Resources Canada, <http://www.geogratis.ca/geogratis/en/collection/metadata.do?id=67> (accessed February 23, 2005). Pearse, P.H., F. Bertrand and J.W. MacLaren, 1985, *Currents of Change: Final Report of the Inquiry on Federal Water Policy*, Environment Canada, Ottawa. Natural Resources Canada, GeoAccess Division, 2003, *1:1 Million Digital Drainage Area Framework, version 4.8b*, Ottawa. Statistics Canada, 2006 Census of Population. Statistics Canada, 2001, *Electric Power Generating Stations*, Catalogue no. 57-206-X.

**Table 2.4**  
**Distribution of streamflow, water area and 2006 population, by province and territory**

	Streamflow	Water area	Population
	percent		
<b>Canada</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Newfoundland and Labrador	8.6	5.0	1.6
Prince Edward Island	0.1	0.1	0.4
Nova Scotia	1.2	0.5	2.9
New Brunswick	1.3	0.2	2.3
Quebec	21.6	18.6	23.9
Ontario	8.9	8.8	38.5
Manitoba	2.6	10.0	3.6
Saskatchewan	1.5	7.0	3.1
Alberta	1.9	2.6	10.4
British Columbia	24.0	3.0	13.0
Yukon	4.2	1.0	0.1
Northwest Territories and Nunavut	24.0	43.3	0.2

**Source(s):** Fernandes, R., G. Pavlic, W. Chen and R. Fraser, 2001, *1-km Water Fraction From National Topographic Data Base Maps, Canada*, Natural Resources Canada, <http://www.geogratis.ca/geogratis/en/collection/metadata.do?id=67> (accessed April 29, 2002). Pearce, P.H., F. Bertrand and J.W. MacLaren, 1985, *Currents of Change: Final Report of the Inquiry on Federal Water Policy*, Environment Canada, Ottawa. Statistics Canada, CANSIM table 051-0001.

**Table 2.5**  
**Top ten Canadian weather stories of 2008**

	Location	Time period	Rank <sup>1</sup>
The East's Big Summer Soak	Eastern Canada	Summer	1
The Great Arctic Thaw Continues	The Arctic	All year	2
A Never-Ending Winter	Ontario and Quebec	Winter	3
Saint John River Floods From Top to Bottom	New Brunswick	Spring	4
Pre-Winter Shockers	Various	December	5
Hail of a Summer for Growers	Various	Summer	6
Winter's Last Hurrah	Eastern Canada	March	7
Hanna and Her Brothers	Eastern Canada	July to September	8
The Coldest Place On Earth	Various	Winter	9
PE-Ice Storms	Prince Edward Island	Winter	10

1. Canada's Top Weather Stories for 2008 are rated from one to ten based on the degree to which Canada and Canadians were impacted, the extent of the area affected, economic effects and longevity as a top news story.

**Source(s):** Environment Canada, Meteorological Service of Canada, 2009, *Canada's Top Ten Weather Stories for 2008*, [www.ec.gc.ca/doc/smc-msc/2008/toc\\_eng.html](http://www.ec.gc.ca/doc/smc-msc/2008/toc_eng.html) (accessed January 5, 2009).



Table 2.6

## Average daily temperatures by month for selected weather stations, 1971 to 2000

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
average daily temperature in degrees Celsius													
Goose Bay, Newfoundland and Labrador	-18.1	-16.3	-9.6	-1.7	5.1	11.0	15.4	14.5	9.2	2.4	-4.5	-13.9	-0.5
Gander, Newfoundland and Labrador	-7.4	-7.9	-4.0	1.3	6.7	11.6	16.0	15.7	11.4	5.8	1.0	-4.3	3.8
St. John's, Newfoundland and Labrador	-4.8	-5.4	-2.5	1.6	6.2	10.9	15.4	15.5	11.8	6.9	2.6	-2.2	4.7
Charlottetown, Prince Edward Island	-8.0	-7.8	-3.1	2.7	9.1	14.6	18.5	18.1	13.6	7.8	2.3	-4.1	5.3
Sydney, Nova Scotia	-5.7	-6.5	-2.7	2.1	7.8	13.3	17.7	17.7	13.4	8.0	3.3	-2.1	5.5
Halifax, Nova Scotia	-6.0	-5.6	-1.4	4.0	9.8	15.0	18.6	18.4	14.1	8.3	3.1	-2.8	6.3
Yarmouth, Nova Scotia	-3.0	-3.0	0.3	4.9	9.7	13.7	16.5	16.9	13.8	9.1	4.8	-0.2	7.0
Moncton, New Brunswick	-8.9	-8.0	-2.9	3.2	9.9	15.1	18.6	17.9	13.0	7.1	1.4	-5.5	5.1
Saint John, New Brunswick	-8.1	-7.3	-2.5	3.6	9.4	14.0	17.1	16.9	12.8	7.3	2.0	-4.7	5.0
Chapais 2, Quebec	-18.8	-16.6	-9.5	-0.5	7.9	14.0	16.3	14.9	9.3	2.9	-5.4	-14.8	0.0
Kuujuaq, Quebec	-24.3	-23.6	-18.3	-9.1	0.3	7.2	11.5	10.6	5.6	-0.7	-8.4	-19.3	-5.7
Kuujuaq, Quebec	-23.4	-23.2	-17.3	-7.6	1.3	7.0	10.6	11.4	7.4	2.1	-5.0	-16.2	-4.4
Québec, Quebec	-12.8	-11.1	-4.6	3.3	11.2	16.5	19.2	17.9	12.5	6.2	-0.7	-9.1	4.0
Sept-Îles, Quebec	-15.3	-13.4	-7.1	0.0	5.9	11.7	15.3	14.2	9.3	3.4	-3.1	-11.3	0.8
Montréal, Quebec	-10.4	-9.0	-2.5	5.5	12.9	17.7	20.5	19.2	13.9	7.5	1.0	-6.8	5.8
Ottawa, Ontario	-10.8	-8.7	-2.5	5.7	13.4	18.3	20.9	19.5	14.3	7.8	1.0	-7.1	6.0
Kapuskasing, Ontario	-18.7	-15.5	-8.6	0.5	9.0	14.4	17.2	15.7	10.1	3.8	-4.8	-14.3	0.7
Thunder Bay, Ontario	-14.8	-12.0	-5.5	2.9	9.5	14.0	17.6	16.6	11.0	5.0	-3.0	-11.6	2.5
Toronto, Ontario	-6.3	-5.4	-0.4	6.3	12.9	17.8	20.8	19.9	15.3	8.9	3.2	-2.9	7.5
Windsor, Ontario	-4.5	-3.2	2.0	8.2	14.9	20.1	22.7	21.6	17.4	11.0	4.6	-1.5	9.4
The Pas, Manitoba	-20.6	-16.1	-8.9	1.0	9.0	14.8	17.7	16.5	10.0	3.1	-7.8	-17.4	0.1
Winnipeg, Manitoba	-17.8	-13.6	-6.1	4.0	12.0	17.0	19.5	18.5	12.3	5.3	-5.3	-14.4	2.6
Churchill, Manitoba	-26.7	-24.6	-19.5	-9.7	-0.7	6.6	12.0	11.7	5.6	-1.7	-12.6	-22.8	-6.9
Regina, Saskatchewan	-16.2	-11.9	-5.0	4.5	11.7	16.4	18.8	18.0	11.7	4.8	-5.5	-13.2	2.8
Saskatoon, Saskatchewan	-17.0	-13.0	-5.8	4.4	11.5	16.0	18.2	17.3	11.2	4.5	-6.2	-14.3	2.2
Calgary, Alberta	-8.9	-6.1	-1.9	4.6	9.8	13.8	16.2	15.6	10.8	5.4	-3.1	-7.4	4.1
Edmonton, Alberta	-13.5	-10.5	-4.5	4.3	10.4	14.1	15.9	15.1	10.1	4.3	-5.7	-11.3	2.4
Victoria, British Columbia	3.8	4.9	6.4	8.8	11.8	14.4	16.4	16.4	14.0	9.8	6.1	4.0	9.7
Penticton, British Columbia	-1.7	0.7	4.7	9.0	13.6	17.4	20.4	20.1	14.9	8.7	3.1	-1.1	9.2
Vancouver, British Columbia	3.3	4.8	6.6	9.2	12.5	15.2	17.5	17.6	14.6	10.1	6.0	3.5	10.1
Prince Rupert, British Columbia	1.3	2.5	3.9	6.0	8.7	11.1	13.1	13.5	11.3	7.9	4.1	2.2	7.1
Prince George, British Columbia	-9.6	-5.4	-0.3	5.2	9.9	13.3	15.5	14.8	10.1	4.6	-2.9	-7.8	4.0
Mayo, Yukon Territory	-25.7	-19.0	-9.6	0.9	8.4	14.0	16.0	13.1	6.4	-2.9	-15.9	-22.3	-3.1
Whitehorse, Yukon Territory	-17.7	-13.7	-6.6	0.9	6.9	11.8	14.1	12.5	7.1	0.6	-9.4	-14.9	-0.7
Inuvik, Northwest Territories	-27.6	-26.9	-23.2	-12.8	0.2	11.3	14.2	11.0	3.7	-8.2	-21.0	-25.7	-8.8
Yellowknife, Northwest Territories	-26.8	-23.4	-17.3	-5.3	5.6	13.5	16.8	14.2	7.1	-1.7	-13.8	-23.7	-4.6
Resolute, Nunavut	-32.4	-33.1	-30.7	-22.8	-10.9	-0.1	4.3	1.5	-4.7	-14.9	-23.6	-29.2	-16.4
Alert, Nunavut	-32.4	-33.4	-32.4	-24.4	-11.8	-0.8	3.3	0.8	-9.2	-19.4	-26.4	-30.1	-18.0
Clyde, Nunavut	-28.1	-29.6	-27.2	-19.0	-8.5	0.7	4.4	3.9	0.0	-7.6	-17.5	-24.8	-12.8
Iqaluit, Nunavut	-26.6	-28.0	-23.7	-14.8	-4.4	3.6	7.7	6.8	2.2	-4.9	-12.8	-22.7	-9.8
Baker Lake, Nunavut	-32.3	-31.5	-27.2	-17.4	-5.8	4.9	11.4	9.5	2.6	-7.5	-20.1	-28.4	-11.8

**Note(s):** Averaged over the period 1971 to 2000.

**Source(s):** Environment Canada, 2004, *Canadian Climate Normals and Averages 1971-2000*, [www.climate.weatheroffice.ec.gc.ca/climate\\_normals/index\\_e.html](http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html) (accessed December 16, 2008).

**Table 2.7**  
**Annual regional temperature departures from climate normal, trends and extremes, 1948 to 2008**

	Trend <sup>1</sup>		Extreme years				Annual 2008 <sup>p</sup>	
			Coldest		Warmest		Rank <sup>3</sup>	Departure <sup>2</sup>
	Year on record	Departure <sup>2</sup>	Year on record	Departure <sup>2</sup>	Year on record	Departure <sup>2</sup>		
	degrees Celsius	year	degrees Celsius	year	degrees Celsius	number	degrees Celsius	
<b>Canada <sup>4</sup></b>	<b>1.3</b>	<b>1972</b>	<b>-1.8</b>	<b>1998</b>	<b>2.5</b>	<b>16</b>	<b>0.7</b>	
Atlantic Canada	0.3	1972	-1.4	1999	2.0	15	0.7	
Great Lakes/St. Lawrence Lowlands	0.6	1978	-1.0	1998	2.3	21	0.4	
Northeastern Forest	0.8	1972	-1.9	2006	2.3	20	0.4	
Northwestern Forest	1.7	1950	-2.1	1987	3.0	30	0.2	
Prairies	1.4	1950	-2.1	1987	3.1	40	0.1	
South British Columbia Mountains	1.5	1955	-1.8	1998	2.0	36	0.1	
Pacific Coast	1.1	1955	-1.2	1958	1.6	46	-0.1	
North British Columbia Mountains and Yukon	2.0	1972	-2.1	2005	2.8	38	0.2	
Mackenzie District	2.1	1982	-1.5	1998	3.9	23	0.8	
Arctic Tundra	1.6	1972	-2.4	2006	3.4	8	1.5	
Arctic Mountains and Fiords	1.2	1972	-1.9	2006	2.3	13	1.0	

1. A linear (least square) trend over the period between 1948 and 2008.

2. Difference from the normal temperature.

3. This column ranks 2008 temperature departures over the period between 1948 and 2008. For example, the Atlantic Canada Climate Region had a departure that was 0.7°C warmer than the long term temperature average, which ranked the 2008 season as the 15th warmest over the 61 year period.

4. The climate regions of Canada are illustrated in Map 2.5.

**Source(s):** Environment Canada, Meteorological Service of Canada, Climate Research Branch, 2009, *Climate Trends and Variations Bulletin for Canada, Annual 2008*, [www.msc.ec.gc.ca/ccrm/bulletin/archive\\_e.cfm](http://www.msc.ec.gc.ca/ccrm/bulletin/archive_e.cfm) (accessed January 9, 2009).

# Section 3

## *Annual statistics: Pressures on Canada's environment*

### 3.1 Driving forces

Driving forces are the conditions and activities that shape the relationship between human activities and the environment. Topics covered in this section include population, economic conditions, transportation, natural resources and ecosystems.

### 3.2 Population

Population growth, distribution and density are major factors in determining the impacts that human activities have on the environment. Canada's population has expanded considerably since 1901, when there were 5.4 million Canadians (Table 3.1). By 2006, the population had grown six-fold, reaching over 32 million people. However, growth rates have not been consistent over time. Two historical periods were characterized by high annual population growth rates. The first was from 1901 to 1911, when massive immigration resulted in annual growth rates of up to 3%. The second period of high growth followed the end of the Second World War and is generally referred to as the 'baby boom'. In contrast to these two periods of population growth, two periods of slow economic activity (1891 to 1901 and 1931 to 1941) coincided with a slump in population growth rates. Since 1956, when the annual growth rate was 3.3%, growth rates have been decreasing, fluctuating between 0.8% and 1.8% from 1970 to 2006.

The growth of Canada's population is the result of two factors: natural increase and international migration. Since 1995/1996, international migration has become a more important component of population growth than natural increase. In 2007/2008, international migration accounted for 67% of the annual increase (Table 3.2).

Tables 3.3 and 3.4 present population by ecozone, illustrating the unevenness of Canada's population distribution. In 2006, the average population density

for Canada was 359 persons per 100 km<sup>2</sup>, ranging from 0.2 persons per 100 km<sup>2</sup> in the Taiga Cordillera to 15,522.4 persons per 100 km<sup>2</sup> in the Mixed Wood Plains. (Table 3.3).

Table 3.5 presents population characteristics by drainage region. Table group 3.6 presents population by sub-drainage area.

### 3.3 Economy

The economy is a strong driving force for changes in the environment. Gross domestic product (GDP) measures the total value of goods and services produced in Canada. Goods-producing industries—such as manufacturing, construction and resource industries—accounted for 30% of GDP in 2008 and 23.5% of employment. Service-producing industries—from wholesale and retail trade to health care—made up the remaining 70% of GDP and 76.5% of employment (Tables 3.7 and 3.8).

Table 3.9 outlines the changes in the composition of exports and imports from 1973 to 2008. Over the period, agricultural and fishing products' share of total exports decreased from 13.9% to 8.3% and forestry products' share fell from 17.2% to 5.2%. With Canada becoming an important energy producer, energy exports took up the slack. Exports of energy products moved from 9.4% to 25.7% of total exports from 1973 to 2008. At the same time, the share of energy imports grew from 5.7% to 12.0%.

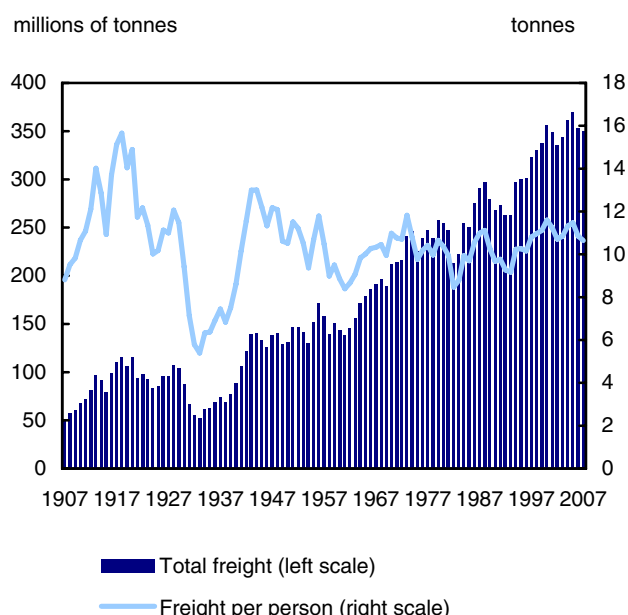
### 3.4 Transportation

Transportation fulfils an essential role in maintaining Canada's economic and social well-being. Bringing goods to market and getting people from place to place, transportation refers to the transport of goods and commercial passengers, as well as private transport.

The Tables 3.10, 3.11, 3.12 and 3.13 and Chart 3.1 outline the tonnage of goods transported by water, rail, truck and air transport. In 2006, 466.3 million tonnes of

goods were moved by water compared to 365.8 million tonnes by rail, 300.6 million tonnes by truck, and 790 thousand tonnes by air. Water transport also led other modes on a tonne-kilometre basis—which takes into account weight of shipment and distance transported—at 2.3 trillion tonne-kilometres in 2006, compared to 357 billion for rail, 189 billion for trucking and 2 billion for air.

**Chart 3.1**  
**Railroad freight shipped, 1907 to 2007**



**Source(s):** Statistics Canada, *Canada Year Book*, Catalogue no. 11-402-X, various issues. Statistics Canada, CANSIM tables 051-0001, 075-0001 and 404-0016.

While the majority of freight is indeed moved by water and rail, the importance of trucking to freight transport has grown substantially. A contributing factor to increasing truck traffic on roads is the concept of 'just-in-time' delivery of freight, where parts and products are scheduled to arrive as they are needed. For the for-hire trucking industry, tonnes of freight carried grew by 59% from 1989 to 2006, while tonne-kilometres grew by 144% (Table 3.12).

Since the early 20<sup>th</sup> century, the amount of freight shipped by rail has grown steadily, with the exception of the depression years (Chart 3.1). While rail freight per person has fluctuated greatly, its overall trend has been flat over the whole of this period.

The most recent published data show that in 2007, 55.1 million passengers were transported by Canadian air transport carriers (Table 3.13). Passenger-kilometers—derived by multiplying the number of passengers by the distance travelled—for air transport grew to 130 billion in 2007. Trains carried 4.3 million passengers in 2007, while passenger-kilometers reached more than 1.4 billion (Table 3.11). In 2006, 38.4 million passengers were transported by ferry, 11% below a high of 43.2 million reached in 1994 (Table 3.10).

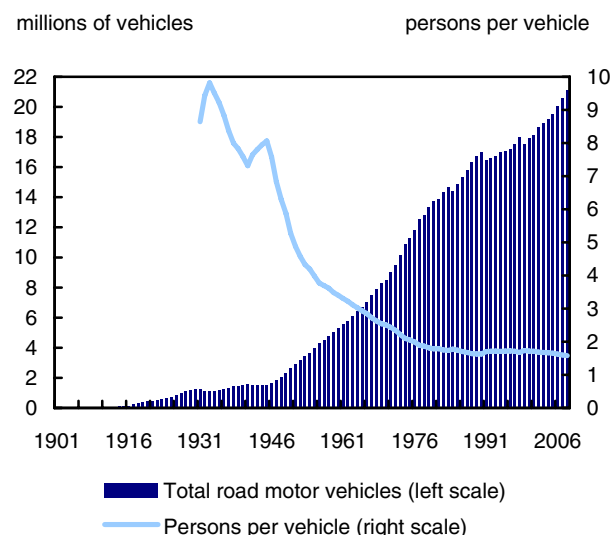
The number of road motor vehicle registrations increased by 20% between 1999 and 2008, reaching over 21 million vehicles. Since 1999, the number of vehicles weighing less than 4,500 kg has increased by 3.1 million to 19.6 million, accounting for 93% of all registered road motor vehicles (Table 3.14). As the number of vehicles on the road increased over the course of the twentieth century, the number of persons per vehicle declined. There were 8.6 persons for each vehicle registered in 1931; by the mid-1980's this number had fallen to about 1.7 persons per vehicle (Chart 3.2).

Across the country, driving to work is by far the most popular commuting method (Table 3.15). However, some regional differences exist: for example, public transportation is most popular in Toronto, Montreal and Ottawa-Hull; more than 10% of people get to work by walking in Halifax and Victoria; and 5.6% of workers bicycle to work in Victoria, more than any other census metropolitan area (Table 3.16).

The majority (69%) of petroleum products used for transportation in 2007 were sold through retail pump sales. While most retail pump sales are made to individuals, some commercial vehicles including taxis and fleet vehicles also purchase retail fuel. The road transport and urban transit industries used another 13% of petroleum products, compared to 10% for airlines, 4% for marine and 4% for railways (Table 3.17).

Almost 62,000 vehicles were in use by passenger bus and urban transit industries in 2006, 61% of which were used to transport students to school and employees to work. Urban transit vehicles made up a further 26%. Urban transit vehicles used 52% of the diesel fuel consumed by passenger bus and urban transit industries in 2005. School and employee buses consumed 28% of diesel fuel (Table 3.18).

**Chart 3.2**  
Number of road motor vehicles, 1903 to 2008



**Note(s):** In 1999, Statistics Canada changed the data collection methodology for road motor vehicles. Some of the difference in the vehicle trend may be attributable to this methodological change.

**Source(s):** Statistics Canada, 1983, *Historical Statistics of Canada*, Second Edition, F.H. Leacy (ed.), Catalogue no. 11-516-X. Statistics Canada, CANSIM tables 051-0001, 075-0001, 405-0001 and 405-0004.

### 3.5 Natural resources

This section examines one of the main sources of impacts on the environment—natural resource consumption. The statistics presented here on agriculture, fisheries, forestry, minerals and energy, provide an indication of the role that Canada's environment plays as a source of natural resources.

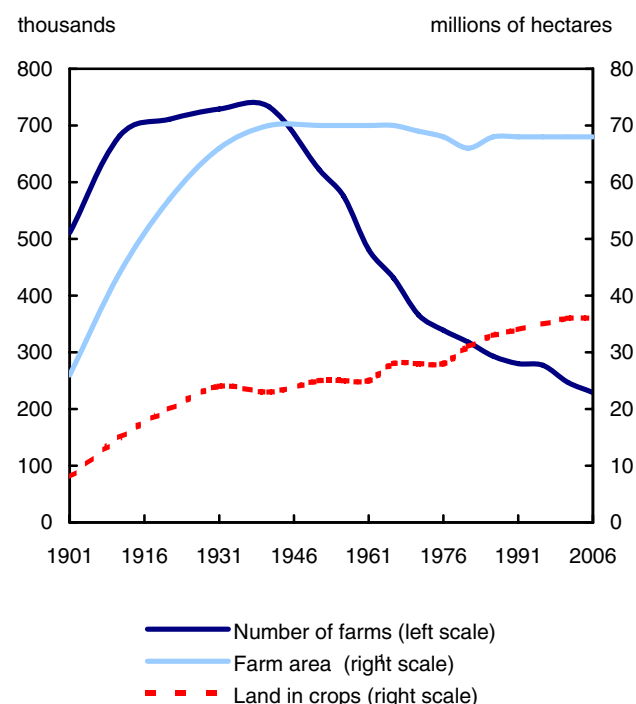
#### 3.5.1 Agriculture

Crop and animal production contributed 1.6% or \$20 billion to total GDP in 2008 (Table 3.19). The number of farms in Canada increased between 1871

and 1941 from 367,862 to 732,832. Since then the number has been declining. In 2006 there were 229,373 farms in Canada (Table 3.20). Chart 3.3 illustrates that while total farm area remained stable at 68 million hectares, the area of land in crops increased to 36 million hectares. The average farm size increased from 113 hectares in 1951 to 295 hectares in 2006.

Charts 3.4 and 3.5 present the production of selected field crops and small grains, while Chart 3.6 presents livestock inventories.

**Chart 3.3**  
Number of farms, farm area and land in crops, 1901 to 2006



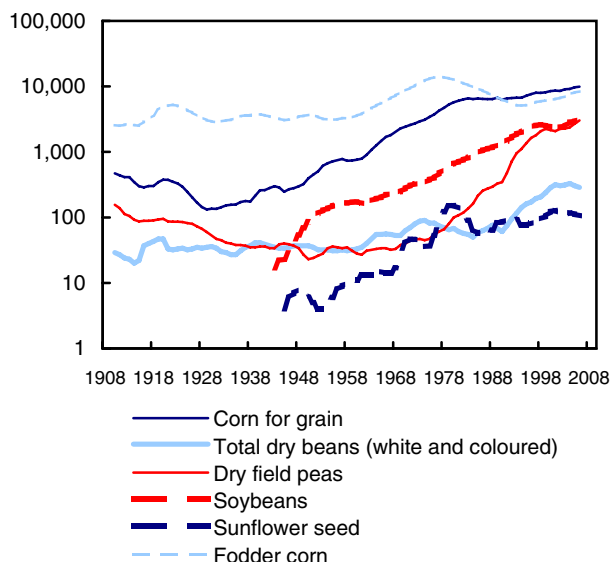
1. Data for 1901 and 1911 include all improved land.

**Note(s):** The definition of a census farm changed over the years, affecting the comparability of data among censuses.

**Source(s):** Statistics Canada, 2007, *Selected Historical Data from the Census of Agriculture*, Catalogue no. 95-632-X. Dominion Bureau of Statistics, 1963, *Census of Canada, Agriculture, Bulletin 5.1—1*, Catalogue no. 96-530 (Vol: V — Part: 1).

**Chart 3.4**  
Selected field crop production, 1908 to 2008

thousand tonnes (log scale)

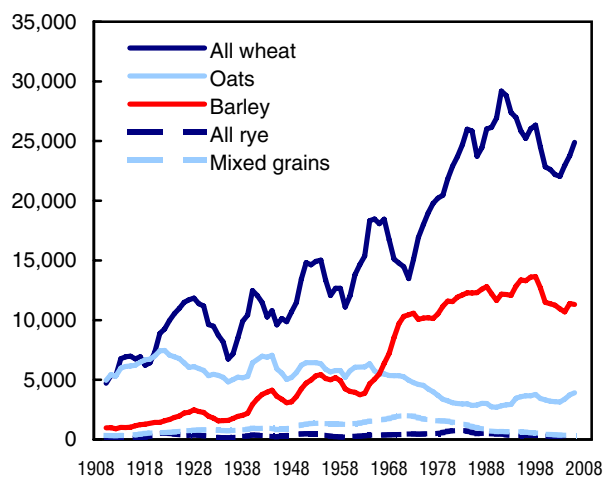


1. Data from 1908 to 2008 are used to create the five-year averages.

**Source(s):** Statistics Canada, CANSIM table 001-0010.

**Chart 3.5**  
Production of major small grains, 1908 to 2008

thousands of tonnes

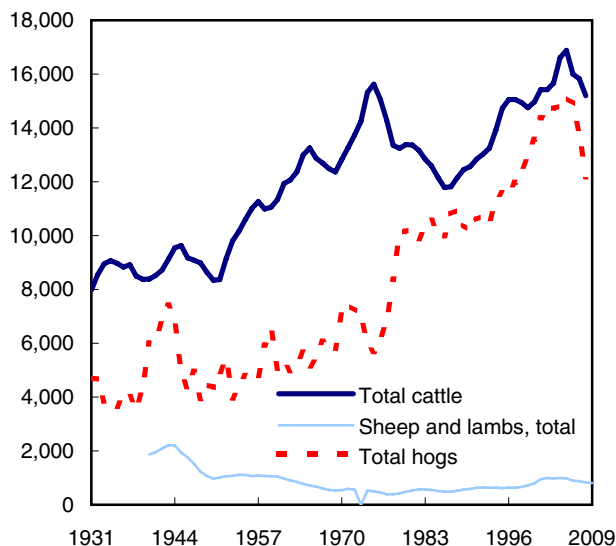


**Note(s):** Data from 1908 to 2008 are used to create the five-year averages.

**Source(s):** Statistics Canada, CANSIM table 001-0010.

**Chart 3.6**  
Selected livestock populations, 1931 to 2009

in thousands



**Source(s):** Statistics Canada, CANSIM tables 003-0004, 003-0031, 003-0032 and 003-0072.

### 3.5.2 Fisheries

Despite declines in fish stocks during the last part of the twentieth century, Canadian fisheries continue to play an important role in communities in Atlantic Canada and British Columbia. Fishing industries contributed 0.17% or \$2.1 billion to total GDP in 2008 (Table 3.21) and they employed more than forty-six thousand people, 0.27% of total employment in Canada in 2008 (Table 3.22).

Exports and imports of fish and fish products are presented in Table 3.23. Canada continues to be a net exporter of these products, with exports of \$4.2 billion and imports of \$1.9 billion in 2008.

After a steady decline throughout the early 1990s, the total catch by seafisheries has remained relatively stable, with almost 1.0 million tonnes, worth almost \$1.9 billion, caught in 2007 (Table 3.24). Aquaculture production was 170 thousand tonnes in 2007, worth more than \$837 million (Table 3.25).

### 3.5.3 Forestry

Logs and bolts—the raw material from which lumber, plywood and other wood products are produced—account for the bulk of wood harvested from

forests each year, with pulpwood making up most of the remainder (Table 3.26). British Columbia continued to dominate the forest industry in 2006, harvesting 44% of the total volume of wood cut. Quebec, Alberta and Ontario harvested an additional 43% of the total (Table 3.27).

Gross domestic product (GDP) for the forest products industries fell to \$18.5 billion dollars or 1.5% of total GDP in 2008 (Table 3.28).

Employment in the forest products industries declined for an eighth consecutive year in 2008, falling to 162 thousand (Table 3.29).

Forest products exports made continuous gains from 1991 to 2000, but have since trended downward, reaching a level of \$26 billion in 2008. As a share of total exports, forest products declined from 16.1% in 1989 to 5.4% in 2008 (Table 3.30).

### 3.5.4 Minerals

The mineral industries include the extraction and production of metallic minerals such as copper, gold, iron, nickel, silver and zinc; mineral fuels including coal, crude petroleum and natural gas; and other minerals including potash, sand, and gravel. In 2008, mining and oil and gas extraction industries contributed 4.6% to GDP while petroleum and coal products and selected primary mineral manufacturing contributed another 1.0% (Tables 3.31 and 3.33).

In 2008, total employment in the mining and oil and gas extraction industries reached 202,225 (Table 3.32). Since 1994, Alberta's share of total employment in the mining and oil and gas extraction industries has risen from 47% to 55%.

In 2007, crude petroleum production in Canada reached \$57 billion. In the same year, \$52 billion worth of natural gas was extracted, with the majority coming from the western provinces. Metal production totalled over \$26 billion (Table 3.34). Tables 3.35 and 3.36 detail reserves and production of selected minerals.

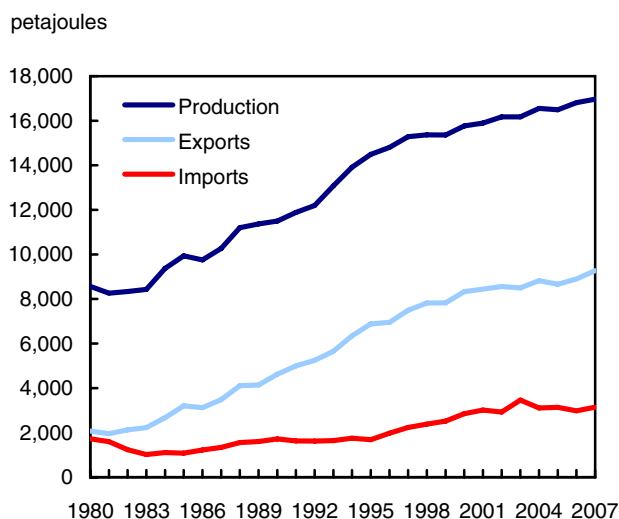
### 3.5.5 Energy

Energy resources such as coal, crude oil, natural gas, hydro power and uranium have transformed society, fuelling economic growth and industrial activity. They have provided the means to heat and light our homes, travel and transport goods with ease.

Canadians are consuming more energy than ever before. Energy consumption in Canada grew 18% since 1986, reaching 354 gigajoules per person by 2007. By contrast, energy consumption per dollar of inflation-adjusted (real) gross domestic product (GDP) has fallen since the 1974 oil crisis (Table 3.37).

Since 1980, primary energy production has doubled to 17 million TJ in 2007, driven by increases in the production of natural gas and crude oil (Table 3.38). Energy products have become an increasingly large component of Canadian exports. By 2007, energy exports rose to 9,270 PJ, up from 2,068 PJ in 1980 (Chart 3.7). Meanwhile, record-high crude oil prices provide further incentive for energy producers to ramp up production (Chart 3.8).

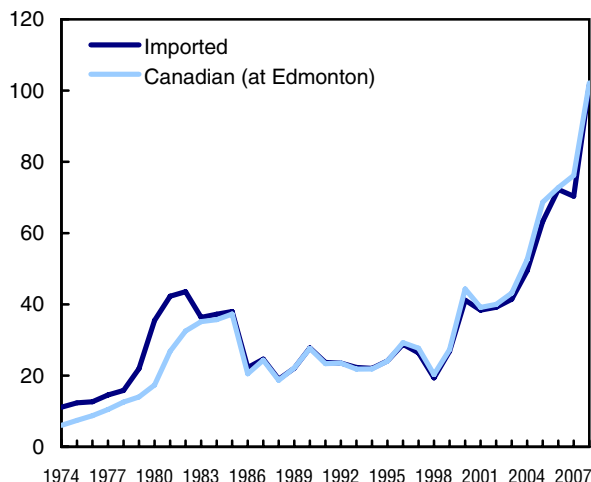
**Chart 3.7**  
Primary energy production, exports and imports, 1980 to 2007



Source(s): Statistics Canada, CANSIM tables 128-0002 and 128-0009.

**Chart 3.8**  
**Crude oil prices, 1974 to 2008**

Cdn\$ per barrel



**Source(s):** Natural Resources Canada, Oil Division, 2009, special tabulation.

Table 3.39 outlines Canadian energy resource reserves of coal, crude oil, crude bitumen, natural gas and uranium. Established crude oil reserves declined by 29% from 1976 to 2007. As a result of the decline, the reserve life of crude oil fell from about 14 years in 1976 to 9 years in 2007. In contrast, established reserves of crude bitumen increased twenty-three fold from 1976 to 2007.

In 2006, 592 million MWh of electricity was generated at hydro-electric, thermal-electric, nuclear, and wind and tidal generating stations. Quebec and British Columbia were the largest hydro-electric power generators, followed by Ontario, Newfoundland and Labrador and Manitoba. Ontario and Alberta were the leading generators of thermal-electric energy, while Ontario generated 90% of Canada's nuclear power. (Table 3.40).

Hydro-electric facilities generated 372,884 GWh of electricity in 2008, accounting for 62% of total electric power generation in Canada (Table 3.41). Coal, the predominant source of fuel for thermal-electric power production in Canada (Table 3.42), accounted for 68% of electricity generated at thermal-electric power stations in 2006 (Table 3.43). Across Canada, the efficiency of thermal electric power plants ranged from 20% to 35%, depending on the type of fuel consumed (Table 3.44).

## 3.6 Ecosystems

Human activity has had a profound impact on the structure and function of many ecosystems. Natural areas are altered by human activities which contributes to loss of habitats and extinction of animal and plant species. This section focuses on the impacts human activities have on air, land, water and wildlife.

### 3.6.1 Air

The atmosphere, an envelope of gases surrounding the earth, is made up of nitrogen (78%), oxygen (21%) argon (0.9%) and other gases. The atmosphere provides the air we breathe, shields us from ultraviolet radiation, affects air circulation and weather patterns and keeps the earth warm.

Human activities can affect both the air and the atmosphere. Traffic emissions affect urban air quality; industrial emissions of sulphur oxides and nitrogen oxides can lead to acid rain; chlorofluorocarbons, hydrochlorofluorocarbons and other substances deplete the ozone layer; and carbon dioxide, methane and nitrous oxide contribute to climate change.

Air pollutants have a negative impact on the air we breathe and also have an effect on soil and water systems through acid deposition and other means. Effects can be local or global, as pollution travels with prevailing winds. Criteria air contaminants are those for which ambient air quality standards have been established by government. In 2007, criteria air contaminants including sulphur oxides, carbon monoxide, nitrogen oxides, volatile organic compounds and particulate matter made up 97% of pollutants released by industrial facilities to air (Table 3.45).

Table 3.46 breaks down criteria air contaminant emissions for 2006, by source. Industrial sources were responsible for the highest emissions of sulphur oxides and volatile organic compounds and were the second highest emitters of particulate matter, after open sources. The majority of nitrogen oxides and carbon monoxide emissions came from transportation.

Greenhouse gases (GHGs) help regulate the planet's climate by trapping solar energy as it is radiated back from the Earth. Emissions of GHGs from human activities over the past 200 years have amplified this natural process and could impact global climate conditions. While criteria air contaminants persist in



the environment for a relatively short time (from less than a day to a few weeks), the effects of greenhouse gases may not be realised for much longer periods of time.

Table 3.47 compares emissions of common GHGs: carbon dioxide, methane and nitrous oxide by source for 1990 and 2006. Greenhouse gas emissions reached 721 megatonnes in 2006, 22% higher than in 1990. The increase was driven by growth in emissions from electricity and heat generation, the fossil fuel industries, transportation and mining. GHG emissions declined for the chemical, manufacturing and construction industries.

Table 3.48 shows the direct energy use and greenhouse gas emissions, by sector for 1990 to 2004. In 2005, households were directly responsible for 22% of energy use and 15% of GHG emissions.

Table group 3.49 shows energy intensity, measured as gigajoules per thousand dollars of production, and GHG intensity measured as tonnes of carbon dioxide equivalent per thousand dollars of production, in 2004 for 117 industries in Canada. In Table group 3.50 energy intensity and GHG intensity are indexed to 1990 and data are presented for the same industries. In 2004, of the 117 industries tracked, 73% had increased their energy efficiency and 78% had lowered their GHG emissions relative to 1990 levels.

See note(s) at the end of the section.

### 3.6.2 Land

Canada is the second largest country in the world, with over 9.9 million square kilometres of land.<sup>1</sup> This land supports many uses, from agriculture and forestry to urban development, parks and recreation.

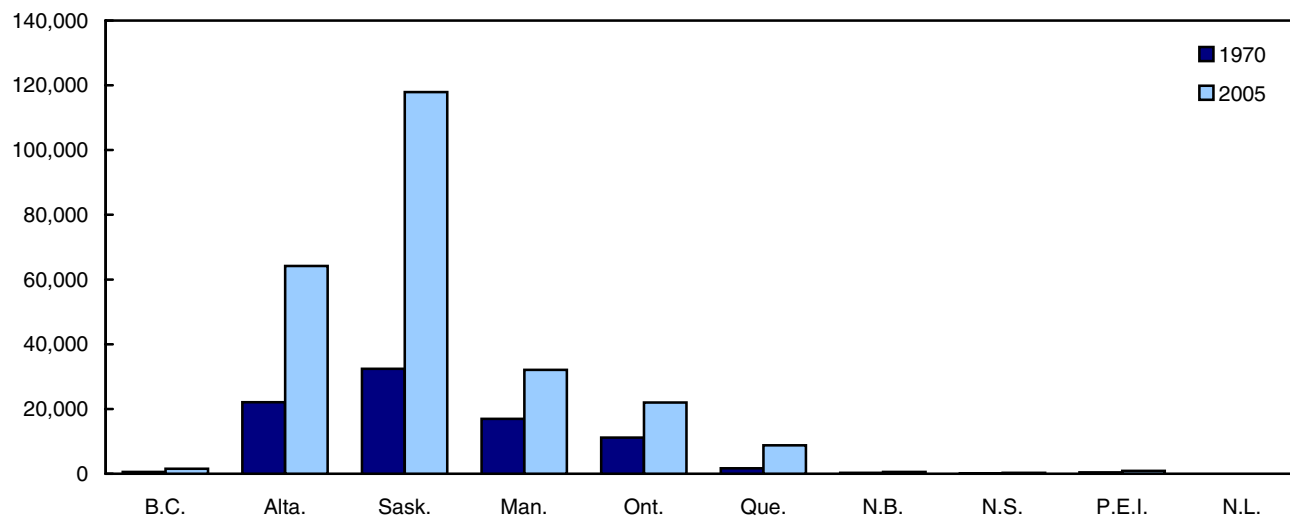
Table 3.51 shows the distribution of forest land by province and territory. Table 3.52 presents the area of forest harvested from 1975 to 2007, while Table 3.53 shows the area of timber-productive forest land burned from 1980 to 2007.

Fertilizers and manure supply the nitrogen, phosphorus and potassium and other nutrients that are essential for plant growth. The application of manure also adds needed organic matter to soil. Care must be taken to ensure that fertilizers and manure are applied correctly, in a way that minimizes the risk of runoff. In 2006, Canadian farmers applied fertilizer to over 253 thousand km<sup>2</sup> of land to improve crop yield, an increase of 6% compared to 2001 (Table 3.54). Livestock produced an estimated 181 million tonnes of manure in 2006 (Table 3.55).

Pesticides, including herbicides, insecticides and fungicides are used to control weeds, insects and crop diseases. The risk to the environment is determined by the mobility, persistence and toxicity of the pesticide to organisms other than its target, as well as the amount used. The area of farmland treated with pesticides is illustrated in Charts 3.9 and 3.10.

**Chart 3.9**  
**Area of farmland treated with herbicides by province, 1970 and 2005**

square kilometres

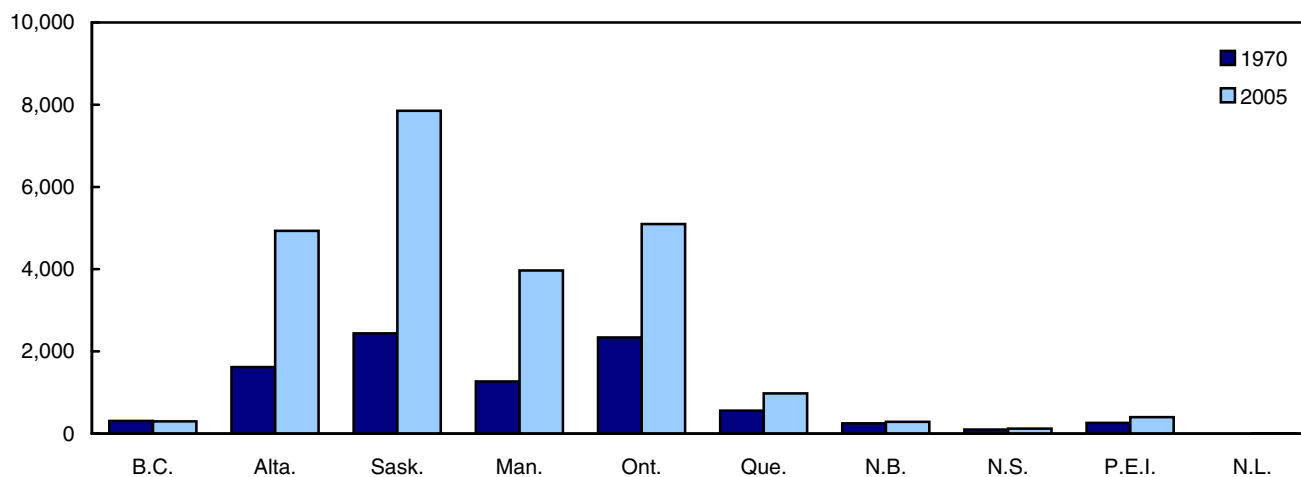


**Note(s):** As in previous censuses, the area of land on which herbicides, insecticides and fungicides were applied is under-reported. However, the data are comparable with previous censuses.

**Source(s):** Statistics Canada, Agriculture Division, 2007, *Selected Historical Data from the Census of Agriculture*, Catalogue no. 95-632-X. Statistics Canada, Agriculture Division, 2008, special tabulation.

**Chart 3.10**  
**Area of farmland treated with insecticides by province, 1970 and 2005**

square kilometres



**Note(s):** For 1970, fungicides were also included. As in previous censuses, the area of land on which herbicides, insecticides and fungicides were applied is under-reported. However, the data are comparable with previous censuses.

**Source(s):** Statistics Canada, Agriculture Division, 2007, *Selected Historical Data from the Census of Agriculture*, Catalogue no. 95-632-X. Statistics Canada, Agriculture Division, 2008, special tabulation.

The National Pollutant Release Inventory Database measures the volume of pollutants released on-site by over 8 thousand industrial facilities. In 2007, hydrogen sulphide made up 63% of the tonnage of substances released to land (Table 3.56).

### 3.6.3 Water

With 20% of the world's fresh water resources and 7% of the world's total renewable water flow, water remains a precious part of Canada's natural wealth.<sup>2</sup> Used for power generation, transportation, recreation,

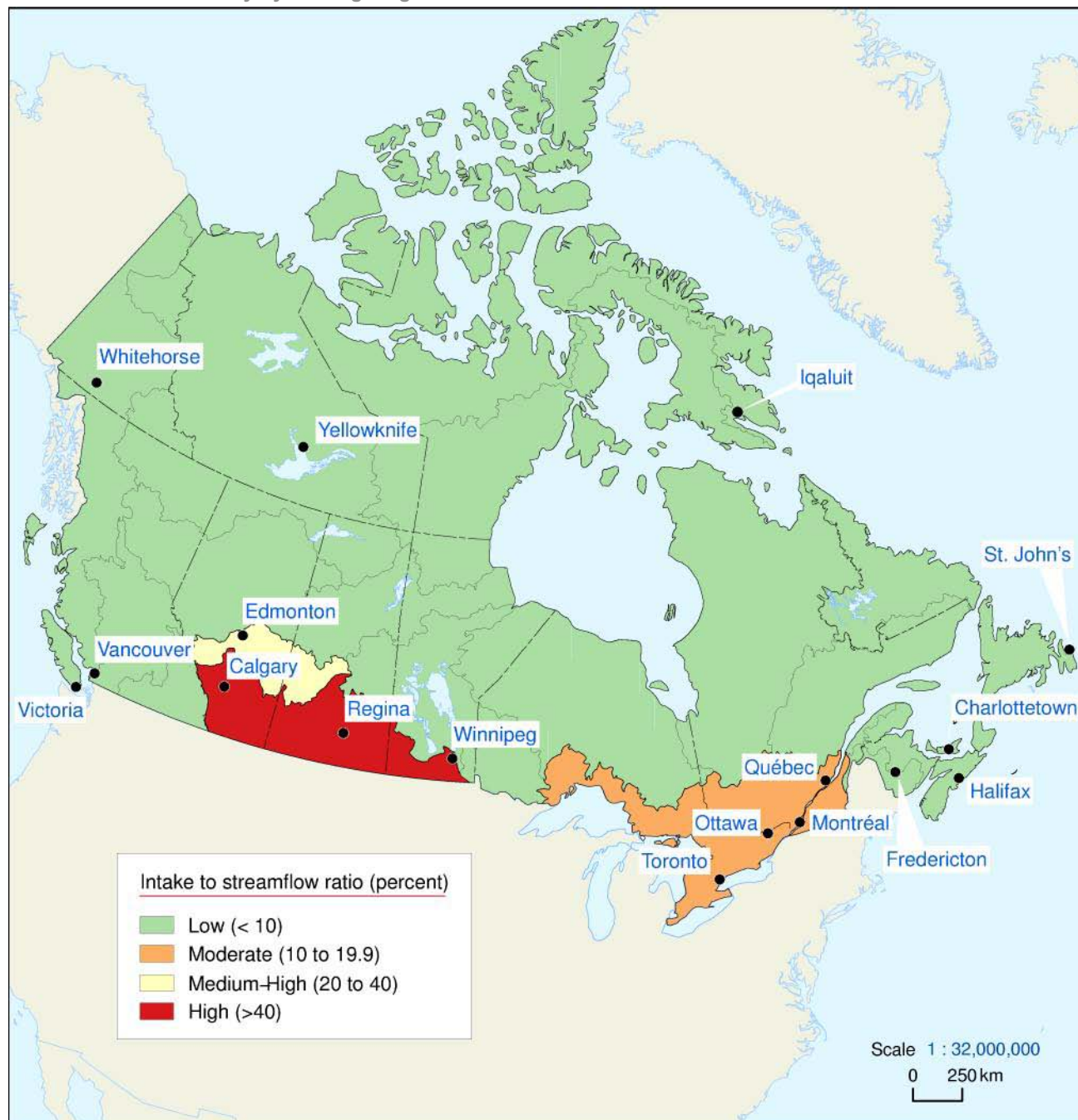
irrigation, manufacturing, agriculture and drinking water, Canadian water use per capita is the second highest in the world.<sup>2</sup> We also use our rivers, lakes and marine areas to dispose of municipal wastewater and wastes from industry. Some activities for which water is used can make it unfit for use by humans or wildlife.

Map 3.1 illustrates the proportion of surface fresh water that is used by Canadians within each of Canada's major drainage regions. Although responsible for only 14% of total water intake, the South Saskatchewan, Missouri and Assiniboine-Red and the North Saskatchewan drainage regions have the highest ratios of water intake to streamflow (Table 3.57).

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See note(s) at the end of the section.

Map 3.1  
Water use and availability by drainage region



Source(s): Statistics Canada, Environment Accounts and Statistics Division.

The Great Lakes - Ottawa - St. Lawrence drainage region also stands out with water intake of 30.6 billion m<sup>3</sup>, used mainly for industrial (89%) and municipal (10%) purposes. In contrast, 71% of total surface fresh water intake in the South Saskatchewan, Missouri and Assiniboine-Red drainage regions, 2.9 billion m<sup>3</sup>, was for agricultural use (Table 3.57).

In 2007, ammonia and nitrate made up 90% of the total tonnage of substances released into water (Table 3.58). Water contaminated with high levels of nitrate cannot be used as drinking water and ammonia is toxic to fish and other aquatic organisms.

### 3.6.4 Wildlife

Canada is home to over 70,000 wild species including, but by no means limited to, birds, fishes, vascular plants, butterflies, dragonflies, bees, worms, mosses and mushrooms. These species, and other aspects of nature, are highly valued by Canadians. Despite the importance of wildlife to Canadians, our activities have significantly reduced certain wildlife populations. Hunting by early European settlers was unregulated and in some cases, excessive. Habitats have been disrupted and fragmented as land has been drained and cleared to make way for agriculture, forestry, urbanization, transportation corridors and industrial development. Habitats have also been polluted, creating conditions under which a number of species can no longer live or reproduce.

The first step in preventing the loss of species is to know which species we have, where they occur and how they are doing. The aim of the *Wild Species* series is to provide this overview. *Wild Species 2005: The General Status of Species in Canada* presents the results of general status assessments for 7,732 species. General status assessments integrate the best available information to create a snapshot of each

species' status; their population size and distribution, the threats that each species faces in Canada, and any trends in these factors. The Canada ranks for these species are summarised in Table 3.59.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is a committee of experts that assesses and designates which wildlife species are in some danger of disappearing from Canada. As of 2008, 36 animal and plant species in Canada were either extinct or extirpated, while 238 were considered to be endangered and another 146 were classified as threatened (Table 3.60).

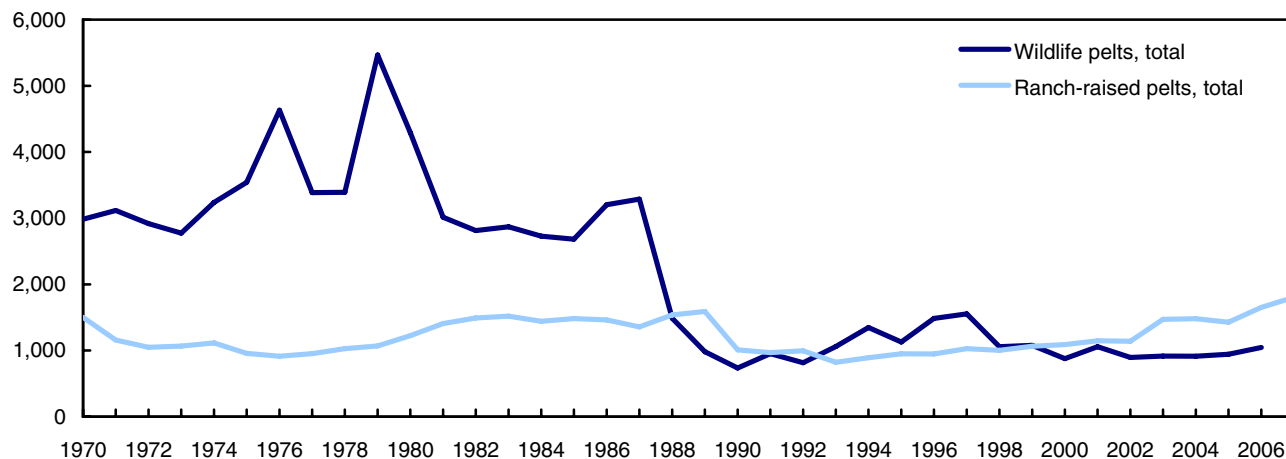
The federal *Species at Risk Act* (SARA) is a key tool for conserving and protecting Canada's biological diversity. Its purposes are to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened. Once a species is added to Schedule 1 of SARA, it benefits from all the legal protection afforded, and the mandatory recovery planning required, under SARA. The legal protection of wildlife species in Canada under the *Species at Risk Act* is summarized in Table 3.61.

Table 3.62 lists extinct and extirpated species in Canada, including date of extinction or extirpation and the probable cause(s).

While many prefer to simply view wildlife in a natural setting, hunting remains a popular recreational activity. Some continue to hunt and trap for their livelihood. At the same time, farming of furbearing animals continues to contribute to the Canadian economy. Table 3.63 shows harvest estimates for selected waterfowl species including Canada Goose, American Black Ducks and Mallards. Tables 3.64 and 3.65 and Charts 3.11 and 3.12 show the number and value of wild and farmed pelts harvested.

**Chart 3.11**  
**Number of pelts harvested, 1970 to 2007**

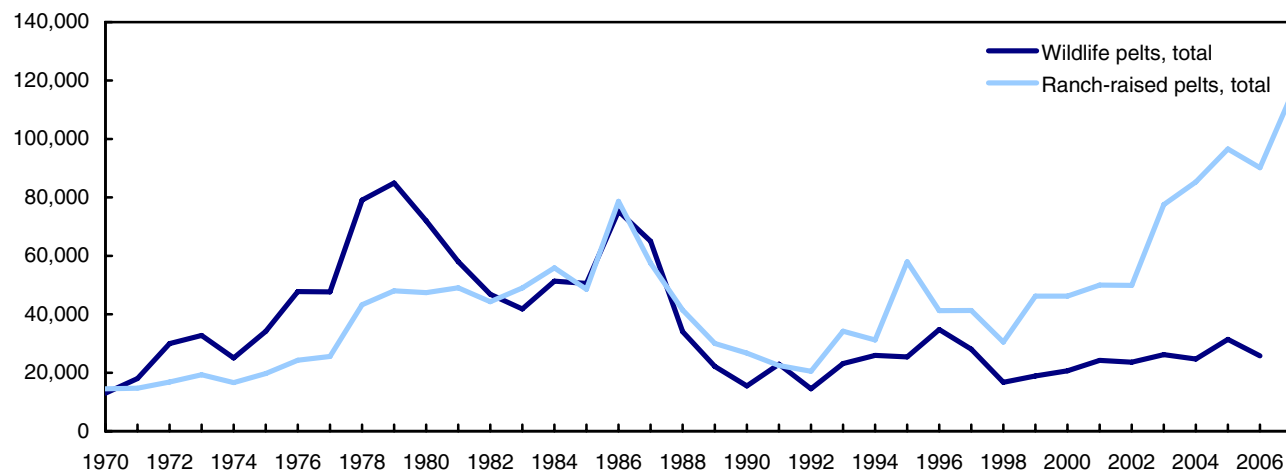
thousands



**Source(s):** Statistics Canada, CANSIM table 003-0013.

**Chart 3.12**  
**Value of pelts harvested, 1970 to 2007**

thousand of dollars



**Source(s):** Statistics Canada, CANSIM table 003-0013.

# Notes

1. Natural Resources Canada, 2004, "Land and Freshwater Areas," *The Atlas of Canada*, <http://atlas.gc.ca/site/english/learningresources/facts/surfareas.html> (accessed January 29, 2009).
2. Statistics Canada, 2003, "Fresh Water Resources," *Human Activity and the Environment*, Catalogue no. 16-201-x.

**Table 3.1**  
**Total population by province and territory, selected census years**

	1901	1911	1921	1931	1941	1951	1961
thousands							
<b>Canada</b>	<b>5,371.3</b>	<b>7,206.6</b>	<b>8,787.8</b>	<b>10,376.7</b>	<b>11,506.7</b>	<b>14,009.4</b>	<b>18,238.3</b>
Newfoundland and Labrador	..	..	..	..	..	361.4	457.9
Prince Edward Island	103.3	93.7	88.6	88.0	95.0	98.4	104.6
Nova Scotia	459.6	492.3	523.8	512.8	578.0	642.6	737.0
New Brunswick	331.1	351.9	387.9	408.2	457.4	515.7	597.9
Quebec	1,648.9	2,005.8	2,360.5	2,874.7	3,331.9	4,055.7	5,259.2
Ontario	2,182.9	2,527.3	2,933.7	3,431.7	3,787.7	4,597.6	6,236.1
Manitoba	255.2	461.4	610.1	700.1	729.7	776.5	921.7
Saskatchewan	91.3	492.4	757.5	921.8	896.0	831.7	925.2
Alberta	73.0	374.3	588.5	731.6	796.2	939.5	1,332.0
British Columbia	178.7	392.5	524.6	694.3	817.8	1,165.2	1,629.1
Yukon	27.2	8.5	4.1	4.2	5.0	9.1	14.6
Northwest Territories	20.1 <sup>1</sup>	6.5 <sup>1</sup>	8.1 <sup>1</sup>	9.3 <sup>1</sup>	12.0 <sup>1</sup>	16.0 <sup>1</sup>	23.0 <sup>1</sup>
Nunavut	...	...	...	...	...	...	...
Percentage change							
	1971	1981	1991	2001	2006	1901 to 1951	1951 to 2006
thousands						percent	
<b>Canada</b>	<b>21,962.0</b>	<b>24,819.9</b>	<b>28,037.4</b>	<b>31,019.0</b>	<b>32,576.1</b>	<b>161</b>	<b>133</b>
Newfoundland and Labrador	530.9	575.3	579.6	522.0	510.3	..	41
Prince Edward Island	112.6	123.6	130.4	136.7	137.9	-5	40
Nova Scotia	797.3	854.9	915.0	932.5	938.0	40	46
New Brunswick	642.5	706.4	745.6	749.8	745.7	56	45
Quebec	6,137.3	6,547.2	7,067.4	7,396.3	7,631.6	146	88
Ontario	7,849.0	8,812.3	10,431.3	11,896.7	12,665.3	111	175
Manitoba	998.9	1,035.5	1,109.6	1,151.4	1,184.0	204	52
Saskatchewan	932.0	975.8	1,002.7	1,000.2	992.1	811	19
Alberta	1,665.7	2,291.1	2,592.3	3,058.0	3,421.3	1,187	264
British Columbia	2,240.5	2,826.6	3,373.8	4,076.3	4,243.6	552	264
Yukon	19.0	23.9	28.9	30.2	32.3	-67	255
Northwest Territories	36.4 <sup>1</sup>	47.4 <sup>1</sup>	38.7	40.8	43.2	...	...
Nunavut	..	..	22.2	28.1	30.8	...	...

1. Includes Nunavut.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM tables 051-0001, 051-0024 and 075-0009.



**Table 3.2**  
**Components of population growth**

	Population 1, 2			Natural increase			International migration					
	Population at beginning period (July 1)	Population growth	Growth rate	Births	Deaths	Natural increase	Immigrants	Emigrants	Returning emigrants	Net temporary emigrants	Net non-permanent residents <sup>3</sup>	Net international migration
	thousands	percent					thousands					
1972/1973	22,218.5	273.3	1.2	345.8	162.6	183.2	138.5	63.8	36.1	..	8.0	..
1973/1974	22,491.8	316.2	1.4	342.4	166.3	176.2	217.5	83.5	36.7	..	-2.0	..
1974/1975	22,808.0	335.3	1.5	356.0	168.8	187.2	209.3	78.0	37.5	..	8.0	..
1975/1976	23,143.3	306.5	1.3	364.3	166.4	197.8	170.0	66.7	36.4	..	-3.0	..
1976/1977	23,449.8	276.0	1.2	357.8	165.7	192.1	130.9	57.8	32.8	..	-2.0	..
1977/1978	23,725.8	237.4	1.0	359.8	169.0	190.8	101.0	63.3	31.9	..	-3.0	..
1978/1979	23,963.2	238.3	1.0	362.4	165.8	196.6	84.5	62.4	31.5	..	8.0	..
1979/1980	24,201.5	314.1	1.3	367.3	171.5	195.8	143.8	49.9	29.4	..	15.0	..
1980/1981	24,515.7	304.2	1.2	372.1	170.5	201.6	127.2	44.9	27.0	..	13.3	..
1981/1982	24,819.9	297.0	1.2	372.5	172.4	200.1	135.3	54.8	25.7	..	12.3	..
1982/1983	25,116.9	249.5	1.0	373.6	176.5	197.1	101.4	59.2	28.1	..	3.8	..
1983/1984	25,366.5	240.6	0.9	374.5	174.2	200.4	88.6	57.8	26.0	..	5.1	..
1984/1985	25,607.1	235.1	0.9	376.3	179.1	197.2	83.9	55.2	27.1	..	3.7	..
1985/1986	25,842.1	258.2	1.0	375.4	183.4	192.0	88.7	50.6	25.8	..	22.4	..
1986/1987	26,100.3	346.3	1.3	373.0	182.6	190.4	130.9	47.7	16.7	..	58.7	..
1987/1988	26,446.6	345.1	1.3	370.0	189.9	180.1	152.2	41.0	14.3	..	42.2	..
1988/1989	26,791.7	485.0	1.8	384.0	188.4	195.6	177.6	40.4	14.1	..	140.7	..
1989/1990	27,276.8	414.4	1.5	403.3	192.6	210.7	203.4	39.8	13.9	..	28.8	..
1990/1991	27,691.1	346.3	1.2	402.9	192.4	210.5	221.4	43.7	15.2	..	-52.9	..
1991/1992	28,037.4	333.8	1.2	403.1	197.0	206.1	244.3	45.6	15.9	19.7	-42.9	151.9
1992/1993	28,371.3	313.5	1.1	392.2	201.8	190.4	266.9	44.0	15.3	19.7	-71.2	147.2
1993/1994	28,684.8	315.9	1.1	386.2	206.5	179.7	235.4	49.5	16.4	19.7	-22.2	160.3
1994/1995	29,000.7	301.6	1.0	382.0	209.4	172.6	220.7	52.1	18.4	19.7	-14.2	153.2
1995/1996	29,302.3	307.9	1.0	372.5	209.8	162.7	217.5	48.4	19.0	19.7	-0.8	167.5
1996/1997	29,610.2	295.7	1.0	357.3	217.2	140.1	224.9	52.8	19.0	25.6	0.2	165.6
1997/1998	29,905.9	249.2	0.8	345.1	217.7	127.4	194.5	51.8	18.7	25.6	-4.0	131.8
1998/1999	30,155.2	246.1	0.8	338.3	217.6	120.7	173.2	48.0	17.5	25.6	18.3	135.4
1999/2000	30,401.3	284.4	0.9	336.9	217.2	119.7	205.7	48.1	17.7	25.6	25.0	174.8
2000/2001	30,685.7	333.3	1.1	327.1	219.1	108.0	252.5	47.8	17.9	25.6	39.6	236.7
2001/2002	31,019.0	334.6	1.1	328.2	220.5	107.7	256.4	41.9	20.3	20.2	33.4	248.0
2002/2003	31,353.7	286.0	0.9	330.5	223.9	106.6	199.2	37.9	22.9	20.2	36.4	200.4
2003/2004	31,639.7	301.0	0.9	337.8	228.8	108.9	239.1	39.0	23.2	20.2	10.1	213.2
2004/2005	31,940.7	304.5	0.9	339.3	229.9	109.4	244.6	40.8	23.7	20.2	8.9	216.2
2005/2006	32,245.2	330.9	1.0	346.1	225.5	120.6	254.4	43.4	22.9	20.2	14.9	228.7
2006/2007	32,576.1	351.3	1.1	357.3	232.5	124.8	238.1	40.5	22.0	20.2	27.0	226.5
2007/2008	32,927.4	384.0	1.2	364.1	237.2	126.9	249.6	45.0	22.6	20.2	50.1	257.1
2008/2009	33,311.4	..	..	..	..	..	..	..	..	..	..	..

1. Postcensal estimates are based on the latest census counts adjusted for census net undercoverage, incompletely enumerated Indian reserves and for the estimated population growth that occurred since that census. Intercensal estimates are based on postcensal estimates and census counts adjusted of the censuses preceding and following the considered year.
  2. Estimates are final intercensal from 1971 to 2005, final postcensal for 2006, updated postcensal for 2007 and preliminary postcensal for 2008.
  3. The five following groups are referred to as NPRs: (1) persons residing in Canada claiming refugee status; (2) persons residing in Canada who hold a study permit; (3) persons residing in Canada who hold a work permit; (4) persons residing in Canada who hold a Minister's permit; (5) all non-Canadian born dependants of persons claiming refugee status, or of persons holding study permits, work permits or Minister's permits and living in Canada.
- Note(s):** Data are presented from July 1 to June 30. Population growth figures do not equal the sum of the natural increase and international migration. It is necessary to add the residual deviation to these data.
- Source(s):** Statistics Canada, CANSIM tables 051-0001 and 051-0004.

**Table 3.3**  
**Population by ecozone**

	Area	Population				Density	
		1981	2001	2006	Change 1981 to 2006	1981	2006
	square kilometres	persons				persons per 100 square kilometres	
<b>Canada</b>	<b>8,806,839</b>	<b>24,343,181</b>	<b>30,007,094</b>	<b>31,612,897</b>	<b>7,269,716</b>	<b>276.4</b>	<b>359.0</b>
Arctic Cordillera	234,708	821	1,304	1,293	472	0.3	0.6
Northern Arctic	1,371,340	11,872	20,451	22,859	10,987	0.9	1.7
Southern Arctic	702,542	8,137	14,470	15,893	7,756	1.2	2.3
Taiga Plains	569,363	18,358	20,726	22,225	3,867	3.2	3.9
Taiga Shield	1,122,504	30,859	38,116	41,682	10,823	2.7	3.7
Boreal Shield	1,640,949	2,731,344	2,821,808	2,886,412	155,068	166.4	175.9
Atlantic Maritime	192,017	2,428,735	2,537,685	2,554,089	125,354	1,264.9	1,330.1
Mixed Wood Plains	107,017	12,187,952	15,631,830	16,611,643	4,423,691	11,388.8	15,522.4
Boreal Plains	668,664	673,775	771,205	812,017	138,242	100.8	121.4
Prairies	443,159	3,499,494	4,222,569	4,514,106	1,014,612	789.7	1,018.6
Taiga Cordillera	264,213	563	370	411	-152	0.2	0.2
Boreal Cordillera	459,864	26,507	30,690	32,244	5,737	5.8	7.0
Pacific Maritime	196,200	2,014,790	3,027,206	3,215,775	1,200,985	1,026.9	1,639.0
Montane Cordillera	474,753	701,014	859,134	873,498	172,484	147.7	184.0
Hudson Plains	359,546	8,960	9,530	8,750	-210	2.5	2.4

**Note(s):** The area figures are for land area only and are calculated by taking the total ecozone area and subtracting the surface water area in the ecozone derived from the 1-km water fraction digital dataset. The total area of Canada excluding the Great Lakes is 9,886,215 km<sup>2</sup>. Including the Canadian portion of the Great Lakes the total area of Canada is 9,976,182 km<sup>2</sup>.

**Source(s):** Agriculture and Agri-Food Canada, and Environment Canada, 2003, *A National Ecological Framework for Canada*, [http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis\\_data.html](http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis_data.html) (accessed March 2, 2005). Fernandes, R., G. Pavlic, W. Chen and R. Fraser, 2001, *1-km Water Fraction From National Topographic Data Base Maps, Canada*, Natural Resources Canada, <http://www.geogratis.ca/geogratis/en/collection/metadata.do?id=67> (accessed March 2, 2005). Statistics Canada, Environment Accounts and Statistics Division, Spatial Environmental Information System and Censuses of Population, 1981, 2001 and 2006.

**Table 3.4**  
**Population by provincial and territorial ecozone**

	Area		Population					Density				
	1981 to 1999	1999 to 2006	1981	1991	2001	2006	Change 1981 to 2006	1981	1991	2001	2006	Change 1981 to 2006
	square kilometres		persons					persons per square kilometre				percent
<b>Canada</b>	<b>8,806,839</b>	<b>8,806,839</b>	<b>24,343,181</b>	<b>27,296,859</b>	<b>30,007,094</b>	<b>31,612,897</b>	<b>7,269,716</b>	<b>2.764</b>	<b>3.099</b>	<b>3.407</b>	<b>3.590</b>	<b>29.9</b>
<b>Newfoundland and Labrador</b>												
Arctic Cordillera	17,318	17,318	0	0	0	0	0	0.000	0.000	0.000	0.000	0.0
Boreal Shield	139,813	139,813	563,063	563,897	508,197	500,806	-62,257	4.027	4.033	3.635	3.582	-11.1
Taiga Shield	194,228	194,228	4,618	4,577	4,733	4,663	45	0.024	0.024	0.024	0.024	0.0
<b>Total</b>	<b>351,359</b>	<b>351,359</b>	<b>567,681</b>	<b>568,474</b>	<b>512,930</b>	<b>505,469</b>	<b>-62,212</b>	<b>1.616</b>	<b>1.618</b>	<b>1.460</b>	<b>1.439</b>	<b>-11.0</b>
<b>Prince Edward Island</b>												
Atlantic Maritime	5,402	5,402	122,506	129,765	135,294	135,851	13,345	22.679	24.023	25.047	25.148	10.9
<b>Total</b>	<b>5,402</b>	<b>5,402</b>	<b>122,506</b>	<b>129,765</b>	<b>135,294</b>	<b>135,851</b>	<b>13,345</b>	<b>22.679</b>	<b>24.023</b>	<b>25.047</b>	<b>25.148</b>	<b>10.9</b>
<b>Nova Scotia</b>												
Atlantic Maritime	50,633	50,633	847,442	899,942	908,007	913,462	66,020	16.737	17.774	17.933	18.041	7.8
<b>Total</b>	<b>50,633</b>	<b>50,633</b>	<b>847,442</b>	<b>899,942</b>	<b>908,007</b>	<b>913,462</b>	<b>66,020</b>	<b>16.737</b>	<b>17.774</b>	<b>17.933</b>	<b>18.041</b>	<b>7.8</b>
<b>New Brunswick</b>												
Atlantic Maritime	70,602	70,602	696,403	723,900	729,498	729,997	33,594	9.864	10.253	10.333	10.340	4.8
<b>Total</b>	<b>70,602</b>	<b>70,602</b>	<b>696,403</b>	<b>723,900</b>	<b>729,498</b>	<b>729,997</b>	<b>33,594</b>	<b>9.864</b>	<b>10.253</b>	<b>10.333</b>	<b>10.340</b>	<b>4.8</b>
<b>Quebec</b>												
Arctic Cordillera	12,360	12,360	0	0	0	0	0	0.000	0.000	0.000	0.000	0.0
Atlantic Maritime	65,380	65,380	762,384	758,879	764,886	774,779	12,395	11.661	11.607	11.699	11.850	1.6
Boreal Shield	573,556	573,556	1,159,520	1,227,015	1,292,746	1,351,404	191,884	2.022	2.139	2.254	2.356	16.5
Hudson Plains	34,724	34,724	1,342	1,788	2,312	2,514	1,172	0.039	0.051	0.067	0.072	85.6
Mixed Wood Plains	27,220	27,220	4,501,391	4,894,723	5,160,906	5,398,949	897,558	165.373	179.823	189.602	198.345	19.9
Northern Arctic	33,599	33,599	932	1,461	1,842	2,097	1,165	0.028	0.043	0.055	0.062	122.9
Southern Arctic	123,968	123,968	2,156	3,257	4,017	4,630	2,474	0.017	0.026	0.032	0.037	119.7
Taiga Shield	437,194	437,194	10,678	8,840	10,770	11,758	1,080	0.024	0.020	0.025	0.027	12.1
<b>Total</b>	<b>1,308,002</b>	<b>1,308,002</b>	<b>6,438,403</b>	<b>6,895,963</b>	<b>7,237,479</b>	<b>7,546,131</b>	<b>1,107,728</b>	<b>4.922</b>	<b>5.272</b>	<b>5.533</b>	<b>5.769</b>	<b>17.2</b>
<b>Ontario</b>												
Boreal Shield	559,603	559,603	933,099	952,438	933,908	943,313	10,214	1.667	1.702	1.669	1.686	1.1
Hudson Plains	254,963	254,963	5,447	5,789	5,214	4,275	-1,172	0.021	0.023	0.020	0.017	-20.2
Mixed Wood Plains	79,798	79,798	7,686,561	9,126,658	10,470,924	11,212,694	3,526,133	96.326	114.372	131.218	140.513	45.9
<b>Total</b>	<b>894,364</b>	<b>894,364</b>	<b>8,625,107</b>	<b>10,084,885</b>	<b>11,410,046</b>	<b>12,160,282</b>	<b>3,535,175</b>	<b>9.644</b>	<b>11.276</b>	<b>12.758</b>	<b>13.597</b>	<b>41.0</b>
<b>Manitoba</b>												
Boreal Plains	83,667	83,667	104,579	110,298	116,672	120,760	16,181	1.250	1.318	1.394	1.443	15.5
Boreal Shield	216,334	216,334	65,707	68,052	72,277	75,945	10,238	0.304	0.315	0.334	0.351	15.5
Hudson Plains	66,685	66,685	2,171	2,361	2,004	1,961	-210	0.033	0.035	0.030	0.029	-10.9
Prairies	64,234	64,234	852,832	910,069	927,172	948,339	95,507	13.277	14.168	14.434	14.764	11.2
Southern Arctic	1,142	1,142	0	0	0	0	0	0.000	0.000	0.000	0.000	0.0
Taiga Shield	109,048	109,048	952	1,162	1,458	1,396	444	0.009	0.011	0.013	0.013	42.2
<b>Total</b>	<b>541,110</b>	<b>541,110</b>	<b>1,026,241</b>	<b>1,091,942</b>	<b>1,119,583</b>	<b>1,148,401</b>	<b>122,160</b>	<b>1.897</b>	<b>2.018</b>	<b>2.069</b>	<b>2.122</b>	<b>11.9</b>
<b>Saskatchewan</b>												
Boreal Plains	163,274	163,274	161,945	158,821	160,484	158,021	-3,924	0.992	0.973	0.983	0.968	-2.4
Boreal Shield	147,484	147,484	9,955	12,086	14,680	14,939	4,984	0.067	0.082	0.100	0.101	51.2
Prairies	229,248	229,248	792,946	816,283	801,806	793,332	386	3.459	3.561	3.498	3.461	0.0
Taiga Shield	37,460	37,460	3,467	1,738	1,963	1,865	-1,602	0.093	0.046	0.052	0.050	-46.5
<b>Total</b>	<b>577,467</b>	<b>577,467</b>	<b>968,313</b>	<b>988,928</b>	<b>978,933</b>	<b>968,157</b>	<b>-156</b>	<b>1.677</b>	<b>1.713</b>	<b>1.695</b>	<b>1.677</b>	<b>0.0</b>
<b>Alberta</b>												
Boreal Plains	367,431	367,431	354,030	387,592	438,155	474,416	120,386	0.964	1.055	1.192	1.291	33.9
Boreal Shield	4,159	4,159	0	4	0	5	5	0.000	0.001	0.000	0.001	100.0
Montane Cordillera	46,336	46,336	27,961	31,481	39,813	40,120	12,159	0.603	0.679	0.859	0.866	43.6
Prairies	149,676	149,676	1,853,716	2,123,916	2,493,591	2,772,435	918,719	12.385	14.190	16.660	18.523	49.6
Taiga Plains	60,663	60,663	2,017	2,560	2,938	3,100	1,083	0.033	0.042	0.048	0.051	54.9
Taiga Shield	7,932	7,932	0	0	310	274	274	0.000	0.000	0.039	0.035	100.0
<b>Total</b>	<b>636,199</b>	<b>636,199</b>	<b>2,237,724</b>	<b>2,545,553</b>	<b>2,974,807</b>	<b>3,290,350</b>	<b>1,052,626</b>	<b>3.517</b>	<b>4.001</b>	<b>4.676</b>	<b>5.172</b>	<b>47.1</b>
<b>British Columbia</b>												
Boreal Cordillera	188,728	188,728	3,598	3,351	2,396	2,283	-1,315	0.019	0.018	0.013	0.012	-36.3
Boreal Plains	39,073	39,073	48,582	49,126	53,174	55,972	7,390	1.243	1.257	1.361	1.432	15.2
Montane Cordillera	428,417	428,417	673,053	720,713	819,321	833,378	160,325	1.571	1.682	1.912	1.945	23.8
Pacific Maritime	192,107	192,107	2,014,790	2,503,960	3,027,206	3,215,775	1,200,985	10.488	13.034	15.758	16.739	59.6
Taiga Plains	66,853	66,853	4,444	4,911	5,641	6,079	1,635	0.066	0.073	0.084	0.091	37.8
<b>Total</b>	<b>915,178</b>	<b>915,178</b>	<b>2,744,467</b>	<b>3,282,061</b>	<b>3,907,738</b>	<b>4,113,487</b>	<b>1,369,020</b>	<b>2.999</b>	<b>3.586</b>	<b>4.270</b>	<b>4.495</b>	<b>49.9</b>
<b>Yukon</b>												
Boreal Cordillera	266,546	266,546	22,909	27,488	28,294	29,961	7,052	0.086	0.103	0.106	0.112	30.7
Pacific Maritime	4,093	4,093	0	0	0	0	0	0.000	0.000	0.000	0.000	0.0
Southern Arctic	4,496	4,496	1	0	0	0	-1	0.000	0.000	0.000	0.000	0.0
Taiga Cordillera	180,170	180,170	243	309	370	411	168	0.001	0.002	0.002	0.002	128.1

See notes at the end of the table.

Table 3.4 – continued

## Population by provincial and territorial ecozone

	Area		Population					Density				
	1981 to 1999	1999 to 2006	1981	1991	2001	2006	Change 1981 to 2006	1981	1991	2001	2006	Change 1981 to 2006
	square kilometres		persons					persons per square kilometre				percent
Taiga Plains	18,110	18,110	0	0	10	0	0	0.000	0.000	0.001	0.000	0.0
<b>Total</b>	<b>473,415</b>	<b>473,415</b>	<b>23,153</b>	<b>27,797</b>	<b>28,674</b>	<b>30,372</b>	<b>7,219</b>	<b>0.049</b>	<b>0.059</b>	<b>0.061</b>	<b>0.064</b>	<b>30.9</b>
<b>Northwest Territories<sup>1</sup></b>												
Arctic Cordillera	205,053	...	821	1,047	...	0	-821	0.004	0.005	...	...	...
Boreal Cordillera	4,589	4,589	0	0	0	0	0	0.000	0.000	0.000	0.000	0.0
Boreal Plains	15,218	15,218	4,639	3,008	2,720	2,848	-1,791	0.305	0.198	0.179	0.187	-38.6
Hudson Plains	3,174	...	0	0	...	0	0	0.000	0.000	...	0.000	0.0
Northern Arctic	1,337,719	198,761	10,940	14,867	512	520	-10,420	0.008	0.075	0.003	0.003	-67.3
Southern Arctic	572,936	158,124	5,980	7,057	3,109	3,324	-2,656	0.010	0.045	0.020	0.021	110.2
Taiga Cordillera	84,043	84,043	320	0	0	0	-320	0.004	0.000	0.000	0.000	-100.0
Taiga Plains	423,737	423,737	11,897	13,958	12,137	13,046	1,149	0.028	0.033	0.029	0.031	10.0
Taiga Shield	336,641	257,638	11,144	17,712	18,882	21,726	10,582	0.033	0.069	0.073	0.084	155.5
<b>Total</b>	<b>2,983,143</b>	<b>1,142,110</b>	<b>45,741</b>	<b>57,649</b>	<b>37,360</b>	<b>41,464</b>	<b>-4,277</b>	<b>0.015</b>	<b>0.050</b>	<b>0.033</b>	<b>0.036</b>	<b>142.0</b>
<b>Nunavut<sup>1</sup></b>												
Arctic Cordillera	...	205,053	...	...	1,304	1,293	...	...	...	0.006	0.006	...
Hudson Plains	...	3,174	...	...	0	0	...	...	...	0.000	0.000	...
Northern Arctic	...	1,138,957	...	...	18,097	20,242	...	...	...	0.016	0.018	...
Southern Arctic	...	414,811	...	...	7,344	7,939	...	...	...	0.018	0.019	...
Taiga Shield	...	79,003	...	...	0	0	...	...	...	0.000	0.000	...
<b>Total</b>	<b>...</b>	<b>1,841,032</b>	<b>...</b>	<b>...</b>	<b>26,745</b>	<b>29,474</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>0.015</b>	<b>0.016</b>	<b>...</b>

1. As Nunavut was created on April 1, 1999, population data is not available for 1981 and 1991. Population for 1981 and 1991 for Nunavut is included in the Northwest Territories data.

**Note(s):** The area figures are for land area only and are calculated by taking the total ecozone area and subtracting the surface water area in the ecozone derived from the 1-km water fraction digital dataset. The total area of Canada excluding the Great Lakes is 9,886,215 km<sup>2</sup>. Including the Great Lakes the total area of Canada is 9,976,182 km<sup>2</sup>.

**Source(s):** Agriculture and Agri-Food Canada and Environment Canada, 2003, *A National Ecological Framework for Canada*, [http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis\\_data.html](http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis_data.html) (accessed March 2, 2005). Fernandes, R., G. Pavlic, W. Chen and R. Fraser, 2001, *1-km Water Fraction From National Topographic Data Base Maps, Canada*, Natural Resources Canada, <http://www.geogratis.ca/geogratis/en/collection/metadata.do?id=67> (accessed March 2, 2005). Statistics Canada, Environment Accounts and Statistics Division, Spatial Environmental Information System and Censuses of Population, 1981, 1991, 2001 and 2006.

**Table 3.5**  
**Population characteristics by drainage region**

	Drainage region code	Total population		Population as a share of total	Population change 1971 to 2006	Population density in 2006		Mean annual streamflow per capita
		1971	2006			By total area <sup>1</sup>	By water area <sup>2</sup>	
	code	persons		percent		persons per square kilometre		thousands of cubic metres per person
<b>Canada</b>	...	<b>21,568,311</b>	<b>31,612,897</b>	<b>100.0</b>	<b>46.6</b>	<b>3.2</b>	<b>26.9</b>	<b>105</b>
Pacific Coastal	1	916,210	1,437,391	4.55	56.9	4.3	95.6	360
Fraser - Lower Mainland	2	967,851	2,144,661	6.78	121.6	9.2	237.9	58
Okanagan - Similkameen	3	120,553	305,011	0.96	153	19.5	469.3	8
Columbia	4	131,462	156,987	0.5	19.4	1.8	63.2	404
Yukon	5	17,204	28,706	0.09	66.9	0.1	3.1	2,753
Peace - Athabasca	6	206,564	375,036	1.19	81.6	0.8	22.4	244
Lower Mackenzie	7	34,182	53,973	0.17	57.9	0.0	0.3	4,287
Arctic Coast - Islands	8	7,690	18,358	0.06	138.7	0.0	0.1	15,021
Missouri	9	14,349	8,869	0.03	-38.2	0.3	7.9	43
North Saskatchewan	10	844,730	1,416,072	4.48	67.6	9.4	195.4	5
South Saskatchewan	11	948,446	1,953,874	6.18	106	11.0	313	4
Assiniboine - Red	12	1,250,804	1,383,937	4.38	10.6	7.3	152.1	1
Winnipeg	13	84,685	84,757	0.27	0.1	0.8	4.1	282
Lower Saskatchewan - Nelson	14	237,276	215,255	0.68	-9.3	0.6	3.2	280
Churchill	15	61,711	88,638	0.28	43.6	0.3	1.7	249
Keewatin - Southern Baffin Island	16	6,271	13,261	0.04	111.5	0.0	0.1	12,801
Northern Ontario	17	149,112	137,806	0.44	-7.6	0.2	2.5	1,372
Northern Quebec	18	87,805	105,401	0.33	20	0.1	0.7	5,036
Great Lakes - Ottawa - St. Lawrence	19,20,21	12,759,943	18,772,580	59.38	47.1	32.2	139.1	12
North Shore - Gaspé	22	503,796	508,030	1.61	0.8	1.4	13.6	506
Saint John - St. Croix	23	365,294	402,583	1.27	10.2	9.6	223.7	61
Maritime Coastal	24	1,329,135	1,494,979	4.73	12.5	12.2	222.2	77
Newfoundland - Labrador	25	523,238	506,732	1.6	-3.2	1.3	9.1	580

1. Area includes the Canadian portion of the Great Lakes.

2. Water area figures are calculated from the Canada-wide 1 km water fraction derived from National Topographic Database.

**Note(s):** These drainage regions and associated flow measures are adapted from Pearse (1985) (see full reference below). Some of these drainage region aggregates have more than one outflow.

**Source(s):** Fernandes, R., G. Pavlic, W. Chen and R. Fraser, 2001, *1-km Water Fraction From National Topographic Data Base Maps, Canada*, Natural Resources Canada, <http://www.geogratis.ca/geogratis/en/collection/metadata.do?id=67> (accessed February 23, 2005). Pearse, P.H., F. Bertrand and J.W. MacLaren, 1985, *Currents of Change: Final Report of the Inquiry on Federal Water Policy*, Environment Canada, Ottawa. Natural Resources Canada, GeoAccess Division, 2003, *1:1 Million Digital Drainage Area Framework, version 4.8b*, Ottawa. Statistics Canada, Censuses of Population 1971 and 2006.

**Table 3.6-1**  
**Total population by major drainage and sub-drainage area — Maritime provinces**

	Drainage area code	1981	1986	1991	1996	2001	2006
		number					
<b>Canada</b>		<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>Maritime provinces</b>	<b>[01]</b>	<b>1,806,205</b>	<b>1,848,245</b>	<b>1,883,845</b>	<b>1,911,685</b>	<b>1,893,695</b>	<b>1,897,915</b>
Saint John and Southern Bay of Fundy, N.B.	[01A]	385,680	393,945	398,480	408,885	403,755	403,430
Gulf of St. Lawrence and Northern Bay of Fundy, N.B.	[01B]	450,040	454,330	455,665	458,955	446,645	445,020
Prince Edward Island	[01C]	122,510	126,645	129,765	134,560	135,295	135,870
Bay of Fundy and Gulf of St. Lawrence, N.S.	[01D]	291,055	305,415	315,810	321,270	317,940	319,885
Southeastern Atlantic Ocean, N.S.	[01E]	386,840	401,795	422,445	429,745	441,655	451,390
Cape Breton Island	[01F]	170,085	166,115	161,685	158,275	148,410	142,320

**Source(s):** Statistics Canada, CANSIM table 153-0036.

Table 3.6-2

## Total population by major drainage and sub-drainage area — St. Lawrence

Drainage area code	1981	1986	1991	1996	2001	2006
number						
<b>Canada</b>	<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>St. Lawrence</b> [02]	<b>15,137,905</b>	<b>15,727,225</b>	<b>17,073,065</b>	<b>17,963,690</b>	<b>18,704,560</b>	<b>19,763,560</b>
Northwestern Lake Superior	133,445	134,360	136,790	137,515	132,490	134,185
Northeastern Lake Superior	55,595	50,145	51,075	49,510	46,625	42,530
Northern Lake Huron	263,665	260,525	266,290	267,435	253,190	256,845
Wanapitei and French, Ont.	91,670	87,530	91,315	91,675	89,015	89,390
Eastern Georgian Bay	410,135	440,775	540,300	610,395	679,535	761,645
Eastern Lake Huron	263,420	275,645	302,160	309,535	310,990	310,620
Northern Lake Erie	1,649,120	1,690,085	1,838,285	1,933,060	2,028,510	2,142,595
Lake Ontario and Niagara Peninsula	4,549,385	4,879,010	5,463,720	5,882,975	6,356,940	6,861,310
Upper Ottawa	112,510	114,270	120,075	120,200	112,595	111,740
Central Ottawa	343,685	356,280	383,730	412,425	429,430	448,115
Lower Ottawa	857,915	932,310	1,044,135	1,129,250	1,190,950	1,268,965
Upper St. Lawrence	233,990	246,585	260,335	273,790	270,745	280,025
Saint-Maurice	131,615	135,045	126,960	128,740	126,420	127,555
Central St. Lawrence	3,895,360	3,971,215	4,253,605	4,407,750	4,516,340	4,748,230
Lower St. Lawrence	1,052,255	1,068,255	1,118,665	1,149,035	1,154,435	1,188,920
Northern Gaspé Peninsula	140,060	139,320	132,855	132,995	131,525	129,605
Saguenay	287,275	286,690	287,215	287,765	279,825	272,800
Betsiamites, coast	16,200	15,505	15,155	15,160	15,385	14,675
Manicouagan and aux Outardes	23,655	20,155	20,240	20,495	18,170	19,195
Moisie and St. Lawrence Estuary	61,195	53,820	53,055	52,840	49,250	48,850
Gulf of St. Lawrence, Romaine	2,065	2,030	2,145	2,195	1,560	1,485
Gulf of St. Lawrence, Natashquan	20,755	21,380	19,970	19,685	19,880	19,145
Petit Mécatina and Strait of Belle Isle	6,565	6,650	6,905	6,670	5,705	6,145
Northern Newfoundland	217,670	214,330	208,475	198,690	178,700	171,240
Southern Newfoundland	318,690	325,285	329,625	323,905	306,360	307,750

Source(s): Statistics Canada, CANSIM table 153-0036.

Table 3.6-3

## Total population by major drainage and sub-drainage area — Northern Quebec and Labrador

Drainage area code	1981	1986	1991	1996	2001	2006
number						
<b>Canada</b>	<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>Northern Quebec and Labrador</b> [03]	<b>78,220</b>	<b>70,670</b>	<b>72,590</b>	<b>74,460</b>	<b>73,160</b>	<b>73,045</b>
Nottaway, coast	32,305	29,400	27,005	26,985	25,180	23,445
Broadback and Rupert	2,955	3,525	3,380	4,375	4,865	5,940
Eastmain	330	360	440	525	615	650
La Grande, coast	5,410	3,540	4,210	4,725	4,970	5,525
Grande rivière de la Baleine, coast	1,065	1,050	1,115	1,380	1,330	1,375
Eastern Hudson Bay	0	55	285	320	350	390
Northeastern Hudson Bay	1,665	1,985	2,510	2,765	3,055	3,575
Western Ungava Bay	1,320	1,705	2,075	2,335	2,645	2,975
Aux Feuilles, coast	175	245	285	355	385	1,730
Koksoak	810	1,070	1,405	1,730	1,930	840
Caniapiscau	3,170	1,075	1,140	1,215	1,255	1,320
Eastern Ungava Bay	145	380	525	650	710	735
Northern Labrador	2,175	2,445	2,655	2,560	2,895	2,845
Churchill, N.L.	19,710	16,185	17,145	16,175	14,165	12,955
Central Labrador	4,310	4,785	5,440	5,520	6,095	6,150
Southern Labrador	2,665	2,875	2,965	2,875	2,715	2,595

Source(s): Statistics Canada, CANSIM table 153-0036.

**Table 3.6-4**  
**Total population by major drainage and sub-drainage area — Southwestern Hudson Bay**

	Drainage area code	1981	1986	1991	1996	2001	2006
number							
Canada		24,343,181	25,309,300	27,296,859	28,846,761	30,007,094	31,612,895
Southwestern Hudson Bay	[04]	207,340	199,745	207,410	210,250	200,275	194,900
Hayes, Man.	[04A]	5,145	7,650	7,365	9,440	10,445	11,725
Southwestern Hudson Bay	[04B]	0	0	0	0	0	0
Severn	[04C]	4,290	575	3,590	4,625	5,760	6,205
Winisk, coast	[04D]	1,575	1,055	1,945	2,295	2,615	2,795
Ekwan, coast	[04E]	0	0	0	0	0	0
Attawapiskat, coast	[04F]	1,400	490	1,945	2,040	1,965	745
Upper Albany	[04G]	2,775	1,050	1,550	1,545	2,260	2,530
Lower Albany, coast	[04H]	1,200	0	1,195	1,605	445	1,810
Kenogami	[04J]	11,040	10,485	9,060	8,805	8,105	6,720
Moose, Ont.	[04K]	2,975	1,935	2,855	4,070	2,885	2,005
Missinaibi and Mattagami	[04L]	71,360	69,265	68,265	67,170	62,010	59,245
Abitibi	[04M]	51,130	50,430	50,005	48,785	46,375	43,695
Harricanaw, coast	[04N]	54,450	56,815	59,615	59,880	57,415	57,425

**Source(s):** Statistics Canada, CANSIM table 153-0036.

**Table 3.6-5**  
**Total population by major drainage and sub-drainage area — Nelson River**

	Drainage area code	1981	1986	1991	1996	2001	2006
number							
Canada		24,343,181	25,309,300	27,296,859	28,846,761	30,007,094	31,612,895
Nelson River	[05]	3,975,415	4,163,310	4,347,520	4,497,255	4,746,290	5,053,865
Upper South Saskatchewan	[05A]	193,860	201,045	209,695	221,130	231,665	249,210
Bow	[05B]	670,160	716,255	805,825	883,470	1,029,515	1,166,785
Red Deer	[05C]	167,620	178,675	188,285	202,625	220,550	243,780
Upper North Saskatchewan	[05D]	295,410	284,880	303,690	312,845	342,365	385,930
Central North Saskatchewan	[05E]	576,450	638,380	683,145	697,835	747,370	811,145
Battle	[05F]	107,650	105,455	106,290	111,590	118,105	122,250
Lower North Saskatchewan	[05G]	102,505	105,895	102,620	101,530	100,240	96,565
Lower South Saskatchewan	[05H]	248,015	274,140	277,460	284,360	289,255	295,920
Qu'Appelle	[05J]	323,500	333,890	330,410	326,810	318,850	313,530
Saskatchewan	[05K]	71,065	68,755	65,215	65,160	63,130	61,915
Lake Winnipegosis and Lake Manitoba	[05L]	98,160	94,195	90,590	89,915	91,860	82,900
Assiniboine	[05M]	374,905	365,480	353,115	349,745	337,010	336,190
Souris	[05N]	81,070	80,400	74,510	73,520	69,765	65,520
Red	[05O]	526,560	575,680	611,715	625,545	638,805	668,130
Winnipeg	[05P]	53,830	54,150	56,165	57,430	54,745	56,615
English	[05Q]	28,900	29,365	28,305	29,380	28,455	28,005
Eastern Lake Winnipeg	[05R]	5,405	5,275	5,350	5,750	5,175	7,840
Western Lake Winnipeg	[05S]	24,660	22,815	25,455	27,980	30,730	31,220
Grass and Burntwood	[05T]	18,235	19,810	19,830	19,450	17,975	18,325
Nelson	[05U]	7,460	8,770	9,860	11,185	10,710	12,090

**Source(s):** Statistics Canada, CANSIM table 153-0036.

Table 3.6-6

## Total population by major drainage and sub-drainage area — Western and Northern Hudson Bay

	Drainage area code	1981	1986	1991	1996	2001	2006
		number					
Canada		24,343,181	25,309,300	27,296,859	28,846,761	30,007,094	31,612,895
Western and Northern Hudson Bay	[06]	76,300	82,725	85,540	95,660	98,540	103,730
Beaver, Alta. and Sask.	[06A]	46,355	50,875	52,490	57,095	58,215	61,605
Upper Churchill, Manitoba	[06B]	6,795	6,495	7,075	7,830	8,185	8,605
Central Churchill, upper, Manitoba	[06C]	6,570	7,340	8,015	9,610	10,430	10,865
Reindeer	[06D]	1,450	2,340	2,490	3,135	3,160	3,595
Central Churchill, lower, Manitoba	[06E]	6,485	6,165	4,785	5,760	5,560	4,870
Lower Churchill, Manitoba	[06F]	1,440	1,220	1,175	1,085	960	925
Seal, coast	[06G]	240	215	235	340	315	330
Western Hudson Bay, Southern	[06H]	0	0	0	0	0	0
Thelon	[06J]	0	0	0	0	0	0
Dubawnt	[06K]	0	0	0	0	0	0
Kazan	[06L]	0	0	0	0	0	0
Chesterfield Inlet	[06M]	955	1,005	1,190	1,390	1,505	1,730
Western Hudson Bay, central	[06N]	2,570	3,070	3,585	4,260	4,730	5,100
Western Hudson Bay, northern	[06O]	0	0	0	0	0	0
Hudson Bay, Southampton Island	[06P]	810	895	1,100	1,300	1,390	1,515
Foxe Basin, Southampton Island	[06Q]	0	0	0	0	0	0
Foxe Basin, Melville Peninsula	[06R]	1,445	1,725	1,955	2,280	2,505	2,945
Foxe Basin, Baffin Island	[06S]	75	110	45	0	0	0
Hudson Strait, Baffin and Southampton Islands	[06T]	1,085	1,245	1,405	1,565	1,585	1,645

Source(s): Statistics Canada, CANSIM table 153-0036.

Table 3.6-7

## Total population by major drainage and sub-drainage area — Great Slave Lake

	Drainage area code	1981	1986	1991	1996	2001	2006
		number					
Canada		24,343,181	25,309,300	27,296,859	28,846,761	30,007,094	31,612,895
Great Slave Lake	[07]	319,365	334,860	342,895	365,465	378,200	409,235
Upper Athabasca	[07A]	34,185	35,690	37,475	40,960	40,835	42,035
Central Athabasca, upper	[07B]	50,445	52,770	53,530	58,085	57,035	57,925
Central Athabasca, lower	[07C]	32,630	30,520	27,015	26,960	38,450	36,060
Lower Athabasca	[07D]	9,085	15,940	18,120	17,750	15,430	26,925
Williston Lake	[07E]	7,440	6,965	7,460	7,705	6,225	4,880
Upper Peace	[07F]	71,255	73,515	74,705	78,060	74,465	77,710
Smoky	[07G]	61,190	62,590	65,580	71,490	78,705	91,060
Central Peace, upper	[07H]	15,180	14,505	12,555	13,495	14,795	15,170
Central Peace, lower	[07J]	10,285	13,950	14,855	15,485	19,290	21,560
Lower Peace	[07K]	825	1,090	1,230	1,660	1,620	425
Fond-du-Lac	[07L]	855	1,665	1,700	2,035	1,945	2,205
Lake Athabasca, shores	[07M]	4,230	1,240	1,250	1,290	1,295	1,150
Slave	[07N]	2,330	2,485	2,510	2,470	2,205	2,375
Hay	[07O]	5,300	5,435	6,305	7,380	5,845	6,355
Southern Great Slave Lake	[07P]	2,345	2,185	720	640	805	1,260
Great Slave Lake, east arm, south shore	[07Q]	255	270	290	305	245	315
Lockhart	[07R]	0	0	0	0	0	0
Northeastern Great Slave Lake	[07S]	10,855	13,225	17,170	19,265	18,195	21,305
Marian	[07T]	265	345	390	420	455	465
Western Great Slave Lake	[07U]	410	470	0	0	355	55

Source(s): Statistics Canada, CANSIM table 153-0036.



**Table 3.6-8**  
**Total population by major drainage and sub-drainage area — Pacific**

Drainage area code	1981	1986	1991	1996	2001	2006
number						
<b>Canada</b>	<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>Pacific</b> [08]	<b>2,680,660</b>	<b>2,818,275</b>	<b>3,215,895</b>	<b>3,655,150</b>	<b>3,840,750</b>	<b>4,043,585</b>
Alsek [08A]	365	520	650	765	560	610
Northern coastal waters, B.C. [08B]	0	0	0	0	0	0
Stikine, coast [08C]	615	685	875	885	915	1,110
Nass, coast [08D]	3,625	2,670	2,955	2,985	2,590	2,460
Skeena, coast [08E]	59,260	57,095	60,690	64,625	60,850	56,420
Central coastal waters, B.C. [08F]	18,245	16,330	17,225	17,390	16,285	14,825
Southern coastal waters, B.C. [08G]	473,825	491,685	531,145	587,815	625,205	652,660
Vancouver Island [08H]	496,695	517,380	590,845	655,925	665,695	705,820
Nechako [08J]	59,570	59,480	59,875	67,415	63,715	61,025
Upper Fraser [08K]	68,555	69,435	70,240	75,025	74,650	72,015
Thompson [08L]	143,160	137,485	149,305	172,315	171,985	178,935
Lower Fraser [08M]	1,008,555	1,118,750	1,347,655	1,570,510	1,708,120	1,830,480
Columbia [08N]	341,575	341,290	378,995	433,780	445,045	461,620
Queen Charlotte Islands [08O]	5,620	5,480	5,320	5,590	4,940	4,815
Skagit [08P]	995	0	85	110	210	790

**Source(s):** Statistics Canada, CANSIM table 153-0036.

**Table 3.6-9**  
**Total population by major drainage and sub-drainage area — Yukon River**

Drainage area code	1981	1986	1991	1996	2001	2006
number						
<b>Canada</b>	<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>Yukon River</b> [09]	<b>21,945</b>	<b>22,200</b>	<b>26,285</b>	<b>28,730</b>	<b>27,230</b>	<b>28,420</b>
Headwaters Yukon [09A]	17,305	18,475	21,945	23,725	23,530	24,680
Pelly [09B]	2,150	990	1,770	1,870	1,025	950
Upper Yukon [09C]	390	230	290	295	245	235
Stewart [09D]	935	895	540	555	575	300
Central Yukon [09E]	915	1,375	1,490	2,005	1,555	2,000
Porcupine [09F]	240	235	255	280	305	255
Tanana [09H]	0	0	0	0	0	0
Copper [09M]	0	0	0	0	0	0

**Source(s):** Statistics Canada, CANSIM table 153-0036.

**Table 3.6-10**  
**Total population by major drainage and sub-drainage area — Arctic**

	Drainage area code	1981	1986	1991	1996	2001	2006
		number					
<b>Canada</b>		<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>Arctic</b>	<b>[10]</b>	<b>26,950</b>	<b>29,925</b>	<b>31,365</b>	<b>34,515</b>	<b>34,300</b>	<b>37,115</b>
Upper Liard	[10A]	2,935	2,945	2,765	2,320	1,775	1,850
Central Liard	[10B]	0	0	135	105	145	110
Fort Nelson	[10C]	4,590	4,810	4,660	5,495	5,635	6,035
Central Liard and Petitot	[10D]	0	0	0	0	0	0
Lower Liard	[10E]	840	1,035	575	585	1,315	1,440
Upper Mackenzie, Mills Lake	[10F]	735	710	765	865	875	900
Upper Mackenzie, Camell Bend	[10G]	980	990	1,185	1,280	480	465
Central Mackenzie, Blackwater Lake	[10H]	440	510	545	615	640	120
Great Bear	[10J]	820	720	805	875	815	1,305
Central Mackenzie, The Ramparts	[10K]	425	630	645	790	665	765
Lower Mackenzie	[10L]	3,730	4,055	3,955	4,190	3,635	4,215
Peel and Southwestern Beaufort Sea	[10M]	1,355	1,525	1,565	1,645	1,465	1,565
Southern Beaufort Sea	[10N]	825	980	1,025	945	1,035	1,000
Amundsen Gulf	[10O]	620	230	260	1,475	1,490	295
Coppermine	[10P]	375	895	0	0	0	0
Coronation Gulf and Queen Maud Gulf	[10Q]	90	80	1,130	65	0	1,325
Back	[10R]	0	0	0	0	0	0
Gulf of Boothia	[10S]	690	790	985	1,145	1,325	1,495
Southern Arctic Islands	[10T]	1,835	2,125	2,490	2,785	2,780	3,060
Baffin Island, Arctic drainage	[10U]	5,330	6,465	7,545	8,760	9,755	10,795
Northern Arctic Islands	[10V]	310	430	305	525	450	375

**Source(s):** Statistics Canada, CANSIM table 153-0036.

**Table 3.6-11**  
**Total population by major drainage and sub-drainage area — Mississippi River**

	Drainage area code	1981	1986	1991	1996	2001	2006
		number					
<b>Canada</b>		<b>24,343,181</b>	<b>25,309,300</b>	<b>27,296,859</b>	<b>28,846,761</b>	<b>30,007,094</b>	<b>31,612,895</b>
<b>Mississippi River</b>	<b>[11]</b>	<b>12,875</b>	<b>12,150</b>	<b>10,445</b>	<b>9,905</b>	<b>10,095</b>	<b>7,525</b>
Missouri	[11A]	12,875	12,150	10,445	9,905	10,095	7,525

**Source(s):** Statistics Canada, CANSIM table 153-0036.

**Table 3.7**  
**Gross domestic product by industry**

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	millions of chained 2002 dollars									
<b>All industries</b>	<b>974,405</b>	<b>1,026,242</b>	<b>1,040,943</b>	<b>1,068,765</b>	<b>1,091,378</b>	<b>1,124,998</b>	<b>1,155,681</b>	<b>1,189,661</b>	<b>1,219,327</b>	<b>1,225,789</b>
Goods-producing industries	325,467	347,304	339,779	346,175	350,817	360,281	368,147	372,320	374,126	363,616
Service-producing industries	648,465	678,385	701,115	722,590	740,591	764,791	787,730	818,097	846,591	864,603
Agriculture, forestry, fishing and hunting	26,193	26,268	24,674	23,293	25,478	27,669	28,214	27,648	26,478	25,965
Mining and oil and gas extraction	50,000	51,519	51,236	53,488	54,979	55,672	55,796	56,699	57,288	55,317
Utilities	28,982	29,050	27,384	28,883	29,057	28,993	30,613	30,181	31,344	31,144
Construction	49,053	51,757	55,542	57,775	59,871	63,453	66,611	70,805	72,890	74,575
Manufacturing	171,923	188,925	181,084	182,736	181,349	184,814	187,806	187,041	185,311	175,588
Wholesale trade	49,396	52,519	53,438	55,226	57,767	59,990	63,159	66,622	70,256	70,444
Retail trade	49,437	52,579	55,234	58,483	60,515	62,666	64,535	68,420	72,391	74,553
Transportation and warehousing	46,603	48,921	50,176	50,066	50,270	52,169	54,148	55,690	56,624	56,766
Information and cultural industries	31,617	34,007	36,498	38,229	38,631	40,813	41,888	43,227	44,349	45,123
Finance, insurance, real estate, rental and leasing and management of companies and enterprises	181,851	189,181	196,769	202,959	207,544	215,074	222,475	231,381	240,536	247,024
Professional, scientific and technical services	41,845	46,307	47,453	48,481	50,797	52,099	53,618	55,963	57,874	58,522
Administrative and support, waste management and remediation services	20,934	21,809	22,820	24,853	25,722	27,363	28,500	29,989	30,948	31,113
Educational services	50,162	50,394	50,675	51,593	52,566	53,764	55,561	57,108	58,863	60,528
Health care and social assistance	63,754	65,968	67,198	68,142	70,324	71,589	72,826	74,940	77,035	79,262
Arts, entertainment and recreation	9,333	9,718	10,142	10,398	10,365	10,791	10,873	11,454	11,716	11,731
Accommodation and food services	23,804	24,544	24,950	25,408	24,881	25,656	25,998	26,680	27,146	27,756
Other services (except public administration)	23,335	24,627	26,101	27,230	27,894	28,729	29,632	30,565	31,542	32,520
Public administration	56,674	57,968	59,705	61,523	63,314	64,085	64,548	66,134	67,463	69,427

**Source(s):** Statistics Canada, CANSIM table 379-0027.

**Table 3.8**  
**Employment by industry**

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
	percent									
Agriculture, forestry and logging with support activities, fishing, hunting and trapping	4.3	4.2	4.4	4.3	4.3	4.3	4.1	4.0	3.9	3.8
Mining and oil and gas extraction	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
Utilities	1.0	1.1	1.1	1.1	1.1	1.0	0.9	0.9	0.8	0.8
Construction	6.2	6.2	5.7	5.6	5.4	5.5	5.5	5.3	5.3	5.2
Manufacturing	16.4	15.7	14.7	14.3	13.9	14.0	14.3	14.3	14.7	14.9
Trade	15.8	15.9	16.0	16.0	15.8	15.8	15.6	15.6	15.4	15.1
Transportation and warehousing	5.1	4.9	4.9	4.8	4.8	4.9	5.0	5.0	5.1	5.1
Finance, insurance, real estate and leasing, business, building and other support services	8.8	9.0	9.1	9.1	9.2	9.2	9.4	9.6	9.5	9.4
Professional, scientific and technical services	4.3	4.4	4.7	4.6	4.8	4.9	5.1	5.3	5.7	6.1
Educational services	6.4	6.4	6.7	7.0	7.1	7.1	7.0	6.8	6.7	6.6
Health care and social assistance	9.5	9.8	10.2	10.4	10.5	10.4	10.4	10.4	10.1	10.2
Information, culture and recreation	4.1	3.9	3.9	3.9	3.9	4.1	4.3	4.3	4.4	4.4
Accommodation and food services	5.8	5.9	5.9	6.0	6.0	6.1	6.1	6.3	6.4	6.5
Other services	4.7	4.6	4.6	4.7	4.9	5.0	4.9	4.9	5.0	5.0
Public administration	6.2	6.4	6.6	6.8	6.7	6.4	6.2	6.0	5.8	5.6
<b>Total, all industries</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
	percent									
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Agriculture, forestry and logging with support activities, fishing, hunting and trapping	3.6	3.3	2.8	2.8	2.8	2.7	2.7	2.6	2.5	2.4
Mining and oil and gas extraction	1.1	1.1	1.2	1.1	1.1	1.2	1.3	1.5	1.5	1.5
Utilities	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.7	0.8	0.9
Construction	5.3	5.5	5.5	5.7	5.8	6.0	6.3	6.5	6.7	7.2
Manufacturing	15.2	15.2	14.9	14.9	14.5	14.4	13.7	12.8	12.1	11.5
Trade	15.4	15.5	15.8	15.7	15.7	15.7	15.9	16.0	15.9	15.6
Transportation and warehousing	5.1	5.2	5.2	5.0	5.0	5.0	4.9	4.9	4.9	5.0
Finance, insurance, real estate and leasing, business, building and other support services	9.5	9.4	9.5	9.6	9.7	10.0	10.2	10.5	10.4	10.3
Professional, scientific and technical services	6.3	6.3	6.6	6.4	6.4	6.4	6.5	6.6	6.7	7.0
Educational services	6.7	6.6	6.6	6.6	6.6	6.5	6.8	7.0	7.0	7.0
Health care and social assistance	10.0	10.3	10.3	10.6	10.7	10.9	10.7	10.8	10.9	11.1
Information, culture and recreation	4.4	4.5	4.7	4.7	4.6	4.6	4.5	4.5	4.6	4.4
Accommodation and food services	6.3	6.4	6.3	6.4	6.4	6.3	6.2	6.2	6.3	6.3
Other services	5.0	4.7	4.5	4.5	4.6	4.4	4.3	4.3	4.3	4.4
Public administration	5.4	5.2	5.3	5.2	5.2	5.2	5.2	5.1	5.1	5.4
<b>Total, all industries</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM table 282-0008.

**Table 3.9**  
**Exports and imports**

	Agricultural and fishing products		Energy products		Forestry products		Industrial goods and materials		Machinery and equipment	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	percent									
1973	13.9	9.5	9.4	5.7	17.2	1.4	23.1	19.1	10.8	26.7
1974	13.1	8.9	15.5	10.5	16.6	1.3	23.1	21.0	10.3	25.6
1975	13.4	8.5	15.5	11.9	14.7	1.3	21.5	18.0	11.7	26.0
1976	11.9	8.6	12.7	10.8	16.6	1.2	21.8	17.2	11.3	24.7
1977	11.4	8.7	11.9	9.9	17.3	1.1	21.8	17.2	10.4	24.1
1978	11.0	8.4	10.8	8.9	17.6	1.1	21.7	18.5	11.3	25.3
1979	10.9	7.6	13.2	9.2	17.5	1.2	22.6	20.5	13.1	26.4
1980	11.6	7.7	13.6	12.1	15.6	0.9	26.1	21.1	13.7	27.7
1981	12.1	7.4	13.4	12.2	14.4	0.9	23.9	20.2	14.3	28.4
1982	12.6	8.0	14.4	9.9	13.2	0.8	20.6	19.3	14.4	27.8
1983	11.9	7.4	13.8	6.8	13.6	1.0	19.5	20.0	13.1	27.5
1984	10.1	6.8	12.4	6.4	12.9	0.9	19.1	19.1	13.4	27.8
1985	8.5	6.0	13.3	6.0	12.5	0.8	18.6	18.7	13.9	26.6
1986	8.7	6.3	8.8	4.4	14.2	0.9	20.6	18.7	16.2	27.2
1987	9.0	6.2	9.8	5.0	16.0	1.0	20.8	18.1	15.8	27.9
1988	8.6	5.7	8.9	3.9	15.0	1.0	22.3	19.3	15.1	30.7
1989	7.9	5.9	9.3	4.5	14.6	1.0	22.0	19.3	16.3	31.1
1990	8.8	6.2	9.2	5.8	13.4	0.9	21.1	18.7	19.0	30.4
1991	8.9	6.4	9.6	4.7	12.6	0.9	21.2	17.6	19.8	30.5
1992	9.4	6.3	9.5	4.2	12.2	0.9	19.8	17.7	19.5	30.2
1993	8.5	6.2	9.3	3.9	12.3	0.9	18.5	18.2	19.4	30.0
1994	8.2	6.1	8.4	3.3	12.8	0.9	18.6	18.9	20.0	31.6
1995	7.9	5.8	7.7	3.1	13.8	0.9	19.2	19.8	21.1	32.9
1996	8.3	5.9	9.3	4.0	12.3	0.8	18.7	19.6	22.1	32.1
1997	8.2	5.6	9.0	3.8	11.6	0.9	18.7	19.6	22.7	32.9
1998	7.7	5.7	7.3	2.8	10.8	0.8	18.1	19.9	24.7	33.3
1999	6.9	5.4	8.1	3.3	10.9	0.8	16.2	19.0	24.0	33.1
2000	6.4	5.1	12.4	4.9	10.0	0.8	15.8	19.1	25.6	33.9
2001	7.4	5.8	13.3	5.1	9.6	0.8	16.1	19.5	24.4	32.0
2002	7.5	6.1	11.9	4.6	9.0	0.9	16.9	19.3	23.4	29.7
2003	7.3	6.3	15.2	5.8	8.6	0.9	16.7	19.0	22.2	28.8
2004	7.2	5.9	15.9	6.8	9.2	0.9	18.2	20.2	21.2	28.7
2005	6.7	5.7	19.3	8.7	8.1	0.8	18.7	20.3	20.7	28.6
2006	6.9	5.8	19.1	8.6	7.3	0.8	20.7	20.8	20.6	28.4
2007	7.4	6.1	19.8	8.8	6.3	0.7	22.6	20.5	20.2	28.1
2008	8.3	6.4	25.7	12.0	5.2	0.6	22.8	20.7	19.0	27.7

See notes at the end of the table.

Table 3.9 – continued

## Exports and imports

	Automotive products		Other consumer goods <sup>1</sup>		Special transactions trade		Unallocated balance of payments adjustments	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	percent							
1973	20.3	25.6	1.5	10.6	0.2	1.1	3.6	0.3
1974	16.9	21.8	1.4	9.7	0.3	0.9	2.9	0.3
1975	18.6	23.2	1.3	9.6	0.2	0.9	3.0	0.7
1976	20.9	24.7	1.3	10.9	0.4	1.3	3.1	0.6
1977	22.6	26.7	1.3	10.6	0.2	1.0	3.1	0.8
1978	22.6	26.1	1.4	10.5	0.2	0.8	3.5	0.4
1979	17.6	23.8	1.5	9.9	0.3	0.9	3.3	0.6
1980	13.8	19.1	1.6	9.7	0.3	1.1	3.8	0.6
1981	15.6	19.7	1.6	9.6	0.8	1.2	3.9	0.6
1982	19.4	21.4	1.6	10.8	0.3	1.5	3.5	0.5
1983	22.8	24.7	1.6	11.1	0.3	1.3	3.4	0.3
1984	25.4	26.7	1.6	10.7	0.4	1.6	4.7	0.0
1985	26.9	29.0	1.6	9.8	0.3	1.5	4.4	1.6
1986	25.3	28.6	2.0	10.4	0.4	1.5	3.8	2.1
1987	24.2	27.3	2.0	10.6	0.5	1.7	1.8	2.2
1988	24.2	25.0	2.0	10.2	0.5	1.6	3.4	2.7
1989	23.1	22.9	1.8	10.8	0.5	1.5	4.5	2.9
1990	22.8	21.6	2.2	11.2	1.1	2.1	2.4	3.0
1991	22.0	22.0	2.4	11.8	1.1	2.6	2.5	3.6
1992	23.3	21.8	2.7	12.3	1.1	2.6	2.4	4.0
1993	25.6	22.6	2.9	12.1	1.1	2.5	2.4	3.8
1994	25.2	23.0	3.1	11.3	1.1	2.3	2.4	2.6
1995	23.7	21.8	3.1	11.1	1.1	2.4	2.3	2.2
1996	22.6	21.5	3.4	10.9	1.1	3.0	2.2	2.2
1997	22.9	21.9	3.5	10.7	1.3	2.5	2.1	2.0
1998	24.0	22.0	3.8	11.4	1.7	2.1	2.0	1.9
1999	26.4	23.2	3.8	11.3	2.0	1.9	1.7	1.9
2000	22.8	21.4	3.5	11.1	1.9	1.8	1.6	1.8
2001	22.0	20.7	3.9	12.3	1.9	2.0	1.5	1.8
2002	23.3	22.8	4.3	13.0	2.0	1.7	1.6	1.8
2003	21.9	22.3	4.3	13.5	1.9	1.5	1.8	1.8
2004	21.1	21.3	4.0	13.1	1.9	1.4	1.4	1.7
2005	19.5	20.2	3.8	12.8	1.8	1.2	1.4	1.8
2006	18.1	19.8	3.9	12.9	1.9	1.2	1.4	1.9
2007	16.7	19.3	4.0	13.2	1.8	1.3	1.2	2.0
2008	12.5	16.2	3.7	13.0	1.7	1.4	1.1	2.0

1. Includes apparel and footwear, televisions, radios, printed matter, watches, sporting goods and toys, house furnishings, photographic goods, and other miscellaneous end products.

**Note(s):** Merchandise imports and exports by sector, balance of payments basis-transactions are defined in terms of ownership change.

**Source(s):** Statistics Canada, CANSIM table 228-0043.

**Table 3.10**  
**Water transport**

	Freight loaded		Freight unloaded		Total freight handled	Containerized freight handled		Movement of freight	Passengers transported by ferry
	Domestic	International	Domestic	International		Domestic	International		
	millions of tonnes							millions of tonne-kilometres <sup>1</sup>	millions of passengers
1988	70.0	171.1	70.0	78.9	389.9	1.6	12.6	1,711,417	..
1989	62.0	159.1	62.0	80.3	363.4	1.4	12.1	1,644,117	38.7
1990	60.4	159.0	60.4	73.3	353.0	1.3	12.3	1,614,007	40.8
1991	57.9	168.0	57.9	66.1	349.9	0.8	12.2	1,708,082	40.4
1992	52.3	153.8	52.3	69.3	327.7	1.0	12.6	1,578,228	40.0
1993	50.4	152.6	50.4	71.6	324.9	0.9	13.3	1,561,072	41.2
1994	52.2	170.0	52.2	76.9	351.3	0.8	14.7	1,697,225	43.2
1995	50.4	176.5	50.4	83.2	360.5	0.8	15.6	1,775,238	42.0
1996	48.8	174.3	48.8	85.6	357.5	0.8	17.1	1,781,143	39.8
1997	46.7	187.9	46.7	94.7	376.1	1.0	18.8	1,967,095	38.2
1998	48.3	179.0	48.3	100.4	376.0	0.9	19.7	1,876,328	37.3
1999	52.2	179.6	52.2	101.6	385.6	0.9	22.5	1,881,141	39.2
2000	54.5	187.8	54.5	105.9	402.8	0.9	24.0	1,969,105	38.5
2001	53.9	174.7	53.9	112.1	394.7	0.9	23.5	1,872,856	39.0
2002	62.8	174.3	62.6	108.5	408.1	1.0	25.6	1,765,822	39.4
2003	68.5	191.4	68.6	115.3	443.8	1.0	28.2	1,966,611	38.9
2004	69.1	196.0	69.1	119.0	453.3	1.1	31.2	2,046,226	38.8
2005	70.1	201.8	70.2	129.8	471.9	1.0	31.9	2,207,167	38.4
2006	68.1	206.0	68.1	124.1	466.3	1.0	33.0	2,256,360	38.4

1. The movement of one tonne over a distance of one kilometre.

**Source(s):** Statistics Canada, Transportation Division, *Shipping in Canada*, Catalogue no. 54-205-X, various issues. Transport Canada, Surface and Marine Statistics and Forecasts, 2009, special tabulation.

**Table 3.11**  
**Rail transport**

	Freight movement		Passenger movement		Locomotives	Passenger cars	Freight cars	Total diesel	Total track operated
	Revenue and non-revenue freight, tonnes	Revenue and non-revenue freight, <sup>1</sup> tonne-kilometres	Revenue passengers, passengers	Revenue passengers, passenger-kilometres <sup>2</sup>					
	millions		number				millions of litres		kilometres
2000	363.5	325,206	4.2	1,549	2,508	333	88,018	1,977	74,412
2001	356.9	325,040	4.2	1,553	2,535	323	87,019	1,982	73,821
2002	345.7	321,318	4.3	1,597	2,480	372	82,632	1,970	73,186
2003	353.0	321,804	4.0	1,434	2,512	461	82,346	2,008	71,920
2004	374.1	343,858	4.0	1,421	2,552	480	84,276	2,097	72,048
2005	382.6	356,202	4.3	1,478	2,683	512	93,947	2,130	72,367
2006	365.8	356,698	4.2	1,450	2,689	520	91,428	2,119	72,079
2007	361.7	361,145	4.3	1,445	2,655	528	83,175	2,194	72,286

1. The movement of one tonne over a distance of one kilometre.

2. The movement of a passenger over a distance of one kilometre. Passenger-kilometres are derived by multiplying the number of passengers by the distance travelled.

**Note(s):** Common carrier railways operating in Canada that provide for-hire passenger and freight services are included. Excluded from the survey are companies that provide rail support services (bridge and terminal service etc.) and sightseeing tours.

**Source(s):** Statistics Canada, CANSIM tables 404-0010, 404-0012, 404-0016 and 404-0017.

**Table 3.12**  
**Truck transport**

	Freight carried		Number of shipments	Shipments	
	Tonnes	Tonne-kilometres <sup>1</sup>		Weight per shipment	Distance per shipment
	millions			kilograms	kilometres
1989	189.6	77,383	34.9	5,431	621
1990	174.2	77,069	30.0	5,816	647
1991	150.6	70,048	29.1	5,178	648
1992	149.5	72,276	27.6	5,410	656
1993	173.4	83,968	27.9	6,208	659
1994	195.6	101,873	30.5	6,418	641
1995	210.9	109,434	32.3	6,523	685
1996	229.0	120,459	35.2	6,509	709
1997	223.3	130,141	32.0	6,962	792
1998	233.9	137,552	33.8	6,914	776
1999	269.3	158,104	36.4	7,396	771
2000	278.4	164,720	35.6	7,830	798
2001	288.0	170,915	37	7,775	803
2002	293.6	177,210	38.6	7,607	782
2003	305.2	184,957	40.4	7,559	797
2004	298.6	188,151	39.7	7,523	822
2005	306.8	194,786	40.2	7,630	798
2006	300.6	189,033	39.8	7,557	827

1. The movement of one tonne over a distance of one kilometre.

**Note(s):** These figures pertain only to the long distance shipments of Canada-based long distance for-hire trucking carriers.

**Source(s):** Statistics Canada, Transportation Division, *Trucking in Canada*, Catalogue no. 53-222-X, various issues. Statistics Canada, Transport Division, 2009, special tabulation.

**Table 3.13**  
**Air transport**

	Freight carried		Passengers	
	Weight	Tonne-kilometres <sup>1</sup>	Passengers	Passenger-kilometres <sup>2</sup>
	tonnes		millions	
1988	591,250	1,516	34.8	62,141
1989	603,828	1,552	35.7	65,628
1990	628,180	1,727	36.3	66,608
1991	603,267	1,565	31.3	57,953
1992	596,812	1,493	31.9	62,117
1993	624,561	1,636	31.1	60,985
1994	653,444	1,791	32.5	65,636
1995	692,579	2,034	36.0	73,506
1996	721,260	2,168	39.6	82,270
1997	789,146	2,353	43.6	92,104
1998	822,185	2,280	45.2	96,643
1999	832,987	2,364	46.4	99,623
2000	845,809	2,327	46.8	104,917
2001	789,625	2,149	45.4	102,473
2002	786,607	2,151	40.5	95,094
2003	662,612	1,855	41.5	90,326
2004	694,458	2,013	45.6	101,965
2005	779,930	2,236	48.1	109,975
2006	790,238	2,227	51.8	122,107
2007	776,458	2,029	55.1	130,118

1. The movement of one tonne over a distance of one kilometre.

2. The movement of a passenger over a distance of one kilometre. Passenger-kilometres are derived by multiplying the number of passengers by distance travelled.

**Note(s):** Figures include all Canadian carriers that earned more than 1 million dollars in revenue during each of the previous two years.

**Source(s):** Statistics Canada, Transportation Division, *Aviation*, Catalogue no. 51-004-X, various issues.



**Table 3.14**  
**Motor vehicle registrations**

	Road motor vehicles						Trailers	Off-road, construction, farm vehicles
	Vehicles weighing less than 4,500 kilograms	Vehicles weighing 4,500 kilograms to 14,999 kilograms	Vehicles weighing 15,000 kilograms or more	Buses	Motorcycles and mopeds	Total, road motor vehicle registrations		
	thousands							
1999	16,538	387	262	73	274	17,534	4,145	1,957
2000	16,832	391	270	77	311	17,882	3,989	1,756
2001	17,055	387	267	74	318	18,102	4,023	1,302
2002	17,544	367	277	79	350	18,617	4,161	1,419
2003	17,769	379	282	80	373	18,884	4,316	1,488
2004	17,990	394	286	78	409	19,156	4,514	1,527
2005	18,275	416	302	79	444	19,515	4,723	1,600
2006	18,739	443	318	80	485	20,065	4,961	1,658
2007	19,199	461	328	83	522	20,593	5,231	1,753
2008	19,613	490	333	84	567	21,087	5,528	1,851

**Note(s):** In 1999, Statistics Canada implemented a revised methodology for motor vehicle registration data in Canada. These data are not comparable with motor vehicle registrations prior to 1999.

**Source(s):** Statistics Canada, CANSIM table 405-0004.

**Table 3.15**  
**Usual mode of transportation for travel to work**

	2001	2006	Change 2001 to 2006	2001	2006
	number of workers			percent	
<b>Total</b>	<b>13,450,855</b>	<b>14,714,260</b>	<b>1,263,405</b>	<b>100.0</b>	<b>100.0</b>
Car, truck, van, as driver	9,929,470	10,644,325	714,855	73.8	72.3
Car, truck, van, as passenger	923,975	1,133,150	209,175	6.9	7.7
Used public transit	1,406,585	1,622,725	216,140	10.5	11.0
Walked	881,085	939,290	58,205	6.6	6.4
Bicycled	162,910	195,515	32,605	1.2	1.3
Other <sup>1</sup>	146,835	179,250	32,415	1.1	1.2

1. Corresponds to the remaining modes of transportation, such as motorcycle, taxi or 'other modes', such as inline skating, snowmobile, etc.

**Source(s):** Statistics Canada, 2008, *Place of Work Highlight Tables, 2006 Census*, [www12.statcan.ca/english/census06/data/highlights/POW/Index.cfm](http://www12.statcan.ca/english/census06/data/highlights/POW/Index.cfm) (accessed June 25, 2008). Statistics Canada, 2003, *Where Canadians work and how they get there?, 2001 Census: analysis series*, [www12.statcan.ca/english/census01/Products/Analytic/companion/pow/pdf/96F0030XIE2001010.pdf](http://www12.statcan.ca/english/census01/Products/Analytic/companion/pow/pdf/96F0030XIE2001010.pdf) (accessed June 25, 2008).

**Table 3.16**  
**Usual mode of transportation for travel to work, by census metropolitan areas (CMA), 2006**

	All modes	Car, truck, van		Used public transit	Walked	Bicycled	Other <sup>1</sup>
		As driver	As passenger				
	workers	percent					
<b>All CMAs</b>	<b>10,387,425</b>	<b>69.4</b>	<b>7.4</b>	<b>15.1</b>	<b>5.7</b>	<b>1.4</b>	<b>1.0</b>
St. John's	83,580	74.4	13.8	2.9	6.6	0.3	2.1
Halifax	186,425	65.1	10.6	11.9	10.1	1.0	1.3
Moncton	62,965	74.7	12.4	2.8	7.6	1.0	1.5
Saint John	56,145	75.1	11.2	4.4	7.3	0.3	1.7
Saguenay	66,120	85.1	5.3	2.4	5.3	0.8	1.1
Québec	361,575	74.9	5.4	10.2	7.3	1.4	0.7
Sherbrooke	85,565	80.3	5.8	4.8	7.4	0.9	0.8
Trois-Rivières	62,065	84.8	4.5	2.4	6.1	1.4	0.8
Montréal	1,716,490	65.4	5.0	21.4	5.7	1.6	0.8
Ottawa-Gatineau	559,595	62.7	8.0	19.4	6.8	2.1	0.9
Kingston	69,530	73.1	9.3	4.1	9.6	2.4	1.5
Peterborough	52,110	76.4	10.0	2.5	7.8	2.3	1.1
Oshawa	160,015	79.0	8.6	7.9	3.4	0.4	0.7
Toronto	2,433,060	63.6	7.5	22.2	4.8	1.0	0.9
Hamilton	324,650	76.1	8.5	8.7	5.0	0.9	0.8
St. Catharines-Niagara	178,695	81.0	8.8	2.5	5.0	1.5	1.1
Kitchener	228,700	78.3	9.4	4.8	5.1	1.6	0.8
Brantford	59,030	80.2	9.5	3.1	4.8	1.1	1.2
Guelph	64,825	76.0	8.5	6.0	6.1	2.3	1.0
London	219,485	75.5	9.1	6.7	6.1	1.6	0.9
Windsor	139,055	83.1	7.6	2.9	4.3	1.3	0.9
Barrie	86,830	81.2	9.4	3.8	3.9	0.6	1.0
Greater Sudbury/Grand Sudbury	71,860	77.4	9.5	5.2	6.2	0.7	1.1
Thunder Bay	56,525	79.8	8.6	3.2	5.9	1.6	0.9
Winnipeg	346,795	69.8	8.9	13.0	5.8	1.6	0.9
Regina	100,700	79.6	8.1	4.2	5.8	1.4	0.9
Saskatoon	117,620	78.7	7.5	3.7	6.2	2.4	1.6
Calgary	584,505	69.1	7.5	15.6	5.4	1.3	1.0
Edmonton	546,070	75.0	7.8	9.7	5.1	1.1	1.2
Kelowna	73,030	81.4	7.7	2.7	4.6	2.1	1.5
Abbotsford	72,280	83.2	10.0	1.8	3.2	0.7	1.2
Vancouver	1,003,020	67.3	7.1	16.5	6.3	1.7	1.1
Victoria	158,510	64.9	6.8	10.2	10.4	5.6	2.0

1. Corresponds to the remaining modes of transportation, such as motorcycle, taxi or 'other modes', such as inline skating, snowmobile, etc.

**Source(s):** Statistics Canada, 2008, *Place of Work Highlight Tables, 2006 Census*, Catalogue no. 97-561-XWE2006002, [www12.statcan.ca/english/census06/data/highlights/POW/Index.cfm?](http://www12.statcan.ca/english/census06/data/highlights/POW/Index.cfm?) (accessed June 25, 2008).

**Table 3.17**  
**Consumption of refined petroleum products by transportation industry**

	Railways	Total airlines <sup>1</sup>	Total marine <sup>1</sup>	Road transport and urban transit	Retail pump sales	Pipelines <sup>2</sup>	Total
	thousands of cubic metres						
1993	2,232	3,756	2,397	5,104	33,048	8	46,545
1994	2,310	4,015	2,574	5,978	34,208	30	49,116
1995	2,092	4,244	2,523	6,450	34,251	36	49,596
1996	2,046	4,941	2,480	6,690	34,849	57	51,062
1997	2,074	5,082	2,481	7,147	35,778	13	52,574
1998	1,999	5,227	2,919	7,197	36,817	24	54,182
1999	2,116	5,583	2,741	7,345	37,902	24	55,711
2000	2,169	5,634	2,801	7,175	38,100	21	55,901
2001	2,132	5,015	3,016	6,721	38,448	12	55,344
2002	1,934	5,299	2,718	6,871	38,665	9	55,496
2003	1,927	5,336	2,524	7,368	39,728	20	56,905
2004	1,959	5,822	2,803	7,573	41,192	25	59,376
2005	2,060	6,017	2,728	8,028	40,809	20	59,662
2006	2,124	5,970	2,451	7,973	40,935	11	59,464
2007	2,258	5,989	2,666	8,409	43,264	18	62,603

1. Includes fuels purchased in Canada by domestic and foreign companies.

2. The volume used to operate and run the pumps at the pumping stations.

**Note(s):** Refined petroleum products refers to motor gasoline, diesel fuel oil, light fuel oil, heavy fuel oil, aviation gasoline and aviation turbo fuel. Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM tables 128-0003 and 128-0010.

**Table 3.18**  
**Fuel consumption and number of vehicles by passenger bus and urban transit industries, 2006<sup>P</sup>**

	Fuel consumed			Electricity	Number of vehicles
	Diesel	Gasoline	Other fuel		
	thousands of litres			thousands of kilowatts	number
<b>Total</b>	<b>812,711</b>	<b>F</b>	<b>73,577</b>	<b>827,894</b>	<b>61,874</b>
Urban transit	425,259	424	64,792	805,605	15,871
Interurban and rural bus	70,488	x	0	0	3,274
School and employee bus	228,347	F	F	x	37,533
Charter bus	59,477	925	x	0	2,454
Other transit and ground passenger	14,155	2,767	3,030	0	1,768
Sight-seeing	859	349	420	0	235
Other <sup>1</sup>	14,126	0	0	x	738

1. Comprised mostly of municipal transit operations that are part of municipal budgets rather than separate operating entities.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, Transportation Division, 2008, *Service Bulletin - Surface and Marine Transport*, Catalogue no. 50-002-X, vol. 24 no.1.

**Table 3.19**  
**Gross domestic product of crop and animal production**

	Total gross domestic product	Crop and animal production			Share of total gross domestic product
		Crop production	Animal production	Total	
millions of chained 2002 dollars					percent
1999	974,405	15,646	4,282	19,928	2.05
2000	1,026,242	14,439	4,588	19,028	1.85
2001	1,040,943	11,403	4,936	16,339	1.57
2002	1,068,765	9,842	4,788	14,630	1.37
2003	1,091,378	12,745	4,346	17,091	1.57
2004	1,124,998	14,367	4,646	19,013	1.69
2005	1,155,681	15,015	4,761	19,776	1.71
2006	1,189,661	14,843	4,739	19,582	1.65
2007	1,219,327	14,398	4,764	19,162	1.57
2008	1,225,789	15,426	4,693	20,120	1.64

**Source(s):** Statistics Canada, CANSIM table 379-0027.

**Table 3.20**  
**Number of farms by province**

	Total	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec
	number					
1871	367,862	...	...	46,316	31,202	118,086
1881	464,025	...	13,629	55,873	36,837	137,863
1891 <sup>1</sup>	542,181	...	14,549	60,122	38,577	174,996
1901 <sup>1</sup>	511,073	...	13,748	54,478	37,006	140,110
1911 <sup>1</sup>	682,329	...	14,113	52,491	37,755	149,701
1921	711,090	...	13,701	47,432	36,655	137,619
1931	728,623	...	12,865	39,444	34,025	135,957
1941	732,832	...	12,230	32,977	31,889	154,669
1951	623,087	3,626	10,137	23,515	26,431	134,336
1961	480,877	1,752	7,335	12,518	11,786	95,777
1971	366,110	1,042	4,543	6,008	5,485	61,257
1981	318,361	679	3,154	5,045	4,063	48,144
1991	280,043	725	2,361	3,980	3,252	38,076
1996	276,548	742	2,217	4,453	3,405	35,991
2001	246,923	643	1,845	3,923	3,034	32,139
2006	229,373	558	1,700	3,795	2,776	30,675
	Total	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia
	number					
1871	367,862	172,258	...	...	...	...
1881	464,025	206,989	9,077	1,014 <sup>2</sup>	...	2,743
1891 <sup>1</sup>	542,181	216,195	22,008	9,244 <sup>3</sup>	...	6,490
1901 <sup>1</sup>	511,073	204,054	32,252	13,445	9,479	6,501
1911 <sup>1</sup>	682,329	212,108	43,631 <sup>4</sup>	95,013 <sup>4</sup>	60,559 <sup>4</sup>	16,958
1921	711,090	198,053	53,252 <sup>4</sup>	119,451 <sup>4</sup>	82,954 <sup>4</sup>	21,973
1931	728,623	192,174	54,199	136,472	97,408	26,079
1941	732,832	178,204	58,024	138,713	99,732	26,394
1951	623,087	149,920	52,383	112,018	84,315	26,406
1961	480,877	121,333	43,306	93,924	73,212	19,934
1971	366,110	94,722	34,981	76,970	62,702	18,400
1981	318,361	82,448	29,442	67,318	58,056	20,012
1991	280,043	68,633	25,706	60,840	57,245	19,225
1996	276,548	67,520	24,383	56,995	59,007	21,835
2001	246,923	59,728	21,071	50,598	53,652	20,290
2006	229,373	57,211	19,054	44,329	49,431	19,844

1. Data exclude plots under one acre, to attain comparability with data for later years.

2. Data include the portion of the Northwest Territories located west of Manitoba.

3. Data include the districts of Assiniboia, Saskatchewan and Alberta.

4. Data exclude farms located on Indian reserves.

**Source(s):** Statistics Canada, 1999, *Historical Statistics of Canada*, Second Edition, F.H. Leacy (ed.), Catalogue no. 11-516-X. Statistics Canada, 2007, *Selected Historical Data from the Census of Agriculture*, Catalogue no. 95-632-X.

**Table 3.21**  
**Gross domestic product of fishing industries**

	Total gross domestic product	Fishing industries			Share of total gross domestic product
		Fishing, hunting and trapping	Seafood product preparation and packaging	Total	
	millions of chained 2002 dollars				percent
1999	974,405	956	837	1,793	0.18
2000	1,026,242	985	870	1,855	0.18
2001	1,040,943	1,085	868	1,952	0.19
2002	1,068,765	1,118	951	2,069	0.19
2003	1,091,378	1,138	1,018	2,156	0.20
2004	1,124,998	1,164	1,018	2,182	0.19
2005	1,155,681	1,111	951	2,062	0.18
2006	1,189,661	1,107	947	2,054	0.17
2007	1,219,327	1,139	876	2,015	0.17
2008	1,225,789	1,218	913	2,132	0.17

**Source(s):** Statistics Canada, CANSIM table 379-0027.

**Table 3.22**  
**Employment in the fishing industries**

	Total employment	Fishing industries			Share of total employment
		Fishing	Animal aquaculture	Seafood product preparation and packaging	
	thousands of persons				percent
1987	12,333	33.4	2.3	31.6	0.55
1988	12,710	37.5	1.6	35.3	0.59
1989	12,996	36.9	2.0	33.8	0.56
1990	13,086	37.1	2.5	30.7	0.54
1991	12,857	40.9	3.0	29.5	0.57
1992	12,731	35.1	3.1	29.4	0.53
1993	12,793	36.2	2.9	25.5	0.50
1994	13,059	35.2	2.5	25.2	0.48
1995	13,295	28.5	2.2	22.6	0.40
1996	13,421	30.1	3.2	20.2	0.40
1997	13,706	29.7	3.9	22.5	0.41
1998	14,046	29.5	2.5	22.4	0.39
1999	14,407	29.1	3.4	24.8	0.40
2000	14,764	28.5	4.7	22.9	0.38
2001	14,946	25.7	4.1	23.7	0.36
2002	15,310	25.6	3.2	27.6	0.37
2003	15,672	26.2	3.1	24.3	0.34
2004	15,947	26.5	3.5	25.9	0.35
2005	16,170	25.8	5.0	24.2	0.34
2006	16,484	26.1	4.4	21.6	0.32
2007	16,866	23.7	5.1	20.1	0.29
2008	17,126	21.4	4.7	20.2	0.27

**Source(s):** Statistics Canada, CANSIM table 282-0088. Statistics Canada, Labour Force Survey, 2009, special tabulation.

**Table 3.23**  
**Exports and imports of fish and fish products**

	Exports			Imports		
	Total exports	Fish fresh, frozen, preserved and canned	Share of total exports	Total imports	Fish and marine animals	Share of total imports
	millions of dollars		percent	millions of dollars		percent
1974	32,738	418	1.28	30,903	119	0.38
1975	33,616	451	1.34	33,962	134	0.39
1976	38,166	590	1.54	36,608	182	0.50
1977	44,495	795	1.79	41,523	219	0.53
1978	53,361	1,111	2.08	49,048	248	0.51
1979	65,582	1,271	1.94	61,157	310	0.51
1980	76,680	1,265	1.65	67,903	354	0.52
1981	84,432	1,494	1.77	77,140	360	0.47
1982	84,393	1,591	1.89	66,738	352	0.53
1983	90,556	1,563	1.73	73,098	418	0.57
1984	111,330	1,595	1.43	91,493	488	0.53
1985	119,061	1,849	1.55	102,669	494	0.48
1986	125,172	2,580	2.06	115,195	613	0.53
1987	131,484	2,957	2.25	119,324	691	0.58
1988	143,534	2,818	1.96	132,715	679	0.51
1989	146,963	2,530	1.72	139,216	738	0.53
1990	152,056	2,817	1.85	141,000	679	0.48
1991	147,669	2,636	1.79	140,658	736	0.52
1992	163,464	2,736	1.67	154,430	777	0.50
1993	190,213	2,868	1.51	177,123	996	0.56
1994	228,167	3,258	1.43	207,872	1,126	0.54
1995	265,334	3,496	1.32	229,936	1,286	0.56
1996	280,079	3,444	1.23	237,689	1,470	0.62
1997	303,378	3,498	1.15	277,726	1,434	0.52
1998	327,162	3,664	1.12	303,399	1,636	0.54
1999	369,035	4,261	1.15	327,026	1,870	0.57
2000	429,372	4,561	1.06	362,337	1,929	0.53
2001	420,730	4,722	1.12	350,071	1,945	0.56
2002	414,038	5,240	1.27	356,727	1,935	0.54
2003	399,122	4,987	1.25	342,710	1,812	0.53
2004	429,006	4,858	1.13	363,158	1,804	0.50
2005	450,150	4,673	1.04	387,804	1,823	0.47
2006	453,732	4,434	0.98	404,253	1,816	0.45
2007	463,051	4,293	0.93	415,006	1,890	0.46
2008	489,857	4,249	0.87	442,988	1,909	0.43

**Source(s):** Statistics Canada, CANSIM table 228-0003.

**Table 3.24**  
**Landed catch and value**

	Sea fisheries								Freshwater fisheries	
	Groundfish <sup>1</sup>		Pelagic fish <sup>2</sup>		Shellfish <sup>3</sup>		Total <sup>4</sup>		Total	
	Catch	Value	Catch	Value	Catch	Value	Catch	Value	Catch	Value
	tonnes (live weight)	thousands of dollars	tonnes (live weight)	thousands of dollars	tonnes (live weight)	thousands of dollars	tonnes (live weight)	thousands of dollars	tonnes (live weight)	thousands of dollars
1990	791,246	475,491	560,238	425,690	246,796	518,244	1,624,792	1,432,044	44,718	66,413
1991	792,383	500,184	431,514	293,514	247,199	580,985	1,506,966	1,392,490	49,179	73,403
1992	630,574	415,422	389,644	315,887	265,243	647,967	1,317,602	1,397,032	38,009	71,794
1993	431,407	297,814	418,817	364,067	284,396	730,487	1,154,408	1,419,576	37,855	59,529
1994	332,896	252,858	351,139	402,321	313,434	1,013,681	1,031,024	1,699,994	36,077	72,337
1995	220,710	232,210	302,013	242,458	305,165	1,270,278	858,039	1,781,263	38,756	77,737
1996	274,086	231,609	310,941	269,575	299,562	1,037,063	918,663	1,579,576	38,295	69,249
1997	276,317	255,308	323,497	222,455	337,297	1,081,094	977,940	1,599,953	38,798	70,505
1998	287,498	288,029	319,085	166,369	355,523	1,134,154	994,575	1,611,592	40,744	83,092
1999	298,264	324,995	286,236	124,061	382,486	1,435,695	1,003,063	1,910,165	40,566	82,505
2000	229,637	309,511	305,813	186,734	429,937	1,617,924	1,003,500	2,137,792	40,573	86,820
2001 <sup>5</sup>	274,925	302,344	307,672	171,916	433,100	1,618,301	1,053,338	2,118,552	38,025	79,618
2002 <sup>5</sup>	255,994	284,244	315,275	186,949	458,996	1,688,199	1,073,988	2,198,050	40,531	85,418
2003 <sup>5</sup>	255,614	302,496	348,728	185,743	466,742	1,753,631	1,120,060	2,278,953	36,969	71,504
2004 <sup>5</sup>	306,693	290,826	331,687	173,995	491,880	1,769,258	1,176,229	2,275,860	36,207	63,793
2005 <sup>5</sup>	304,286	313,854	324,465	184,387	443,537	1,550,581	1,096,645	2,076,771	32,286	66,117
2006 <sup>5</sup>	258,389	295,087	315,945	184,809	460,871	1,329,919	1,077,393	1,856,171	32,234	67,885
2007 <sup>5</sup>	229,888	304,741	300,114	146,716	442,627	1,417,579	986,921	1,887,559	32,303	63,570

1. Species that are usually caught near the ocean bottom, including cod, haddock, pollock, redfish, halibut, flounder, and many others.

2. The pelagic species live in midwater or close to the surface. They include herring, capelin, swordfish, tuna, and many others.

3. Aquatic shelled molluscs (oysters, etc.) and crustaceans (crabs, shrimp, etc.).

4. Data do not add up because total also includes marine plants, lumpfish roe and miscellaneous other marine products.

5. Sea fisheries data are preliminary.

**Source(s):** Fisheries and Oceans Canada, 2008, *Commercial Landings, Seafisheries*, [www.dfo-mpo.gc.ca/commnic/statistics/commercial/landings/seafisheries/index\\_e.htm](http://www.dfo-mpo.gc.ca/commnic/statistics/commercial/landings/seafisheries/index_e.htm) (accessed March 27, 2009). Fisheries and Oceans Canada, 2006, *Commercial Landings, Summary Tables*, [www.dfo-mpo.gc.ca/commnic/statistics/commercial/landings/sum\\_e.htm](http://www.dfo-mpo.gc.ca/commnic/statistics/commercial/landings/sum_e.htm) (accessed March 27, 2009).

**Table 3.25**  
**Aquaculture, production and value**

	Total aquaculture		Salmon		Trout <sup>1</sup>		Oysters		Mussels <sup>2</sup>	
	tonnes	thousands of dollars	tonnes	thousands of dollars	tonnes	thousands of dollars	tonnes	thousands of dollars	tonnes	thousands of dollars
1991	49,594	233,559	34,109	195,538	3,324	15,575	5,900	5,952	3,956	4,875
1992	46,931	244,014	30,325	202,735	3,927	20,234	5,843	6,049	4,877	5,696
1993	53,927	277,604	36,670	234,036	4,121	21,737	6,036	6,573	5,141	5,727
1994	57,147	301,992	36,083	249,152	4,434	24,169	7,534	9,081	6,867	7,575
1995	66,269	341,957	42,515	286,852	5,316	26,216	7,719	9,702	8,626	9,891
1996	72,572	356,241	45,624	287,154	7,712	38,993	7,989	10,710	9,898	12,022
1997	81,843	385,447	56,775	324,030	6,876	33,629	5,631	8,695	11,570	13,834
1998	91,499	430,414	58,618	349,043	8,376	42,123	8,137	11,321	15,018	18,965
1999	113,253	558,365	72,890	450,084	12,576	60,830	8,785	13,278	17,397	23,185
2000	127,336	601,326	82,195	483,755	12,037	57,289	9,624	16,515	21,290	27,189
2001	153,326	597,676	105,606	470,471	11,218	51,193	11,319	16,772	21,566	30,404
2002	171,035	620,288	126,321	502,036	8,867	42,811	11,520	15,176	20,615	31,449
2003	150,205	583,285	99,961	441,471	6,403	32,038	13,621	19,208	20,590	30,929
2004	141,580	532,924	90,646	400,180	4,858	22,086	13,228	16,740	22,863	32,807
2005	154,484	706,794	98,370	543,343	4,857	21,363	12,957	16,521	22,930	33,582
2006	171,566	904,531	118,061	748,246	4,374	19,743	13,137	19,042	23,876	35,817
2007	169,314	837,291	117,306	691,819	4,899	23,571	13,711	19,621	23,692	33,059

1. Includes steelhead.

**Note(s):** The production and value of aquaculture includes the amount and value produced on sites and excludes hatcheries or processing. Shellfish also includes some wild production. The data, collected from each of the provincial departments responsible for aquaculture, are considered accurate and reliable. The data will continue to be collected and released in the year following the reference year.

**Source(s):** Statistics Canada, CANSIM table 003-0001.



Table 3.26

## Volume of roundwood harvested by forest product category, selected years

	Industrial roundwood				Fuelwood and firewood	Total roundwood harvested
	Logs and bolts <sup>1</sup>	Pulpwood	Other	Total		
thousands of cubic metres						
1940	32,625	20,981	2,109	55,715	19,732	75,447
1945	30,596	26,412	2,039	59,047	17,188	76,235
1950	40,095	32,311	1,701	74,107	11,508	85,615
1955	44,262	38,721	1,691	84,674	8,208	92,882
1960	51,118	33,924	1,524	86,566	6,750	93,316
1965	62,618	34,164	1,838	98,620	5,125	103,745
1970	75,645	40,553	1,294	117,492	4,133	121,625
1975	73,542 <sup>r</sup>	37,270 <sup>r</sup>	915	111,727 <sup>r</sup>	3,783	115,510 <sup>r</sup>
1980	109,952	38,909	1,923	150,784	4,840 <sup>r</sup>	155,624 <sup>r</sup>
1985	119,317 <sup>r</sup>	40,620 <sup>r</sup>	2,077 <sup>r</sup>	162,014 <sup>r</sup>	6,708	168,722 <sup>r</sup>
1990	118,941 <sup>r</sup>	35,876 <sup>2</sup>	1,581 <sup>r</sup>	156,398 <sup>r</sup>	6,169 <sup>2</sup>	162,567 <sup>r</sup>
1995	150,150 <sup>r</sup>	30,926 <sup>3</sup>	2,081 <sup>r</sup>	183,156 <sup>r</sup>	5,340 <sup>r</sup>	188,497 <sup>r</sup>
2000	166,652 <sup>r</sup>	28,699 <sup>r</sup>	3,566 <sup>r</sup>	198,917 <sup>r</sup>	2,927 <sup>r</sup>	201,843 <sup>r</sup>
2001	154,417 <sup>r</sup>	23,079 <sup>r</sup>	5,449 <sup>r</sup>	182,945 <sup>r</sup>	2,908 <sup>r</sup>	185,854 <sup>r</sup>
2002	164,388 <sup>2</sup>	25,557 <sup>2</sup>	3,298 <sup>2</sup>	193,243 <sup>2</sup>	2,885 <sup>2</sup>	196,128 <sup>2</sup>
2003	147,053 <sup>r</sup>	27,841 <sup>r</sup>	3,318 <sup>r</sup>	178,211 <sup>r</sup>	2,843 <sup>2</sup>	181,054 <sup>r</sup>
2004	173,233 <sup>r</sup>	28,313 <sup>r</sup>	3,583 <sup>r</sup>	205,129 <sup>r</sup>	2,789 <sup>2</sup>	207,919 <sup>r</sup>
2005	172,478 <sup>r</sup>	23,442 <sup>r</sup>	4,330 <sup>r</sup>	200,250 <sup>r</sup>	3,045 <sup>2</sup>	203,325 <sup>r</sup>
2006	152,535 <sup>2</sup>	23,034 <sup>2</sup>	3,627 <sup>2</sup>	179,196 <sup>2</sup>	2,905 <sup>2</sup>	182,134 <sup>2</sup>

1. Logs are defined as the stem of a tree after it has been felled; the raw material from which lumber, plywood, and other wood products are processed. Bolts are defined as raw material used in the manufacture of shingles and shakes; short logs to be sawn for lumber or peeled for veneer.

2. Estimated by provincial or territorial forestry agency.

3. Estimated by the Canadian Forest Service or by Statistics Canada.

**Source(s):** Canadian Council of Forest Ministers, 2009, *Forest Products - National Tables*, [http://nfdp.ccfm.org/products/national\\_e.php](http://nfdp.ccfm.org/products/national_e.php) (accessed March 4, 2009). Natural Resources Canada, 2009, special tabulation.

**Table 3.27**  
**Volume of roundwood harvested by province and territory**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
thousands of cubic metres							
1980	155,624 <sup>r</sup>	2,795 <sup>r</sup>	381	4,686	8,387	31,686	21,322
1981	144,736 <sup>r</sup>	2,568	371 <sup>r</sup>	4,112	7,795	34,234	22,808
1982	127,202 <sup>r</sup>	2,379	357 <sup>r</sup>	3,105	6,320	29,133	19,778
1983	155,983 <sup>r</sup>	2,429	381 <sup>r</sup>	2,596	7,442	36,288	23,736
1984	167,824 <sup>r</sup>	2,889	400 <sup>r</sup>	3,894	8,378	36,519	28,130
1985	168,722 <sup>r</sup>	2,509	411 <sup>r</sup>	3,515	7,896	35,400	28,225
1986	177,190 <sup>r</sup>	2,408	424 <sup>r</sup>	4,004	8,720	38,127	30,186
1987	191,685	2,524	480	4,789	7,869	39,503	29,692
1988	190,616 <sup>r</sup>	2,513	476 <sup>r</sup>	5,039	9,199	39,381	29,338
1989	188,254 <sup>r</sup>	2,535	416 <sup>r</sup>	4,772	9,281	36,192	29,642
1990	162,567 <sup>r</sup>	2,876 <sup>2</sup>	448 <sup>r</sup>	4,639 <sup>2</sup>	8,824 <sup>2</sup>	30,148 <sup>2</sup>	25,420 <sup>2</sup>
1991	160,880 <sup>r</sup>	2,680	452 <sup>r</sup>	4,348	8,643	28,943 <sup>2</sup>	23,829 <sup>3</sup>
1992	170,131 <sup>r</sup>	2,821 <sup>2</sup>	510 <sup>2</sup>	4,248 <sup>2</sup>	9,205	31,001 <sup>r</sup>	24,286 <sup>3</sup>
1993	175,999 <sup>r</sup>	3,131 <sup>2</sup>	534 <sup>2</sup>	4,585 <sup>2</sup>	8,959	34,091 <sup>2</sup>	25,432 <sup>3</sup>
1994	183,261 <sup>2</sup>	2,445	519 <sup>2</sup>	5,106 <sup>2</sup>	9,269	38,231 <sup>2</sup>	25,952 <sup>3</sup>
1995	188,497 <sup>r</sup>	2,983	638	5,483 <sup>2</sup>	10,055	41,438 <sup>2</sup>	26,260 <sup>3</sup>
1996	183,375 <sup>r</sup>	2,742 <sup>2</sup>	557 <sup>3</sup>	6,012 <sup>2</sup>	10,902 <sup>3</sup>	38,267 <sup>2</sup>	25,871 <sup>3</sup>
1997	188,750 <sup>r</sup>	2,558 <sup>2</sup>	514 <sup>r</sup>	6,989 <sup>2</sup>	11,253 <sup>3</sup>	42,543 <sup>2</sup>	26,595 <sup>3</sup>
1998	176,957 <sup>r</sup>	2,398 <sup>2</sup>	520	5,903 <sup>r</sup>	11,534 <sup>2</sup>	43,427 <sup>2</sup>	24,126 <sup>2</sup>
1999	198,258 <sup>r</sup>	2,720 <sup>2</sup>	693	6,164	11,294	45,646 <sup>2</sup>	24,814 <sup>2</sup>
2000	201,843 <sup>r</sup>	2,868 <sup>2</sup>	716 <sup>2</sup>	6,470 <sup>r</sup>	11,872	43,485 <sup>2</sup>	28,118 <sup>2</sup>
2001	185,854 <sup>r</sup>	2,556 <sup>2</sup>	626 <sup>2</sup>	6,182 <sup>r</sup>	10,186	40,579 <sup>2</sup>	24,099 <sup>2</sup>
2002	196,128 <sup>2</sup>	2,561 <sup>2</sup>	635 <sup>2</sup>	6,066	9,989	41,525 <sup>2</sup>	26,327 <sup>2</sup>
2003	181,054 <sup>r</sup>	2,289 <sup>2</sup>	650 <sup>2</sup>	6,085	10,788	40,247 <sup>r</sup>	24,347 <sup>2</sup>
2004	207,919 <sup>r</sup>	2,327 <sup>2</sup>	657 <sup>2</sup>	6,889	11,004	43,126 <sup>r</sup>	25,147 <sup>2</sup>
2005	203,325 <sup>r</sup>	2,400 <sup>2</sup>	569 <sup>2</sup>	6,249	9,968	38,464 <sup>r</sup>	23,371 <sup>2</sup>
2006	182,134 <sup>2</sup>	2,050 <sup>2</sup>	602 <sup>2</sup>	5,209	10,451	33,575 <sup>2</sup>	18,855
2007	..	2,050 <sup>2</sup>	570 <sup>2</sup>	5,249	10,447 <sup>2</sup>	..	14,725

	Canada	Manitoba	Saskat- chewan	Alberta	British Columbia	Yukon	Northwest Territories <sup>1</sup>
thousands of cubic metres							
1980	155,624 <sup>r</sup>	2,335	3,330	5,933	74,654	115	..
1981	144,736 <sup>r</sup>	1,803	3,555	6,586	60,780	124	..
1982	127,202 <sup>r</sup>	1,498	2,526	5,714	56,231	161	..
1983	155,983 <sup>r</sup>	1,520	2,612	7,344	71,443	192	..
1984	167,824 <sup>r</sup>	1,698	2,726	8,457	74,556	177	..
1985	168,722 <sup>r</sup>	1,717	3,016	8,979	76,868	186	..
1986	177,190 <sup>r</sup>	1,703	3,529	10,387	77,503	199	..
1987	191,685	1,887	3,666	10,496	90,591	188	..
1988	190,616 <sup>r</sup>	1,883	3,818	11,990	86,807	172	..
1989	188,254 <sup>r</sup>	1,848	3,685	12,293	87,414	176	..
1990	162,567 <sup>r</sup>	1,563 <sup>2</sup>	2,758 <sup>2</sup>	11,911	73,861	82	38
1991	160,880 <sup>r</sup>	1,278	2,957 <sup>2</sup>	12,926 <sup>2</sup>	74,706	79	40
1992	170,131 <sup>r</sup>	1,598	3,081 <sup>2</sup>	14,594 <sup>2</sup>	78,579	162	46
1993	175,999 <sup>r</sup>	1,539	4,433 <sup>r</sup>	14,897	78,004	193	203
1994	183,261 <sup>2</sup>	1,786	4,468	19,790	75,093	421	181
1995	188,497 <sup>r</sup>	1,987	4,258	20,287	74,622 <sup>3</sup>	357 <sup>r</sup>	127 <sup>2</sup>
1996	183,375 <sup>r</sup>	2,148	4,126	20,037	72,252 <sup>3</sup>	254 <sup>r</sup>	207 <sup>2</sup>
1997	188,750 <sup>r</sup>	2,183	4,205	22,217	69,298 <sup>3</sup>	253 <sup>r</sup>	143
1998	176,957 <sup>r</sup>	2,328	3,348	17,172	65,938 <sup>2</sup>	110 <sup>r</sup>	154
1999	198,258 <sup>r</sup>	2,171	3,882	23,729	76,930	145 <sup>r</sup>	71
2000	201,843 <sup>r</sup>	2,188	4,197	23,418	78,457 <sup>r</sup>	33	20 <sup>2</sup>
2001	185,854 <sup>r</sup>	2,079	4,119	23,474	71,896	39	19 <sup>2</sup>
2002	196,128 <sup>2</sup>	2,106	4,309	24,673	77,864	42	30
2003	181,054 <sup>r</sup>	2,106 <sup>2</sup>	4,898	24,228	65,358	32	26
2004	207,919 <sup>r</sup>	2,106 <sup>2</sup>	6,103	23,510 <sup>2</sup>	86,998	26	26
2005	203,325 <sup>r</sup>	2,498	5,330	27,546	86,880	24	24 <sup>2</sup>
2006	182,134 <sup>2</sup>	2,511 <sup>2</sup>	3,502	25,277 <sup>p</sup>	80,060	19	24 <sup>2</sup>
2007	..	2,000 <sup>2</sup>	3,500 <sup>2</sup>	20,378 <sup>p</sup>	75,418	12	24 <sup>2</sup>

1. Includes Nunavut up to 1998. Figures not available for Nunavut from 1999 to 2007.

2. Estimated by provincial or territorial forestry agency.

3. Estimated by the Canadian Forest Service or by Statistics Canada.

**Source(s):** Canadian Council of Forest Ministers, 2009, *Forest Products - National Tables*, [http://nfdp.ccfm.org/products/national\\_e.php](http://nfdp.ccfm.org/products/national_e.php) (accessed March 4, 2009).

**Table 3.28**  
**Gross domestic product of forest products industries**

	Total gross domestic product	Forest products industries				Total	Share of total gross domestic product
		Forestry and logging	Sawmills and wood preservation	Other wood product manufacturing	Pulp, paper and paperboard mills		
millions of chained 2002 dollars						percent	
1999	974,405	5,302	5,951	2,191	8,046	21,490	2.21
2000	1,026,242	5,632	6,538	2,617	8,538	23,325	2.27
2001	1,040,943	5,676	6,018	2,643	7,737	22,074	2.12
2002	1,068,765	5,893	6,673	2,908	8,114	23,588	2.21
2003	1,091,378	5,756	6,607	2,970	8,060	23,393	2.14
2004	1,124,998	6,142	6,764	3,193	8,305	24,404	2.17
2005	1,155,681	6,080	7,327	2,945	8,267	24,619	2.13
2006	1,189,661	5,794	7,103	2,838	7,658	23,393	1.97
2007	1,219,327	5,160	6,279	2,746	7,299	21,484	1.76
2008	1,225,789	4,314	4,987	2,599	6,590	18,490	1.51

**Source(s):** Statistics Canada, CANSIM table 379-0027.

**Table 3.29**  
**Employment in forest products industries by province and territory**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
	persons						
1994	213,819	1,908	.	x	12,805	59,942	40,031
1995	214,688	2,116	.	x	13,722	62,321	39,881
1996	218,358	2,004	.	x	13,691	63,044	39,608
1997	225,356	2,305	.	x	14,237	66,734	43,000
1998	221,511	1,863	.	x	14,725	66,508	43,348
1999	228,248	1,639	.	x	14,636	67,666	44,379
2000	238,707	1,730	.	x	16,553	72,222	45,495
2001	222,917	1,715	.	x	15,671	68,070	45,521
2002	211,639	1,781	.	4,176	15,093	64,447	44,394
2003	211,817	x	.	4,015	x	67,261	42,555
2004	212,138	x	.	3,886	x	68,163	40,995
2005	203,348	x	.	3,495	x	65,933	38,725
2006	193,494	x	.	3,228	10,591	62,852	37,077
2007	182,242	x	.	x	x	57,712	33,190
2008	162,376	x	.	x	x	52,553	28,159
	Manitoba	Saskat- chewan	Alberta	British Columbia	Yukon	Northwest Territories (including Nunavut)	
	persons						
1994	2,235	x	10,144	74,324	.	.	
1995	2,304	x	10,918	71,274	.	.	
1996	2,247	x	12,391	73,087	.	.	
1997	2,409	x	12,759	70,836	.	.	
1998	2,744	x	13,518	65,662	.	.	
1999	2,958	x	14,395	69,431	.	.	
2000	3,385	x	13,452	72,531	.	.	
2001	4,451	x	13,469	61,843	.	.	
2002	x	1,890	13,005	57,267	.	.	
2003	x	1,725	12,502	58,421	.	.	
2004	x	1,811	13,652	59,305	.	.	
2005	x	1,825	14,293	56,663	.	.	
2006	x	1,652	15,139	53,636	.	.	
2007	x	x	15,075	53,025	.	.	
2008	x	1,339	13,705	46,707	.	.	

**Note(s):** Includes the following industries: forestry and logging; pulp, paper and paperboard mills; sawmills and wood preservation; and other wood product manufacturing. Data do not add up to Canada total because of unavailable data for some provinces or territories.

**Source(s):** Statistics Canada, CANSIM table 281-0024.

**Table 3.30**  
**Export of forest products**

	Other crude wood products	Lumber	Other wood fabricated materials	Wood pulp and similar pulp	Newsprint paper	Other paper and paperboard	Total	Total as a share of Canadian exports
	millions of dollars							percent
1989	438.3	5,590.6	1,060.4	6,940.8	6,507.1	1,753.2	22,290.4	16.1
1990	328.2	5,463.0	1,085.3	6,122.5	6,462.5	2,217.4	21,678.9	14.6
1991	283.0	5,225.5	965.8	4,937.5	6,499.1	2,215.0	20,125.9	13.8
1992	371.5	6,606.9	1,367.8	5,068.6	6,317.3	2,525.8	22,257.9	13.7
1993	389.3	9,514.8	1,787.3	4,640.9	6,656.8	2,812.5	25,801.6	13.8
1994	317.3	11,460.3	2,324.4	6,755.4	6,968.5	3,443.5	31,269.4	13.9
1995	339.2	10,966.3	2,735.0	10,938.3	9,480.1	4,785.1	39,244.0	15.0
1996	339.0	12,591.3	2,973.0	6,922.5	8,849.6	4,441.1	36,116.5	13.1
1997	324.7	13,080.7	3,486.9	6,917.4	7,958.3	4,711.1	36,479.1	12.2
1998	417.2	11,755.1	4,548.9	6,717.8	8,094.0	5,432.4	36,965.4	11.6
1999	528.9	13,413.9	5,965.1	7,468.0	8,254.7	5,780.9	41,411.5	11.7
2000	668.3	12,285.6	5,603.4	9,906.2	8,984.2	6,387.6	43,835.3	10.6
2001	667.8	11,703.3	5,384.5	7,356.0	9,294.5	6,356.1	40,762.2	10.1
2002	812.6	11,006.2	5,657.4	7,003.3	8,318.9	5,705.4	38,503.8	9.7
2003	701.9	9,070.3	6,363.2	6,878.2	7,360.5	4,961.6	35,335.7	9.3
2004	648.8	11,673.2	7,942.6	7,210.3	7,364.7	5,296.3	40,135.9	9.7
2005	759.5	10,567.5	7,261.9	6,328.3	7,471.9	5,099.0	37,488.1	8.6
2006	714.5	9,323.6	5,885.3	6,504.9	6,846.3	4,718.7	33,993.3	7.7
2007	578.7	7,479.3	4,160.8	7,116.7	5,975.0	4,345.2	29,655.7	6.6
2008	471.2	5,370.3	2,850.2	6,989.2	6,399.7	4,256.1	26,336.7	5.4

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM table 228-0003.

**Table 3.31**  
**Gross domestic product of mining and oil and gas extraction industries**

	Total gross domestic product	Mining and oil and gas extraction industries					Total	Share of total gross domestic product
		Oil and gas extraction	Coal mining	Metal ore mining	Non-metallic mineral mining and quarrying	Support activities for mining and oil and gas extraction		
	millions of chained 2002 dollars						percent	
1999	974,405	37,926	1,118	4,285	3,122	3,665	50,116	5.14
2000	1,026,242	37,850	1,185	4,567	3,057	4,825	51,484	5.02
2001	1,040,943	37,188	1,321	4,301	3,276	5,274	51,360	4.93
2002	1,068,765	39,943	1,057	4,113	3,388	4,987	53,488	5.00
2003	1,091,378	40,618	794	4,003	4,091	5,571	55,077	5.05
2004	1,124,998	40,860	993	3,845	4,379	5,883	55,960	4.97
2005	1,155,681	40,440	1,028	3,850	4,313	6,745	56,376	4.88
2006	1,189,661	41,360	931	3,889	4,075	6,933	57,188	4.81
2007	1,219,327	42,009	1,020	3,882	4,800	5,893	57,604	4.72
2008	1,225,789	39,994	1,016	3,860	4,760	6,320	55,949	4.56

**Source(s):** Statistics Canada, CANSIM table 379-0027.

**Table 3.32**  
**Employment in mining and oil and gas extraction industries by province and territory**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
	persons						
1994	135,304	.	.	.	2,966	13,052	21,413
1995	132,204	.	.	.	3,544	12,311	22,785
1996	128,240	.	.	.	3,606	11,872	22,723
1997	138,972	.	.	.	3,520	14,090	22,690
1998	138,040	.	.	.	3,373	14,066	20,066
1999	132,392	.	.	.	3,637	13,908	19,618
2000	136,269	.	.	.	3,840	14,064	18,872
2001	138,835	.	.	.	3,457	11,143	18,428
2002	141,115	.	.	.	2,890	11,839	17,184
2003	148,522	.	.	.	x	12,257	17,256
2004	153,614	.	.	.	x	11,720	18,975
2005	162,488	.	.	.	x	11,635	19,338
2006	180,993	.	.	.	x	12,097	20,416
2007	192,237	.	.	.	x	13,206	23,222
2008	202,225	.	.	.	x	13,937	28,597
	Manitoba	Saskat- chewan	Alberta	British Columbia	Yukon	Northwest Territories (including Nunavut)	
	persons						
1994	3,766	8,527	63,907	12,297	.	.	
1995	3,442	9,992	58,743	13,061	.	.	
1996	2,927	10,124	57,110	11,862	.	.	
1997	3,762	10,910	63,173	12,781	.	.	
1998	3,657	10,539	65,936	13,010	.	.	
1999	2,854	10,254	63,813	10,665	.	.	
2000	3,190	11,153	66,960	10,618	.	.	
2001	2,719	10,637	74,503	10,537	.	.	
2002	2,303	8,454	80,066	10,588	.	.	
2003	x	9,007	86,275	10,570	.	.	
2004	x	9,719	89,540	11,669	.	.	
2005	1,965	11,030	95,300	13,281	.	.	
2006	x	12,785	107,539	14,817	.	.	
2007	x	13,480	111,054	16,235	.	.	
2008	x	15,357	111,179	18,264	.	.	

**Note(s):** Data do not add up to Canada total because of unavailable data for some provinces or territories.

**Source(s):** Statistics Canada, CANSIM table 281-0024.

Table 3.33

**Gross domestic product of petroleum and coal products and selected primary metal manufacturing**

	Total gross domestic product	Petroleum and coal products and selected primary metal manufacturing					Total	Share of total gross domestic product
		Petroleum and coal products manufacturing	Iron and steel mills and ferro-alloy manufacturing	Alumina and aluminum production and processing	Non-ferrous metal (except aluminum) production and processing			
	millions of chained 2002 dollars							percent
1999	974,405	3,049	3,071	2,561	1,763	10,444		1.07
2000	1,026,242	3,056	3,238	3,143	1,867	11,304		1.10
2001	1,040,943	3,423	2,679	3,231	2,196	11,528		1.11
2002	1,068,765	3,477	3,170	3,389	1,963	11,999		1.12
2003	1,091,378	3,477	2,932	3,283	1,845	11,537		1.06
2004	1,124,998	3,432	2,882	3,742	2,085	12,141		1.08
2005	1,155,681	3,297	2,942	4,027	1,976	12,242		1.06
2006	1,189,661	3,338	3,010	4,245	2,035	12,628		1.06
2007	1,219,327	3,339	3,096	4,217	1,988	12,640		1.04
2008	1,225,789	3,247	3,061	4,185	1,863	12,357		1.01

**Source(s):** Statistics Canada, CANSIM table 379-0027.

Table 3.34

Production of selected minerals and fuels by province and territory, 2007<sup>P</sup>

	Total metallic minerals	Selected metallic minerals					
		Copper	Gold	Iron ore	Nickel	Silver	Zinc
millions of dollars							
Canada	26,344.87	4,533.19	2,376.92	2,512.05	9,902.18	380.65	2,087.90
Newfoundland and Labrador	4,971.83	476.52	6.36	1,401.71	2,943.87	8.38	55.99
Prince Edward Island	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nova Scotia	0.00	0.00	0.00	0.00	0.00	0.00	0.00
New Brunswick	1,231.30	69.94	5.46	0.00	0.00	87.40	872.22
Quebec	3,935.99	167.29	649.16	x	994.57	85.68	374.16
Ontario	8,182.31	1,403.12	1,258.60	0.00	4,605.87	61.11	300.03
Manitoba	2,359.84	435.97	88.72	0.00	1,357.88	18.42	377.10
Saskatchewan	2,555.72	0.00	33.01	0.00	0.00	0.03	0.00
Alberta	1.25	0.00	1.25	0.00	0.00	0.00	0.00
British Columbia	2,987.34	1,980.34	287.17	x	0.00	119.40	108.40
Yukon	47.42	0.00	47.19	0.00	0.00	0.23	0.00
Northwest Territories	71.88	0.00	0.00	0.00	0.00	0.00	0.00
Nunavut	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total non-metallic minerals	Selected non-metallic minerals		Total fuels	Selected fuels		
		Potash <sup>1</sup>	Sand and gravel <sup>2</sup>		Coal	Crude petroleum	Natural gas <sup>3</sup>
millions of dollars							
Canada	11,269.53	3,142.35	1,316.48	109,020.20	2,760.98	57,001.1	52,019.07
Newfoundland and Labrador	47.81	0.00	9.06	10,231.90	0.00	10,231.9	0.00
Prince Edward Island	4.09	0.00	x	0.00	0.00	0.0	0.00
Nova Scotia	x	0.00	x	1,438.63	x	343.7	1,094.94
New Brunswick	x	x	12.95	0.00	x	0.0	0.00
Quebec	1,579.79	0.00	79.18	0.00	0.00	0.0	0.00
Ontario	2,492.81	0.00	490.43	112.52	0.00	51.5	61.06
Manitoba	133.62	0.00	50.67	618.71	0.00	618.7	0.00
Saskatchewan	x	x	35.51	9,690.01	x	8,106.3	1,583.66
Alberta	x	0.00	405.80	78,794.89	x	36,438.2	42,356.71
British Columbia	719.62	0.00	198.82	7,573.64	1,964.63	757.8	6,815.85
Yukon	5.76	0.00	5.76	15.79	0.00	0.0	15.79
Northwest Territories	1,421.01	0.00	4.44	544.07	0.00	453.0	91.06
Nunavut	32.43	0.00	0.00	0.00	0.00	0.0	0.00

1. Shipments of potash to Canadian potassium sulphate plants are not included in this table.

2. Mineral production of sand and gravel for Nunavut is included in Northwest Territories.

3. Includes natural gas by-products.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, Manufacturing and Energy Division, 2008, *Canada's Mineral Production, Preliminary Estimates, 2007*, Catalogue no. 26-202-X.  
Statistics Canada, Manufacturing and Energy Division, 2009, special tabulation.



**Table 3.35**  
**Reserves of selected major metals**

	Copper	Nickel	Lead	Zinc	Gold	Silver
	thousands of tonnes					
1977	16,471	7,070	8,954	26,953	0.5	31.0
1978	15,840	7,245	8,930	26,721	0.5	31.0
1979	16,405	7,304	8,992	26,581	0.6	32.1
1980	16,831	8,013	9,637	27,742	0.8	33.8
1981	15,815	7,581	9,380	26,833	0.9	32.1
1982	17,022	7,339	9,139	26,216	0.8	31.2
1983	16,170	7,340	9,054	26,450	1.2	30.2
1984	15,970	7,222	8,887	26,204	1.2	31.5
1985	14,384	7,047	8,012	23,747	1.3	28.8
1986	13,331	6,704	7,167	22,423	1.5	26.7
1987	12,939	6,606	6,694	20,636	1.7	25.6
1988	12,683	6,279	6,969	21,116	1.9	27.0
1989	12,258	6,133	6,941	21,688	1.7	26.8
1990	11,203	5,792	6,317	20,091	1.5	23.2
1991	11,115	5,691	4,956	16,448	1.4	19.1
1992	10,818	5,605	4,348	15,067	1.4	16.3
1993	9,784	5,408	4,152	14,213	1.3	15.7
1994	9,533	5,334	3,861	14,514	1.5	19.1
1995	9,250	5,832	3,660	14,712	1.5	19.1
1996	9,667	5,623	3,450	13,660	1.7	18.9
1997	9,032	5,122	2,344	10,588	1.5	16.7
1998	8,402	5,683	1,845	10,159	1.4	15.7
1999	7,763	4,983	1,586	10,210	1.3	15.4
2000	7,419	4,782	1,315	8,896	1.1	13.9
2001	6,666	4,335	970	7,808	1.1	12.6
2002	6,774	4,920	872	6,871	1.0	11.2
2003	6,037	4,303	749	6,251	1.0	9.2
2004	5,546	3,846	667	5,299	0.8	6.6
2005	6,589	3,960	552	5,063	1.0	6.7
2006	6,923	3,940	737	6,055	1.0	6.9

**Source(s):** Statistics Canada, CANSIM tables 153-0020, 153-0021, 153-0023, 153-0025, 153-0027 and 153-0028.

**Table 3.36**  
**Annual production of metals and non-fuel minerals**

	Copper	Nickel	Lead	Zinc	Iron ore	Gold	Potash	Salt	Gypsum
	thousands of tonnes								
1951	245	125	144	309	4,246	0.14	..	875	3,450
1952	234	127	153	337	4,783	0.14	..	882	3,255
1953	230	130	176	364	5,906	0.13	..	866	3,483
1954	274	146	198	342	6,678	0.14	..	880	3,584
1955	296	159	184	393	14,772	0.14	..	1,129	4,234
1956	322	162	171	384	20,274	0.14	..	1,443	4,440
1957	326	170	165	375	20,205	0.14	..	1,607	4,151
1958	313	126	169	386	14,267	0.14	..	2,155	3,596
1959	358	169	169	359	22,215	0.14	..	2,985	5,335
1960	398	195	186	369	19,550	0.14	..	3,007	4,722
1961	398	211	209	377	18,469	0.14	..	2,945	4,478
1962	415	211	195	420	24,820	0.13	..	3,301	4,836
1963	416	200	184	424	27,300	0.12	..	3,377	5,409
1964	444	207	185	611	34,857	0.12	..	3,618	5,770
1965	462	242	268	747	36,181	0.11	1,335	4,159	5,718
1966	461	203	276	872	36,914	0.10	1,979	3,746	5,421
1967	547	224	285	994	37,788	0.09	2,389	4,532	4,549
1968	574	240	309	1,052	43,040	0.09	2,576	4,413	5,378
1969	520	194	289	1,096	36,337	0.08	3,161	4,199	5,782
1970	610	278	353	1,136	47,458	0.07	3,108	4,919	5,733
1971	654	267	368	1,134	42,957	0.07	3,558	5,061	6,081
1972	720	235	335	1,129	38,736	0.06	3,495	4,902	7,349
1973	824	249	342	1,227	47,498	0.06	4,454	5,047	7,610
1974	821	269	294	1,127	46,784	0.05	5,776	5,447	7,226
1975	720	240	315	1,004	44,742	0.05	4,726	5,123	5,746
1976	731	241	256	982	55,416	0.05	5,215	5,994	6,003
1977	759	232	281	1,071	53,621	0.05	5,764	6,039	7,231
1978	659	128	320	1,067	42,931	0.05	6,344	6,452	8,074
1979	636	126	311	1,100	59,617	0.05	7,074	6,881	8,099
1980	710	188	280	920	50,224	0.05	7,225	7,226	7,285
1981	691	160	268	911	49,551	0.05	6,549	7,239	7,025
1982	612	89	272	966	33,198	0.06	5,309	7,930	5,986
1983	653	125	272	988	32,959	0.07	6,294	8,602	7,507
1984	722	174	264	1,063	39,930	0.08	7,527	10,235	7,775
1985	739	170	268	1,049	39,502	0.09	6,661	10,085	7,761
1986	699	164	334	988	36,167	0.10	6,753	10,740	8,802
1987	794	189	373	1,158	37,804	0.12	7,668	10,129	9,095
1988	758	199	351	1,370	39,934	0.13	8,154	10,687	9,513
1989	704	196	269	1,273	39,445	0.16	7,014	11,158	8,195
1990	771	195	233	1,179	35,670	0.17	7,345	11,191	7,977
1991	780	188	248	1,083	35,917	0.18	7,087	11,871	6,729
1992	762	178	340	1,196	32,137	0.16	7,040	11,088	7,293
1993	711	178	183	991	33,774	0.15	6,880	10,993	7,564
1994	591	142	168	976	36,728	0.15	8,517	12,244	8,586
1995	701	172	204	1,095	37,024	0.15	8,855	10,957	8,055
1996	652	182	242	1,163	34,709	0.16	8,120	12,248	8,201
1997	648	181	171	1,027	39,293	0.17	9,235	13,497	8,628
1998	691	198	150	992	36,847	0.16	8,884	13,034	8,307
1999	582	177	155	963	33,990	0.16	8,475	12,686	9,347
2000	622	181	143	936	35,247	0.15	9,033	12,164	8,572
2001	614	184	150	1,012	27,119	0.16	8,237	13,725	7,820
2002	584	180	101	924	30,902	0.15	8,361	12,736	8,810
2003	541	155	93	757	33,322	0.14	9,229	13,718	8,380
2004	544	177	73	734	28,596	0.13	10,332	14,096	9,204
2005	577	193	73	619	30,386	0.12	10,140	13,463	8,569
2006	586	225	79	601	33,543	0.10	8,518	14,460	9,036
2007	577	244	70	594	32,774	0.10	11,085	11,970	7,562
2008	583	250	69	631	30,847	0.10	10,520	14,188	5,741

**Note(s):** Refers to the recoverable metal in concentrates shipped, with the exception of iron ore where the quantity of ore mined is the determining factor.  
**Source(s):** Statistics Canada, CANSIM tables 152-0001 and 152-0004.

**Table 3.37**  
**Primary energy consumption indicators**

	Population	Gross domestic product	Primary energy <sup>1</sup>	Energy consumption per capita	Energy consumption per dollar of real gross domestic product
	millions	millions of chained 2002 dollars	terajoules	gigajoule per person	megajoule per dollars chained 2002
1980	24,515,667	625,414	8,214,887	335.1	13.1
1981	24,819,915	647,323	7,862,627	316.8	12.1
1982	25,116,942	628,816	7,381,457	293.9	11.7
1983	25,366,451	645,906	7,299,903	287.8	11.3
1984	25,607,053	683,462	7,737,547	302.2	11.3
1985	25,842,116	716,132	7,908,762	306.0	11.0
1986	26,100,278	733,468	7,834,444	300.2	10.7
1987	26,446,601	764,664	8,122,249	307.1	10.6
1988	26,791,747	802,702	8,660,052	323.2	10.8
1989	27,276,781	823,728	8,945,237	327.9	10.9
1990	27,691,138	825,318	9,229,938	333.3	11.2
1991	28,037,420	808,051	9,090,962	324.2	11.3
1992	28,371,264	815,123	9,176,260	323.4	11.3
1993	28,684,764	834,185	9,314,103	324.7	11.2
1994	29,000,663	874,261	9,564,313	329.8	10.9
1995	29,302,311	898,814	9,695,204	330.9	10.8
1996	29,610,218	913,364	10,097,156	341.0	11.1
1997	29,905,948	951,962	10,200,117	341.1	10.7
1998	30,155,173	990,968	10,194,873	338.1	10.3
1999	30,401,286	1,045,786	10,518,257	346.0	10.1
2000	30,685,730	1,100,515	10,830,985	353.0	9.8
2001	31,019,020	1,120,146	10,950,393	353.0	9.8
2002	31,353,656	1,152,905	11,163,501	356.1	9.7
2003	31,639,670	1,174,592	11,478,526	362.8	9.8
2004	31,940,676	1,211,239	11,527,500	360.9	9.5
2005	32,245,209	1,246,064	11,307,113	350.7	9.1
2006	32,576,074	1,284,819	11,176,879	343.1	8.7
2007	32,927,372	1,319,681	11,654,755	354.0	8.8

1. Defined as the amount that was available for use in the Canadian economy. Includes the use of energy resources for non-energy purposes (for example, petrochemical feedstocks in fertilizer production). Excludes the use of wood and wastes as energy sources.

**Source(s):** Statistics Canada, CANSIM tables 051-0001, 128-0002, 128-0009 and 380-0017.

**Table 3.38**  
**Production and consumption of primary energy resources**

	Total coal		Crude oil		Natural gas <sup>1</sup>		Electricity <sup>2</sup>		Total	
	Production	Availability	Production	Availability	Production	Availability	Production	Availability	Production	Availability
	terajoules									
1980	891,070	928,409	3,444,041	4,216,120	3,180,730	2,116,374	1,052,072	953,991	8,567,913	8,214,894
1981	969,542	947,942	3,093,450	3,911,507	3,080,003	2,010,520	1,114,624	992,669	8,257,619	7,862,638
1982	1,028,279	1,001,681	3,052,121	3,359,122	3,163,161	2,040,386	1,093,191	980,277	8,336,752	7,381,466
1983	1,066,011	1,048,015	3,232,271	3,201,037	2,980,532	2,027,274	1,150,257	1,020,347	8,429,071	7,296,673
1984	1,396,400	1,167,377	3,430,899	3,183,745	3,311,332	2,292,108	1,235,057	1,094,325	9,373,688	7,737,555
1985	1,487,132	1,122,086	3,516,525	3,085,568	3,622,687	2,532,461	1,313,821	1,168,658	9,940,165	7,908,773
1986	1,382,118	1,039,979	3,531,205	3,055,190	3,458,952	2,480,595	1,381,010	1,258,688	9,753,285	7,834,452
1987	1,393,936	1,117,744	3,690,859	3,172,058	3,766,024	2,574,349	1,416,413	1,258,110	10,267,232	8,122,261
1988	1,614,195	1,200,307	3,877,941	3,359,461	4,313,054	2,809,862	1,390,669	1,290,430	11,195,859	8,660,060
1989	1,718,400	1,197,786	3,769,304	3,423,980	4,552,627	3,025,526	1,331,644	1,297,953	11,371,975	8,945,245
1990	1,673,101	1,136,171	3,765,187	3,874,090	4,574,109	2,899,032	1,321,912	1,320,656	11,334,309	9,229,949
1991	1,747,976	1,099,786	3,765,443	3,726,587	4,805,528	2,922,760	1,408,181	1,341,838	11,727,128	9,090,971
1992	1,553,530	1,120,353	3,931,692	3,615,091	5,298,028	3,116,689	1,414,322	1,324,135	12,197,572	9,176,268
1993	1,651,313	994,715	4,116,941	3,741,690	5,832,901	3,196,872	1,479,535	1,380,835	13,080,690	9,314,112
1994	1,735,269	1,054,689	4,299,874	3,808,804	6,331,888	3,312,684	1,546,239	1,388,145	13,913,270	9,564,322
1995	1,800,811	1,056,083	4,457,769	3,801,848	6,711,568	3,434,306	1,532,656	1,402,976	14,502,804	9,695,213
1996	1,832,286	1,099,131	4,590,726	3,984,463	6,932,462	3,563,509	1,585,629	1,450,067	14,941,103	10,097,170
1997	1,897,322	1,168,601	4,842,646	4,087,294	7,012,563	3,540,975	1,531,890	1,403,258	15,284,421	10,200,128
1998	1,651,482	1,287,709	5,021,730	4,090,494	7,269,299	3,488,847	1,426,237	1,327,829	15,368,748	10,194,879
1999	1,589,310	1,278,044	4,788,758	4,167,500	7,498,476	3,695,016	1,481,669	1,377,703	15,358,213	10,518,263
2000	1,509,905	1,330,940	4,999,607	4,251,781	7,734,303	3,852,022	1,524,557	1,396,249	15,768,372	10,830,992
2001	1,532,994	1,421,952	5,056,168	4,388,726	7,857,807	3,775,073	1,447,914	1,364,650	15,894,883	10,950,401
2002	1,429,897	1,322,247	5,359,627	4,454,025	7,876,101	3,955,247	1,505,333	1,431,988	16,170,958	11,163,507
2003	1,326,114	1,398,121	5,679,573	4,631,977	7,708,115	4,015,753	1,457,123	1,432,678	16,170,925	11,478,529
2004	1,415,738	1,252,140	5,869,418	4,762,714	7,746,364	4,029,335	1,522,225	1,483,313	16,553,745	11,527,502
2005	1,400,510	1,326,344	5,632,426	4,507,267	7,848,271	3,950,690	1,608,679	1,522,814	16,489,886	11,307,115
2006	1,419,137	1,299,187	5,905,079	4,435,526	7,891,561	3,911,296	1,599,675	1,530,872	16,815,452	11,176,881
2007	1,482,232	1,350,944	6,153,625	4,536,075	7,697,794	4,227,806	1,631,049	1,539,931	16,964,700	11,654,756

1. Includes natural gas liquids (ethane, butane, propane and pentanes plus).

2. Includes primary steam.

**Note(s):** Defined as the amount that was available for use in the Canadian economy. Includes the use of energy resources for non-energy purposes (for example, petrochemical feedstocks in fertilizer production). Excludes the use of wood and wastes as energy sources.

**Source(s):** Statistics Canada, CANSIM tables 128-0002 and 128-0009.

**Table 3.39**  
**Established energy resource reserves**

	Coal <sup>1</sup>		Crude oil		Crude bitumen		Natural gas <sup>2</sup>		Uranium	
	Reserves	Reserve life	Reserves	Reserve life	Reserves	Reserve life	Reserves	Reserve life	Reserves	Reserve life
	megatonnes	years	millions of cubic metres	years	millions of cubic metres	years	billions of cubic metres	years	kilotonnes	years
1976	4,310.7	169	1,014.6	14	150.7	40	1,738.1	26	405	74
1977	4,117.0	144	969.1	13	111.2	33	1,790.2	25	415	72
1978	4,092.6	134	942.7	13	321.5	68	1,911.2	25	438	53
1979	4,021.8	121	903.3	11	353.1	48	1,977.0	24	468	72
1980	4,192.5	114	860.7	11	333.9	32	2,028.3	28	444	66
1981	4,159.9	104	827.8	12	325.0	37	2,084.8	27	340	45
1982	5,704.0	133	780.6	12	315.6	34	2,147.7	31	376	49
1983	5,981.0	134	792.4	12	310.4	18	2,125.9	29	333	49
1984	6,120.6	107	776.3	11	328.8	28	2,106.1	27	260	25
1985	6,011.8	99	790.5	11	343.4	22	2,079.8	25	263	25
1986	6,338.9	110	774.6	11	574.4	30	2,032.1	26	265	23
1987	6,583.5	108	753.6	11	572.5	28	1,955.3	25	258	19
1988	6,542.3	93	739.2	10	566.5	26	1,931.2	19	248	21
1989	6,472.6	92	707.8	10	542.2	23	1,957.1	19	249	23
1990	6,580.7	96	657.3	10	524.0	23	1,978.6	18	295	30
1991	6,545.2	92	614.9	9	501.7	22	1,965.2	20	305	37
1992	6,522.1	99	590.4	8	482.2	20	1,929.1	15	309	34
1993	6,449.4	93	582.2	7	457.6	19	1,859.9	13	313	36
1994	6,372.2	88	544.5	7	565.0	24	1,832.7	13	300	27
1995	6,293.4	84	553.0	7	574.0	20	1,840.9	12	484	47
1996	6,210.7	82	526.7	7	660.8	24	1,725.9	11	430	38
1997	6,132.0	78	532.2	7	614.0	19	1,620.4	10	419	38
1998	6,056.9	81	673.5	8	1,336.0	35	1,562.2	10	433	43
1999	5,502.1	76	642.5	8	1,891.1	53	1,526.8	9	417	41
2000	4,722.8	68	667.3	8	1,860.0	48	1,614.5	9	437	44
2001	4,555.3	67	644.7	8	1,830.0	44	1,547.8	9	452	35
2002	4,485.3	66	606.1	7	1,840.0	38	1,529.6	9	439	34
2003	4,406.4	71	590.0	7	1,720.0	31	1,469.5	9	429	43
2004	4,666.3	66	603.8	8	1,660.0	26	1,497.5	9	444	39
2005	4,560.4	68	752.3	10	1,620.0	28	1,553.7	9	431	34
2006	4,468.8	68	712.6	9	3,340.0	51	1,577.7	9	423	43
2007	4,395.1	63	722.8	9	3,500.0	50	1,534.0	9	482	53

1. Includes bituminous, sub-bituminous and lignite coal.

2. Includes natural gas liquids (ethane, butane, propane and pentanes plus).

**Source(s):** Statistics Canada, CANSIM tables 153-0012, 153-0013, 153-0014, 153-0017, 153-0018 and 153-0019. Statistics Canada, Environment Accounts and Statistics Division, 2009, special tabulation.

**Table 3.40**  
**Installed generating capacity and generation of electric energy by province and territory, 2006**

	Installed generating capacity				
	Total	Hydro	Thermal <sup>1</sup>	Nuclear	Wind and tidal
	megawatts				
<b>Canada</b>	<b>123,792</b>	<b>72,661</b>	<b>36,324</b>	<b>13,345</b>	<b>1,463</b>
Newfoundland and Labrador	7,494	6,777	717	0	0
Prince Edward Island	171	0	158	0	14
Nova Scotia	2,463	404	2,006	0	53
New Brunswick	4,549	936	2,933	680	0
Quebec	40,219	36,686	2,536	675	322
Ontario	32,521	8,349	11,769	11,990	414
Manitoba	5,629	5,024	501	0	104
Saskatchewan	3,879	855	2,853	0	171
Alberta	11,736	924	10,427	0	385
British Columbia	14,828	12,598	2,230	0	0
Yukon	108	77	30	0	1
Northwest Territories	142	31	111	0	0
Nunavut	54	0	54	0	0
	Generation of electric energy				
	Total	Hydro	Thermal <sup>1</sup>	Nuclear	Wind and tidal
	megawatt hours				
<b>Canada</b>	<b>592,007,821</b>	<b>349,469,015</b>	<b>147,653,525</b>	<b>92,418,514</b>	<b>2,466,767</b>
Newfoundland and Labrador	42,768,071	41,709,866	1,058,205	0	0
Prince Edward Island	42,500	0	6,251	0	36,249
Nova Scotia	11,453,829	1,019,420	10,305,730	0	128,679
New Brunswick	18,204,620	3,730,625	10,107,532	4,366,463	0
Quebec	180,247,851	172,591,117	2,642,745	4,595,198	418,791
Ontario	158,023,212	36,032,893	38,388,999	83,456,853	144,467
Manitoba	34,479,065	33,650,538	503,412	0	325,115
Saskatchewan	19,665,130	4,031,938	15,060,990	0	572,202
Alberta	64,108,428	1,868,916	61,398,827	0	840,685
British Columbia	61,858,017	54,247,228	7,610,789	0	0
Yukon	359,031	334,608	23,844	0	579
Northwest Territories	653,358	251,866	401,492	0	0
Nunavut	144,709	0	144,709	0	0

1. Includes steam, internal combustion and combustion turbine.

**Source(s):** Statistics Canada, Manufacturing and Energy Division, 2008, *Electric Power Generation, Transmission and Distribution, 2006*, Catalogue no. 57-202-X.

**Table 3.41**  
**Hydro-electric power generation by province and territory**

	1996			2008		
	Total hydro generation	Overall total generation	Hydro as share of total	Total hydro generation	Overall total generation	Hydro as share of total
	megawatt hours		percent	megawatt hours		percent
<b>Canada</b>	<b>351,156,044</b>	<b>551,888,213</b>	<b>63.6</b>	<b>372,883,539</b>	<b>603,059,380</b>	<b>61.8</b>
Newfoundland and Labrador	35,335,636	36,816,509	96.0	41,733,865	43,161,902	96.7
Prince Edward Island	.	8,824	.	.	106,019	.
Nova Scotia	1,151,343	9,985,274	11.5	1,090,126	12,164,400	9.0
New Brunswick	3,472,200	15,367,673	22.6	3,489,092	14,156,182	24.6
Quebec	164,470,105	170,520,308	96.5	186,400,534	192,569,564	96.8
Ontario	41,268,967	146,584,844	28.2	39,892,188	159,530,002	25.0
Manitoba	30,865,154	31,172,371	99.0	34,588,507	35,144,419	98.4
Saskatchewan	4,385,764	16,512,150	26.6	4,029,843	18,955,933	21.3
Alberta	2,254,239	51,816,853	4.4	2,311,236	60,236,096	3.8
British Columbia	67,329,201	71,764,713	93.8	58,773,685	65,824,059	89.3
Yukon	361,175	499,962	72.2	345,872	369,934	93.5
Northwest Territories including Nunavut	262,260	838,732	31.3	..	..	..
Northwest Territories	..	..	..	228,591	685,607	33.3
Nunavut	..	..	..	0	155,263	0.0

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM tables 127-0001 and 127-0002.

**Table 3.42**  
**Energy consumed in thermal-electric power stations by fuel type**

	Coal					Fuel oil		Natural gas	Wood
	Canadian bituminous	Imported bituminous	Canadian sub-bituminous	Imported sub-bituminous	Lignite	Heavy	Light and diesel		
	terajoules								
1980	108,955	249,422	183,478	..	77,541	105,286	12,619	71,159	..
1981	123,737	261,758	196,493	..	83,624	70,106	11,105	51,057	..
1982	114,238	283,650	227,007	..	102,310	77,043	10,724	42,124	..
1983	126,315	279,586	254,165	..	121,137	45,627	9,559	33,454	..
1984	139,267	297,373	290,931	..	131,173	42,030	9,210	23,619	..
1985	145,449	227,090	317,016	..	134,416	47,958	9,104	23,259	..
1986	119,666	188,934	321,289	..	117,393	43,598	9,175	17,316	..
1987	151,508	229,026	340,572	..	142,376	75,702	9,987	20,619	..
1988	162,522	244,213	364,652	..	170,660	99,195	8,504	40,419	..
1989	163,602	245,290	369,774	..	155,005	154,053	12,136	102,753	..
1990	150,746	183,215	384,276	..	134,968	137,048	12,158	50,530	..
1991	170,019	212,996	430,106	..	131,390	112,131	11,813	41,525	..
1992	159,353	195,313	392,792	..	141,328	132,502	10,346	99,820	..
1993	141,190	118,909	436,468	..	144,378	93,734	11,104	126,992	..
1994	123,014	131,018	478,936	..	150,410	70,834	9,909	154,846	..
1995	122,419	146,541	477,598	..	153,209	79,934	11,088	149,890	..
1996	132,402	169,149	458,122	..	159,646	61,305	10,418	105,074	..
1997	112,114	216,821	475,008	22,193	169,137	99,336	8,691	154,899	..
1998	90,160	281,115	468,503	40,004	177,657	147,675	8,015	200,450	14,959
1999	84,148	300,861	445,127	63,881	170,501	119,554	7,782	204,930	17,112
2000	47,231	381,795	437,491	126,800	166,262	108,955	7,632	273,301	21,024
2001	51,580	351,178	450,912	140,385	169,140	127,541	8,172	333,946	27,293
2002	45,823	305,444	465,280	143,415	166,599	111,800	7,178	278,613	27,620
2003	40,062	309,723	463,203	139,640	167,154	137,307	8,540	241,835	25,365
2004	115,245	249,906	371,637	107,083	169,817	131,109	8,760	267,009	35,105
2005	70,588	252,126	408,500	141,568	160,482	112,317	8,743	307,598	27,125
2006	24,780	205,244	464,403	134,471	154,290	56,835	10,109	330,080	34,324

**Source(s):** Statistics Canada, Manufacturing and Energy Division, *Electric Power Generation, Transmission and Distribution*, Catalogue no. 57-202-X, various issues.



Table 3.43

## Net energy generation in thermal-electric power stations by fuel type

	Coal				Lignite	Fuel oil		Natural gas	Wood
	Canadian bituminous	Imported bituminous	Canadian sub-bituminous	Imported sub-bituminous		Heavy	Light and diesel		
terajoules									
1980	34,102	89,540	58,612	..	21,133	34,564	3,102	19,175	..
1981	36,693	92,867	62,547	..	22,972	22,451	3,256	13,097	..
1982	37,070	100,930	71,820	..	27,892	25,852	3,062	11,030	..
1983	40,109	100,592	80,439	..	33,222	14,658	2,791	8,615	..
1984 <sup>1</sup>	46,928	106,065	90,662	..	38,555	13,554	2,735	5,777	..
1985	48,576	80,331	98,869	..	38,025	15,419	2,710	5,773	..
1986 <sup>1</sup>	42,038	69,406	109,398	..	36,947	15,385	2,865	4,349	..
1987 <sup>1</sup>	53,808	84,830	116,663	..	45,297	27,065	2,995	5,649	..
1988 <sup>1</sup>	58,411	90,953	125,044	..	52,989	35,833	2,463	11,727	..
1989 <sup>1</sup>	58,285	91,097	123,637	..	48,603	54,493	3,913	32,494	..
1990 <sup>1</sup>	53,613	66,888	132,608	..	42,661	49,113	3,715	14,887	..
1991 <sup>1</sup>	57,684	74,519	139,965	..	40,808	39,965	3,434	12,327	..
1992 <sup>1</sup>	56,474	71,853	145,984	..	44,792	46,861	3,193	30,620	..
1993 <sup>1</sup>	50,148	42,944	150,070	..	46,265	33,537	3,541	42,180	..
1994	41,040	44,603	152,382	..	44,731	23,307	3,097	45,040	..
1995	41,244	49,124	152,976	..	45,861	26,223	3,895	52,634	..
1996	44,809	58,752	148,520	..	46,909	19,591	3,327	35,011	..
1997	38,510	76,698	153,122	7,745	49,155	33,222	2,724	54,897	..
1998	30,623	104,460	152,275	13,959	52,801	48,659	2,581	69,600	5,987
1999	28,498	107,224	145,601	22,418	49,652	39,708	2,367	72,474	6,055
2000	14,770	132,830	143,509	42,042	49,995	36,002	2,159	95,844	6,590
2001	16,727	115,049	146,051	40,027	50,929	42,052	2,398	114,738	7,313
2002	13,844	103,636	152,767	47,306	50,257	37,481	2,111	100,130	7,487
2003	11,545	102,218	148,987	48,595	54,613	45,977	2,624	85,489	7,613
2004	38,262	84,545	119,995	34,758	53,518	43,709	2,691	94,532	6,842
2005	22,696	85,370	133,213	46,676	50,056	36,827	2,680	110,699	6,412
2006	7,168	68,368	140,790	44,444	48,151	18,965	3,061	116,069	6,704

1. The years 1984 and 1986 to 1993 are gross generation, which means that station service was not deducted to calculate net generation.

**Source(s):** Statistics Canada, Manufacturing and Energy Division, *Electric Power Generation, Transmission and Distribution*, catalogue no. 57-202-X, various issues.

**Table 3.44**  
**Efficiency of thermal-electric power stations by fuel type**

	Coal				Lignite	Fuel oil		Natural gas	Wood
	Canadian bituminous	Imported bituminous	Canadian sub-bituminous	Imported sub-bituminous		Heavy	Light and diesel		
	percent								
1980	31	36	32	..	27	33	25	27	..
1981	30	35	32	..	27	32	29	26	..
1982	32	36	32	..	27	34	29	26	..
1983	32	36	32	..	27	32	29	26	..
1984	34	36	31	..	29	32	30	24	..
1985	33	35	31	..	28	32	30	25	..
1986	35	37	34	..	31	35	31	25	..
1987	36	37	34	..	32	36	30	27	..
1988	36	37	34	..	31	36	29	29	..
1989	36	37	33	..	31	35	32	32	..
1990	36	37	35	..	32	36	31	29	..
1991	34	35	33	..	31	36	29	30	..
1992	35	37	37	..	32	35	31	31	..
1993	36	36	34	..	32	36	32	33	..
1994	33	34	32	..	30	33	31	29	..
1995	34	34	32	..	30	33	35	35	..
1996	34	35	32	..	29	32	32	33	..
1997	34	35	32	35	29	33	31	35	..
1998	34	37	33	35	30	33	32	35	40
1999	34	36	33	35	29	33	30	35	35
2000	31	35	33	33	30	33	28	35	31
2001	32	33	32	29	30	33	29	34	27
2002	30	34	33	33	30	34	29	36	27
2003	29	33	32	35	33	33	31	35	30
2004	33	34	32	32	32	33	31	35	19
2005	32	34	33	33	31	33	31	36	24
2006	29	33	30	33	31	34	30	35	20

**Note(s):** Efficiency is the electrical energy output as a percentage of primary energy input.

**Source(s):** Statistics Canada, Manufacturing and Energy Division, *Electric Power Generation, Transmission and Distribution*, Catalogue no. 57-202-X, various issues.

**Table 3.45**  
**Top ten substances released to air, 2007**

	Releases	Share of total
	tonnes	percent
Sulphur dioxide	1,724,497.6	41.7
Carbon monoxide	999,918.4	24.2
Oxides of nitrogen (expressed as NO <sub>2</sub> )	830,996.2	20.1
Volatile organic compounds (VOCs)	264,704.7	6.4
Total particulate matter (TPM)	204,399.6	4.9
Ammonia (total) <sup>1</sup>	22,383.9	0.5
Methanol	15,150.2	0.4
Hydrochloric acid	8,424.4	0.2
Sulphuric acid	6,902.9	0.2
Total Reduced Sulphur (TRS)	5,557.1	0.1

1. Refers to the total of both ammonia (NH<sub>3</sub>) and ammonium ion (NH<sub>4</sub><sup>+</sup>) in solution.

**Source(s):** Environment Canada, Pollution Data Branch, 2008, *National Pollutant Release Inventory Databases*, [www.ec.gc.ca/pdb/npri/npri\\_prev\\_dat\\_e.cfm](http://www.ec.gc.ca/pdb/npri/npri_prev_dat_e.cfm) (accessed February 2, 2009).

**Table 3.46**  
**Criteria air contaminant emissions, 2006**

	Particulate matter			SO <sub>x</sub> <sup>4</sup>	NO <sub>x</sub> <sup>5</sup>	VOC <sup>6</sup>	CO
	Total <sup>1</sup>	PM <sub>10</sub> <sup>2</sup>	PM <sub>2.5</sub> <sup>3</sup>				
	tonnes						
Total	18,377,707.2	6,082,953.5	1,333,894.3	1,972,041.5	2,550,728.3	31,785,247.1	11,732,202.0
Industrial sources	515,433.0	194,273.0	112,851.0	1,354,880.0	765,475.0	751,641.0	1,475,046.0
Abrasives manufacture	15.4	13.0	5.8	0.0		32.6	4.9
Aluminum industry	10,332.9	6,071.3	4,746.3	68,242.1	1,888.3	1,110.0	330,549.3
Asbestos industry	54.8	18.8	7.2	183.7	69.1		27.6
Asphalt paving industry	45,729.1	7,403.9	2,609.5	26.2	12.1	7.1	926.4
Bakeries	0.6	0.6	0.6	0.2		7,469.4	
Cement and concrete industry	59,481.6	21,322.6	10,714.1	44,216.8	40,369.1	901.0	20,785.2
Chemicals industry	4,095.5	3,037.3	1,833.0	20,470.6	26,267.2	13,679.5	16,718.1
Mineral products industry	1,115.5	863.5	567.2	1,158.7	750.2	281.1	3,349.2
Foundries	5,650.2	5,330.4	4,882.6	11.2	90.2	597.8	48,315.7
Grain industries	48,690.4	12,119.1	2,484.2	385.0	1,075.1	2,503.8	370.9
Iron and steel industries	7,292.9	4,259.5	3,202.6	28,471.3	13,105.3	1,925.7	51,096.8
Iron ore mining industry	9,407.2	5,991.6	2,256.8	15,228.2	13,121.8	9.4	9,781.9
Mining and rock quarrying	193,368.3	37,220.4	12,337.6	5,504.1	16,590.4	2,743.8	40,400.4
Non-ferrous smelting and refining industry	9,300.6	6,728.0	3,968.7	665,583.4	6,570.6	79.3	19,297.1
Pulp and paper industry	25,666.9	17,920.0	12,649.7	59,566.8	37,930.8	17,515.3	75,081.3
Wood industry	65,695.5	42,726.3	32,022.9	2,823.4	13,796.1	71,070.4	342,212.1
Upstream petroleum industry	16,440.0	13,599.3	11,862.5	337,663.5	476,772.3	539,821.5	458,018.0
Downstream petroleum industry	5,556.2	4,426.0	2,947.1	91,614.4	37,066.1	41,065.2	34,097.1
Petroleum product transportation and distribution	249.5	243.8	243.8	1,904.5	47,405.2	333.3	14,185.4
Other industries	7,290.5	4,977.2	3,509.0	11,825.9	32,595.5	50,495.3	9,828.6
Non-industrial fuel combustion	151,321.4	127,907.2	120,100.0	506,307.9	302,739.9	165,735.5	779,639.8
Commercial fuel combustion	4,674.9	3,645.0	2,776.5	35,458.8	33,298.9	4,990.0	18,799.8
Electric power generation (utilities)	28,352.0	12,679.7	6,049.5	459,886.8	226,340.0	2,047.8	33,822.8
Residential fuel combustion	3,130.0	2,544.5	2,368.8	9,445.9	32,486.0	1,634.8	12,323.4
Residential fuel wood combustion	115,164.6	109,038.0	108,905.2	1,516.4	10,615.0	157,062.8	714,693.8
Transportation	73,701.0	73,193.6	66,133.1	107,536.6	1,230,789.6	572,214.4	6,964,413.6
Air transportation	1,019.4	1,019.4	994.9	4,632.4	66,551.7	10,517.0	60,227.1
Heavy-duty diesel vehicles	6,771.9	6,771.9	6,249.0	3,377.6	259,778.7	9,830.5	56,656.6
Heavy-duty gasoline trucks	377.0	366.0	306.6	80.3	25,027.9	8,303.7	124,755.1
Light-duty diesel trucks	456.6	456.6	421.0	228.3	4,696.4	2,016.0	3,647.9
Light-duty diesel vehicles	141.8	141.8	130.7	55.1	1,298.0	424.2	1,693.5
Light-duty gasoline trucks	709.5	688.9	564.1	666.2	108,942.8	118,003.8	2,080,494.7
Light-duty gasoline vehicles	506.5	491.7	452.2	623.6	98,497.5	116,472.6	1,919,886.3
Marine transportation	10,404.9	10,001.2	9,172.5	77,637.6	112,674.8	3,698.1	9,373.5
Motor cycles	24.2	23.5	16.3	3.1	1,529.3	3,595.6	19,255.9
Off-road use of diesel	35,738.6	35,738.6	34,570.3	14,938.1	392,726.9	39,889.9	203,810.2
Off-road use of gasoline/LPG/CNG	8,503.6	8,503.6	7,837.7	99.9	48,039.0	256,531.4	2,468,607.7
Rail transportation	3,995.3	3,995.3	3,675.7	5,194.5	111,026.5	2,931.7	16,005.2
Tire wear and brake lining	5,051.7	4,995.0	1,742.0				
Incineration	913.2	527.0	421.5	1,918.6	1,448.3	1,309.4	4,499.0
Crematorium	5.0	5.0	5.0	7.0	39.8	1.7	18.2
Industrial and commercial incineration	101.3	62.8	24.0	263.1	238.5	608.9	947.4
Municipal incineration	731.3	454.2	391.1	241.2	1,097.3	672.1	1,985.3
Other incineration and utilities	75.6	5.1	1.4	1,407.3	72.6	26.7	1,548.2
Miscellaneous	8,982.9	8,717.4	8,585.2	0.0	36.8	410,801.4	3,974.7
Cigarette smoking	520.5	520.5	520.5			8.7	2,462.8
Dry cleaning	0.6	0.6	0.6			332.2	
General solvent use						198,931.9	
Marine cargo handling industry	427.3	162.5	52.2				
Meat cooking	7,753.6	7,753.6	7,753.6				
Refined petroleum products retail						47,180.5	
Printing	10.1	9.4	7.5	0.1	36.8	37,766.4	7.4
Structural fires	270.8	270.8	250.8			275.8	1,504.6
Surface coatings						126,306.0	

See notes at the end of the table.

Table 3.46 – continued

## Criteria air contaminant emissions, 2006

	Particulate matter			SO <sub>x</sub> <sup>4</sup>	NO <sub>x</sub> <sup>5</sup>	VOC <sup>6</sup>	CO
	Total <sup>1</sup>	PM <sub>10</sub> <sup>2</sup>	PM <sub>2.5</sub> <sup>3</sup>				
	tonnes						
<b>Open sources</b>	<b>17,325,626.9</b>	<b>5,421,866.3</b>	<b>814,593.7</b>	<b>1,220.6</b>	<b>6,496.0</b>	<b>308,467.1</b>	<b>19,806.1</b>
Agriculture	2,149,163.4	1,095,665.6	57,066.6	0.0	0.0	291,067.3	0.0
Construction operations	3,685,768.4	1,100,421.6	218,011.9	660.6	2,079.6	23.6	341.6
Dust from paved roads	3,248,367.6	622,604.7	148,955.3				
Dust from unpaved roads	8,202,814.4	2,597,406.1	387,212.2				
Waste	5,404.9	2,043.0	1,687.8	509.5	4,082.4	15,783.2	12,203.2
Mine tailings	32,966.0	2,637.3	659.3				
Prescribed burning	1,142.3	1,088.0	1,000.7	50.5	334.1	1,593.0	7,261.3
<b>Natural sources</b>	<b>301,728.5</b>	<b>256,469.5</b>	<b>211,210.0</b>	<b>177.8</b>	<b>243,742.4</b>	<b>29,575,078.0</b>	<b>2,484,823.0</b>

1. Total particulate matter is made up of solid and liquid particles under 100 micrometres in diameter that are released into the atmosphere.

2. PM<sub>10</sub> is the fraction of total particulate matter that is less than or equal to 10 micrometres in diameter.

3. PM<sub>2.5</sub> is the fraction of total particulate matter that is less than or equal to 2.5 micrometres in diameter.

4. SO<sub>x</sub> is made up of gaseous oxides of sulphur, mainly sulphur dioxide (SO<sub>2</sub>). In some cases, emissions may contain small amounts of sulphur trioxide (SO<sub>3</sub>) and sulphurous and sulphuric acid vapour.

5. NO<sub>x</sub> is made up of gaseous nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>).

6. Volatile organic compounds (VOCs) are made up of photochemically reactive hydrocarbon compounds (That is those that participate in chemical reactions when exposed to sunlight). They are major contributors to smog in urban areas.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Environment Canada, Pollution Data Branch, 2008, *Air Pollutant Emissions*, [www.ec.gc.ca/pdb/cac/Emissions1990-2015/emissions\\_e.cfm](http://www.ec.gc.ca/pdb/cac/Emissions1990-2015/emissions_e.cfm) (accessed February 9, 2009).

**Table 3.47**  
**Greenhouse gas (GHG) emissions by source and sink category**

	Carbon dioxide (CO <sub>2</sub> )		Methane (CH <sub>4</sub> )		Nitrous oxide (N <sub>2</sub> O)		CO <sub>2</sub> equivalents <sup>1</sup>		Percentage change 1990 to 2006
	1990	2006	1990	2006	1990	2006	1990	2006	
	kilotonnes								percent
<b>Total <sup>2</sup></b>	<b>456,000</b>	<b>560,000</b>	<b>3,500.00</b>	<b>4,900.00</b>	<b>160.00</b>	<b>150.00</b>	<b>592,000</b>	<b>721,000</b>	<b>21.8</b>
<b>Energy</b>	<b>425,000</b>	<b>519,000</b>	<b>1,700.00</b>	<b>2,600.00</b>	<b>30.00</b>	<b>30.00</b>	<b>470,000</b>	<b>583,000</b>	<b>24.0</b>
<b>Stationary combustion sources</b>	<b>276,000</b>	<b>317,000</b>	<b>200.00</b>	<b>200.00</b>	<b>7.00</b>	<b>8.00</b>	<b>282,000</b>	<b>324,000</b>	<b>14.9</b>
Electricity and heat generation	94,800	116,000	1.80	4.60	2.00	2.00	95,400	117,000	22.6
Fossil fuel industries	49,700	65,200	80.00	100.00	1.00	1.00	52,000	68,000	30.8
Petroleum refining and upgrading	16,000	16,000	...	...	0.30	0.40	16,000	16,000	0.0
Fossil fuel production	34,100	49,100	80.00	100.00	0.70	1.00	36,000	52,000	44.4
Mining and oil and gas extraction	6,150	16,400	0.10	0.30	0.10	0.40	6,190	16,500	166.6
Manufacturing industries	54,300	45,800	3.00	3.00	2.00	2.00	54,900	46,300	-15.7
Iron and steel	6,430	6,310	0.20	0.20	0.20	0.20	6,500	6,380	-1.8
Non ferrous metals	3,170	3,030	0.07	0.07	0.05	0.04	3,190	3,050	-4.4
Chemical	7,060	6,450	0.15	0.14	0.10	0.10	7,100	6,490	-8.6
Pulp and paper	13,500	5,650	2.00	2.00	0.80	0.80	13,700	5,950	-56.6
Cement	3,680	4,840	0.07	0.10	0.04	0.04	3,690	4,850	31.4
Other manufacturing	20,500	19,500	0.40	0.40	0.40	0.40	20,700	19,600	-5.3
Construction	1,850	1,290	0.03	0.02	0.05	0.03	1,870	1,300	-30.5
Commercial and institutional	25,500	33,200	0.50	0.60	0.50	0.70	25,700	33,400	30.0
Residential	40,900	37,300	100.00	100.00	2.00	2.00	44,000	40,000	-9.1
Agriculture and forestry	2,370	1,900	0.04	0.03	0.05	0.06	2,390	1,920	-19.7
<b>Transport <sup>3</sup></b>	<b>138,000</b>	<b>184,000</b>	<b>30.00</b>	<b>30.00</b>	<b>20.00</b>	<b>20.00</b>	<b>150,000</b>	<b>190,000</b>	<b>26.7</b>
Domestic aviation	6,180	8,190	0.50	0.40	0.60	0.70	6,400	8,400	31.3
Road transportation	94,900	130,000	15.00	9.30	10.00	11.00	98,400	133,000	35.2
Light-duty gasoline vehicles	43,800	37,700	7.80	2.90	6.20	3.60	45,800	38,900	-15.1
Light-duty gasoline trucks	19,600	43,100	3.10	3.20	3.20	5.30	20,700	44,800	116.4
Heavy-duty gasoline vehicles	7,720	6,130	1.30	0.35	0.22	0.44	7,810	6,280	-19.6
Motorcycles	143	254	0.14	0.17	0.00	0.01	146	259	77.4
Light-duty diesel vehicles	347	423	0.01	0.01	0.03	0.03	355	433	22.0
Light-duty diesel trucks	691	2,270	0.02	0.06	0.05	0.20	707	2,330	229.6
Heavy-duty diesel vehicles	20,500	39,000	1.00	2.00	0.60	1.00	20,700	39,400	90.3
Propane and natural gas vehicles	2,170	784	1.00	0.70	0.04	0.02	2,200	800	-63.6
Railways	6,160	5,660	0.30	0.30	3.00	2.00	7,000	6,000	-14.3
Domestic marine	4,690	5,380	0.30	0.40	1.00	1.00	5,000	5,800	16.0
Other Transportation	26,000	35,000	20.00	20.00	6.00	8.00	30,000	40,000	33.3
Off-road gasoline	6,000	6,000	8.00	8.00	0.10	0.10	7,000	7,000	0.0
Off-road diesel	13,000	19,000	0.70	1.00	6.00	8.00	20,000	20,000	0.0
Pipelines	6,700	9,390	6.70	9.40	0.20	0.30	6,900	9,660	40.0
<b>Fugitive sources</b>	<b>11,000</b>	<b>17,000</b>	<b>1,500.00</b>	<b>2,400.00</b>	<b>0.10</b>	<b>0.10</b>	<b>42,700</b>	<b>66,800</b>	<b>56.4</b>
Coal mining	...	...	90.00	30.00	...	...	2,000	600	-70.0
Oil and natural gas	10,600	17,400	1,440.00	2,320.00	0.10	0.10	40,700	66,200	62.7
Oil	95	190	193.00	262.00	0.10	0.10	4,180	5,710	36.6
Natural gas	23	66	613.00	1,010.00	...	...	12,900	21,300	65.1
Venting	6,090	11,200	627.00	1,040.00	...	0.01	19,300	33,100	71.5
Flaring	4,400	5,900	2.60	4.10	0.00	0.01	4,400	6,000	36.4
<b>Industrial processes</b>	<b>31,000</b>	<b>41,000</b>	<b>...</b>	<b>...</b>	<b>37.80</b>	<b>7.88</b>	<b>54,800</b>	<b>54,400</b>	<b>-0.7</b>
<b>Mineral products</b>	<b>8,300</b>	<b>9,600</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>8,300</b>	<b>9,600</b>	<b>15.7</b>
Cement production	5,400	7,300	...	...	...	...	5,400	7,300	35.2
Lime production	1,700	1,600	...	...	...	...	1,700	1,600	-5.9
Mineral product use <sup>4</sup>	1,090	600	...	...	...	...	1,090	600	-45.0
<b>Chemical industry</b>	<b>5,000</b>	<b>6,600</b>	<b>...</b>	<b>...</b>	<b>37.80</b>	<b>7.88</b>	<b>17,000</b>	<b>9,000</b>	<b>-47.1</b>
Ammonia production	5,000	6,600	...	...	...	...	5,000	6,600	32.0
Nitric acid production	...	...	...	...	3.27	3.98	1,010	1,230	21.8
Adipic acid production	...	...	...	...	35.00	3.90	11,000	1,200	-89.1
<b>Metal production</b>	<b>9,770</b>	<b>12,800</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>19,500</b>	<b>16,800</b>	<b>-13.8</b>
Iron and steel production	7,060	7,760	...	...	...	...	7,060	7,760	9.9
Aluminum production	2,700	5,000	...	...	...	...	9,300	7,600	-18.3
SF <sub>6</sub> used in magnesium smelters and casters	...	...	...	...	...	...	3,110	1,390	-55.3

See notes at the end of the table.

Table 3.47 – continued

## Greenhouse gas (GHG) emissions by source and sink category

	Carbon dioxide (CO <sub>2</sub> )		Methane (CH <sub>4</sub> )		Nitrous oxide (N <sub>2</sub> O)		CO <sub>2</sub> equivalents <sup>1</sup>		Percentage change 1990 to 2006
	1990	2006	1990	2006	1990	2006	1990	2006	
	kilotonnes								percent
<b>Consumption of halocarbons and SF<sub>6</sub></b>	...	...	...	...	...	...	<b>2,300</b>	<b>6,600</b>	<b>187.0</b>
<b>Other and undifferentiated production</b>	<b>8,000</b>	<b>12,000</b>	...	...	...	...	<b>8,000</b>	<b>12,000</b>	<b>50.0</b>
<b>Solvent and other product use</b>	...	...	...	...	<b>0.56</b>	<b>1.00</b>	<b>170</b>	<b>320</b>	<b>88.2</b>
<b>Agriculture</b>	...	...	<b>980.00</b>	<b>1,300.00</b>	<b>93.00</b>	<b>110.00</b>	<b>49,000</b>	<b>62,000</b>	<b>26.5</b>
Enteric fermentation	...	...	860.00	1,200.00	...	...	18,000	24,000	33.3
Manure management	...	...	120.00	1,60.00	11.00	15.00	6,100	8,000	31.1
Agricultural soils	...	...	...	...	82.00	96.00	25,000	30,000	20.0
Direct sources	...	...	...	...	45.00	49.00	14,000	15,000	7.1
Pasture, range and paddock manure	...	...	...	...	8.20	12.00	2,600	3,800	46.2
Indirect sources	...	...	...	...	30.00	30.00	9,000	10,000	11.1
<b>Waste</b>	<b>270</b>	<b>190</b>	<b>820.00</b>	<b>950.00</b>	<b>2.00</b>	<b>2.00</b>	<b>18,000</b>	<b>21,000</b>	<b>16.7</b>
Solid waste disposal on land	...	...	810.00	940.00	...	...	17,000	20,000	17.6
Wastewater handling	...	...	11.00	12.00	2.00	2.00	780	930	19.2
Waste incineration	270	190	0.40	0.07	0.40	0.20	400	240	-40.0
<b>Land use, land use-change and forestry</b>	<b>-110,000</b>	<b>19,000</b>	<b>150.00</b>	<b>360.00</b>	<b>6.50</b>	<b>15.00</b>	<b>-110,000</b>	<b>31,000</b>	<b>-128.2</b>
Forest land	-140,000	11,000	130.00	340.00	5.60	14.00	-130,000	23,000	-117.7
Cropland	13,000	-1700	10.00	7.00	0.70	0.40	14,000	...	-110.0
Grassland	...	...	...	...	...	...	...	...	...
Wetlands	4,000	2,000	0.30	0.00	0.01	0.00	4,000	2,000	-50.0
Settlements	9,000	8,000	5.00	5.00	0.20	0.20	9,000	8,000	-11.1

1. CO<sub>2</sub> equivalent emissions are the weighted sum of all greenhouse gas emissions. The following global warming potentials are used as the weights: CO<sub>2</sub>= 1; CH<sub>4</sub>= 21; N<sub>2</sub>O = 310; HFCs = 140 to 11,700; PFCs = 6,500 to 9,200; SF<sub>6</sub>= 23,900. Not all HFC, PFC and SF<sub>6</sub> data are presented in this table.

2. National totals exclude all GHGs from the Land use, land-use change and forestry sector.

3. Emissions from fuel ethanol are reported within the gasoline transportation sub-categories.

4. The category 'Mineral product use' includes CO<sub>2</sub> emissions coming from the use of limestone & dolomite, soda ash, and magnesite.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Environment Canada, Greenhouse Gas Division, 2008, *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006*, [www.ec.gc.ca/pdb/ghg/inventory\\_report/2006\\_report/tm-to-eng\\_eng.cfm](http://www.ec.gc.ca/pdb/ghg/inventory_report/2006_report/tm-to-eng_eng.cfm) (accessed February 17, 2009).

**Table 3.48**  
**Direct energy use and greenhouse gas emissions, by sector**

	Energy use				Greenhouse gas emissions			
	Total, all sectors	Business sector <sup>1</sup>	Non-business sector <sup>2</sup>	Household sector <sup>3</sup>	Total, all sectors	Business sector <sup>1</sup>	Non-business sector <sup>2</sup>	Household sector <sup>3</sup>
	terajoules				carbon dioxide equivalents <sup>4</sup>			
1990	8,412,018	6,013,878	422,403	1,975,737	573,817	462,243	16,599	94,976
1991	8,287,084	5,915,933	432,538	1,938,613	560,560	451,425	16,544	92,591
1992	8,474,277	6,069,722	411,746	1,992,809	582,263	470,961	16,054	95,248
1993	8,516,036	6,061,356	393,698	2,060,982	583,647	469,295	14,863	99,489
1994	8,738,126	6,251,620	366,627	2,119,879	602,754	486,838	13,496	102,420
1995	8,949,739	6,482,896	375,797	2,091,046	622,230	507,192	14,179	100,859
1996	9,217,036	6,645,011	381,814	2,190,211	639,570	519,284	14,448	105,837
1997	9,383,707	6,859,499	374,777	2,149,431	650,992	533,330	13,640	104,022
1998	9,539,450	7,090,568	382,074	2,066,808	657,515	543,376	13,997	100,142
1999	9,829,056	7,307,888	387,002	2,134,166	670,682	553,192	14,433	103,057
2000	10,242,348	7,638,001	416,765	2,187,582	694,720	574,078	15,876	104,766
2001	10,091,416	7,513,910	409,720	2,167,786	686,756	567,897	15,358	103,501
2002	10,266,979	7,552,989	457,912	2,256,077	691,248	565,949	17,503	107,797
2003	10,557,868	7,764,124	465,589	2,328,155	713,892	585,320	17,726	110,846
2004	10,498,742	7,658,424	510,846	2,329,473	715,025	585,248	19,488	110,288
2005 <sup>p</sup>	10,524,705	7,726,044	494,966	2,303,695	708,781	581,581	18,811	108,389

1. The business sector consists of all establishments, including unincorporated businesses and excluding government and non-profit institutions.

2. The non-business sector consists of general government (including government hospitals and education) and non-profit institutions.

3. The household sector consists of all resident households, excluding all unincorporated businesses.

4. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.

**Source(s):** Statistics Canada, CANSIM tables 153-0032 and 153-0034.

Table 3.49-1

## Energy and greenhouse gas intensity, by industry, Canada, 2004 — Primary sector

	Energy intensity <sup>1</sup>	Greenhouse gas intensity <sup>2,3,4</sup>
	gigajoules per thousand current dollars of production	tonnes of carbon dioxide equivalent per thousand current dollars of production
Crop and animal production	13.3	3.1
Forestry and logging	8.4	0.6
Fishing, hunting and trapping	12.3	0.9
Support activities for agriculture and forestry	10.6	0.8
Oil and gas extraction	14.6	1.4
Coal mining	15.8	1.5
Metal ore mining	11.7	0.7
Non-metallic mineral mining and quarrying	11.4	0.7
Support activities for mining and oil and gas extraction	9.4	0.6

1. Intensity of energy use is measured in gigajoules per thousand current dollars of production. The current dollar intensity measure is intended for comparing industries in a given year.
2. Intensity of greenhouse gas emissions is measured in tonnes per thousand current dollars of production. The current dollar intensity measure is intended for comparing industries in a given year.
3. Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils; livestock manure and enteric fermentation. Emissions from waste management are excluded.
4. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.

**Note(s):** Industries in the primary sector produce the raw materials employed in the economy. Industries in the secondary sector carry out activities that produce physical goods from raw materials, and industries in the tertiary sector carry out activities related to the provision of services. Industry aggregation is at the L-level of the input-output accounts of Statistics Canada. The input-output tables are built around three classification systems, namely the Input-Output Industry Classification (IOIC) for industries, the Input-Output Commodity Classification (IOCC) for commodities and the Input-Output Final Demand Classification (IOFDC) for final demand. Each classification has four level of hierarchy, consisting of the 'W' (working) level, the 'L' (historical-link) level, the 'M' (medium) level and the 'S' (small) level. The Input-Output Industry Classification (IOIC) is based on the industrial standard of the day, which is currently the North American Industry Classification System (NAICS) 2002. The IOIC uses a coding scheme that resembles NAICS, but is modified to reflect the hierarchical structure and organization of the IOIC. The NAICS definition of the IOIC classes as well as its hierarchical structure can be found in 'Input-Output Classification' at the following link: <http://www.statcan.gc.ca/imdb-bmdi/1401-eng.htm>. The hierarchical structure of the Input-Output Commodity Classification (IOCC) and the Input-Output Final Demand Classification (IOFDC) can be found at the same link.

**Source(s):** Statistics Canada, CANSIM tables 153-0031 and 153-0033.



Table 3.49-2

## Energy and greenhouse gas intensity, by industry, Canada, 2004 — Secondary sector

	Energy intensity <sup>1</sup>	Greenhouse gas intensity <sup>2,3,4</sup>
	gigajoules per thousand current dollars of production	tonnes of carbon dioxide equivalent per thousand current dollars of production
Electric power generation, transmission and distribution	49.2	3.7
Natural gas distribution, water and other systems	5.9	1.1
Residential building construction	6.2	0.5
Non-residential building construction	5.7	0.4
Transportation engineering construction	11.7	0.9
Oil and gas engineering construction	7.8	0.5
Electric power engineering construction	3.7	0.3
Communication engineering construction	5.8	0.4
Other engineering construction	4.9	0.4
Repair construction	5.1	0.4
Other activities of the construction industry	8.9	0.6
Animal food manufacturing	9.8	1.3
Sugar and confectionery product manufacturing	6.1	0.4
Fruit and vegetable preserving and specialty food manufacturing	8.3	0.8
Dairy product manufacturing	10.4	1.7
Meat product manufacturing	10.2	1.9
Seafood product preparation and packaging	8.8	0.7
Miscellaneous food manufacturing	8.7	1.0
Soft-drink and ice manufacturing	6.7	0.4
Breweries	4.6	0.3
Wineries	5.1	0.5
Distilleries	9.8	0.6
Tobacco manufacturing	3.8	0.4
Textile and textile product mills	8.5	0.6
Clothing manufacturing	5.0	0.3
Leather and allied product manufacturing	5.8	0.4
Wood product manufacturing	7.8	0.5
Pulp, paper and paperboard mills	26.8	1.2
Converted paper products manufacturing	12.4	0.6
Printing and related support activities	8.8	0.4
Petroleum and coal products manufacturing	22.2	1.8
Basic chemical manufacturing	26.4	2.0
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	17.6	1.6
Pesticides, fertilizer and other agricultural chemical manufacturing	27.5	4.0
Pharmaceutical and medicine manufacturing	4.8	0.3
Miscellaneous chemical product manufacturing	10.0	0.8
Plastics product manufacturing	9.8	0.7
Rubber product manufacturing	8.4	0.6
Cement and concrete product manufacturing	18.1	2.4
Miscellaneous non-metallic mineral product manufacturing	17.3	1.4
Primary metal manufacturing	23.1	1.2
Fabricated metal product manufacturing	10.2	0.6
Machinery manufacturing	7.2	0.4
Computer and peripheral equipment manufacturing	4.1	0.3
Electronic product manufacturing	4.6	0.3
Household appliance manufacturing	9.0	0.5
Electrical equipment and component manufacturing	8.4	0.5
Motor vehicle manufacturing	7.8	0.5
Motor vehicle body and trailer manufacturing	8.2	0.5
Motor vehicle parts manufacturing	9.5	0.6
Aerospace product and parts manufacturing	4.5	0.3
Railroad rolling stock manufacturing	12.6	0.7
Ship and boat building	6.9	0.4

See notes at the end of the table.

Table 3.49-2 – continued

## Energy and greenhouse gas intensity, by industry, Canada, 2004 — Secondary sector

	Energy intensity <sup>1</sup>	Greenhouse gas intensity <sup>2,3,4</sup>
	gigajoules per thousand current dollars of production	tonnes of carbon dioxide equivalent per thousand current dollars of production
Other transportation equipment manufacturing	5.3	0.3
Furniture and related product manufacturing	6.0	0.4
Miscellaneous manufacturing	7.0	0.4

1. Intensity of energy use is measured in gigajoules per thousand current dollars of production. The current dollar intensity measure is intended for comparing industries in a given year.

2. Intensity of greenhouse gas emissions is measured in tonnes per thousand current dollars of production. The current dollar intensity measure is intended for comparing industries in a given year.

3. Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils; livestock manure and enteric fermentation. Emissions from waste management are excluded.

4. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.

**Note(s):** Industries in the primary sector produce the raw materials employed in the economy. Industries in the secondary sector carry out activities that produce physical goods from raw materials, and industries in the tertiary sector carry out activities related to the provision of services. Industry aggregation is at the L-level of the input-output accounts of Statistics Canada. The input-output tables are built around three classification systems, namely the Input-Output Industry Classification (IOIC) for industries, the Input-Output Commodity Classification (IOCC) for commodities and the Input-Output Final Demand Classification (IOFDC) for final demand. Each classification has four level of hierarchy, consisting of the 'W' (working) level, the 'L' (historical-link) level, the 'M' (medium) level and the 'S' (small) level. The Input-Output Industry Classification (IOIC) is based on the industrial standard of the day, which is currently the North American Industry Classification System (NAICS) 2002. The IOIC uses a coding scheme that resembles NAICS, but is modified to reflect the hierarchical structure and organization of the IOIC. The NAICS definition of the IOIC classes as well as its hierarchical structure can be found in 'Input-Output Classification' at the following link: <http://www.statcan.gc.ca/imb-bmdi/1401-eng.htm>. The hierarchical structure of the Input-Output Commodity Classification (IOCC) and the Input-Output Final Demand Classification (IOFDC) can be found at the same link.

**Source(s):** Statistics Canada, CANSIM tables 153-0031 and 153-0033.

Table 3.49-3

## Energy and greenhouse gas intensity, by industry, Canada, 2004 — Tertiary sector

	Energy intensity <sup>1</sup>	Greenhouse gas intensity <sup>2,3,4</sup>
	gigajoules per thousand current dollars of production	tonnes of carbon dioxide equivalent per thousand current dollars of production
Wholesale trade	5.1	0.3
Retail trade	4.8	0.3
Air transportation	23.0	1.6
Rail transportation	13.2	1.0
Water transportation	30.4	2.3
Truck transportation	15.4	1.1
Transit and ground passenger transportation	12.2	0.8
Pipeline transportation	28.0	2.2
Scenic and sightseeing transportation and support activities for transport	6.2	0.4
Postal service and couriers and messengers	6.2	0.4
Warehousing and storage	4.2	0.3
Motion picture and sound recording industries	7.1	0.4
Radio and television broadcasting	3.8	0.2
Pay TV, specialty TV and program distribution and telecommunications	2.4	0.2
Publishing industries, information services and data processing service	3.8	0.2
Monetary authorities and depository credit intermediation	2.8	0.2
Insurance carriers	2.2	0.1
Lessors of real estate	7.7	0.4
Owner-occupied dwellings	0.5	0.0
Rental and leasing services and lessors of non-financial intangible associations	4.4	0.3
Other finance, insurance and real estate and management of companies	4.1	0.3
Advertising and related services	2.3	0.2
Architectural, engineering, legal and accounting services	2.6	0.2
Other professional, scientific and technical services	3.0	0.2
Administrative and support services	3.2	0.2
Waste management and remediation services	8.4	0.6
Educational services (except universities)	4.9	0.3
Health care services (except hospitals) and social assistance	3.2	0.2
Arts, entertainment and recreation	4.5	0.3
Accommodation and food services	5.4	0.5
Repair and maintenance	5.3	0.3
Grant-making, civic, and professional and similar organizations	3.2	0.2
Personal and laundry services and private households	4.0	0.2
Operating supplies	8.5	0.6
Office supplies	7.6	0.4
Cafeteria supplies	9.3	1.3
Laboratory supplies	8.6	0.6
Travel and entertainment	12.9	0.9
Advertising and promotion	4.1	0.2
Transportation margins	14.5	1.1
Religious organizations	9.5	0.5
Non-profit welfare organization	4.1	0.2
Non-profit sports and recreation clubs	9.3	0.5
Other non-profit institutions serving households	5.0	0.2
Non-profit education services	6.8	0.4
Hospitals	3.5	0.2
Government residential care facilities	1.9	0.1
Universities	5.1	0.3

See notes at the end of the table.

Table 3.49-3 – continued

## Energy and greenhouse gas intensity, by industry, Canada, 2004 — Tertiary sector

	Energy intensity <sup>1</sup>	Greenhouse gas intensity <sup>2,3,4</sup>
	gigajoules per thousand current dollars of production	tonnes of carbon dioxide equivalent per thousand current dollars of production
Government education services	4.0	0.2
Other municipal government services	6.9	0.4
Other provincial and territorial government services	3.4	0.2
Other federal government services and defence services	3.8	0.2

1. Intensity of energy use is measured in gigajoules per thousand current dollars of production. The current dollar intensity measure is intended for comparing industries in a given year.

2. Intensity of greenhouse gas emissions is measured in tonnes per thousand current dollars of production. The current dollar intensity measure is intended for comparing industries in a given year.

3. Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils; livestock manure and enteric fermentation. Emissions from waste management are excluded.

4. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.

**Note(s):** Industries in the primary sector produce the raw materials employed in the economy. Industries in the secondary sector carry out activities that produce physical goods from raw materials, and industries in the tertiary sector carry out activities related to the provision of services. Industry aggregation is at the L-level of the input-output accounts of Statistics Canada. The input-output tables are built around three classification systems, namely the Input-Output Industry Classification (IOIC) for industries, the Input-Output Commodity Classification (IOCC) for commodities and the Input-Output Final Demand Classification (IOFDC) for final demand. Each classification has four level of hierarchy, consisting of the 'W' (working) level, the 'L' (historical-link) level, the 'M' (medium) level and the 'S' (small) level. The Input-Output Industry Classification (IOIC) is based on the industrial standard of the day, which is currently the North American Industry Classification System (NAICS) 2002. The IOIC uses a coding scheme that resembles NAICS, but is modified to reflect the hierarchical structure and organization of the IOIC. The NAICS definition of the IOIC classes as well as its hierarchical structure can be found in 'Input-Output Classification' at the following link: <http://www.statcan.gc.ca/imdb-bmdi/1401-eng.htm>. The hierarchical structure of the Input-Output Commodity Classification (IOCC) and the Input-Output Final Demand Classification (IOFDC) can be found at the same link.

**Source(s):** Statistics Canada, CANSIM tables 153-0031 and 153-0033.

**Table 3.50-1**  
**Energy and greenhouse gas intensity, by industry, Canada — Primary sector**

	Energy intensity <sup>1</sup>				Greenhouse gas intensity <sup>2,3,4</sup>			
	1990	1995	2000	2004	1990	1995	2000	2004
	1990=100							
Crop and animal production	100.0	111.0	99.6	92.7	100.0	104.8	96.2	92.0
Forestry and logging	100.0	115.8	118.7	98.6	100.0	116.2	117.5	97.2
Fishing, hunting and trapping	100.0	139.7	187.6	161.9	100.0	140.5	181.9	159.2
Support activities for agriculture and forestry	100.0	95.8	131.6	139.7	100.0	96.5	134.9	145.4
Oil and gas extraction	100.0	91.2	96.8	94.1	100.0	96.9	96.4	92.0
Coal mining	100.0	97.9	97.9	105.3	100.0	97.4	78.5	78.2
Metal ore mining	100.0	93.2	88.7	86.3	100.0	91.7	96.1	93.0
Non-metallic mineral mining and quarrying	100.0	98.5	91.6	71.3	100.0	98.3	95.1	76.3
Support activities for mining and oil and gas extraction	100.0	87.5	91.4	88.0	100.0	87.3	89.6	87.5

1. Intensity of energy use is measured in gigajoules per thousand dollars of production. Constant dollar intensity measures are presented as an index, 1990=100; based on gigajoules per thousand chained fisher constant dollars of production. The constant dollar intensity should be used for trend analysis for a given industry.

2. Intensity of greenhouse gas emissions is measured in tonnes per thousand dollars of production. Constant dollar intensity measures are presented as an index, 1990=100; based on tonnes per thousand chained fisher constant dollars of production. The constant dollar intensity should be used for trend analysis for a given industry.

3. Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils; livestock manure and enteric fermentation. Emissions from waste management are excluded.

4. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.

**Note(s):** Industries in the primary sector produce the raw materials employed in the economy. Industries in the secondary sector carry out activities that produce physical goods from raw materials, and industries in the tertiary sector carry out activities related to the provision of services. Industry aggregation is at the L-level of the input-output accounts of Statistics Canada. The input-output tables are built around three classification systems, namely the Input-Output Industry Classification (IOIC) for industries, the Input-Output Commodity Classification (IOCC) for commodities and the Input-Output Final Demand Classification (IOFDC) for final demand. Each classification has four level of hierarchy, consisting of the 'W' (working) level, the 'L' (historical-link) level, the 'M' (medium) level and the 'S' (small) level. The Input-Output Industry Classification (IOIC) is based on the industrial standard of the day, which is currently the North American Industry Classification System (NAICS) 2002. The IOIC uses a coding scheme that resembles NAICS, but is modified to reflect the hierarchical structure and organization of the IOIC. The NAICS definition of the IOIC classes as well as its hierarchical structure can be found in 'Input-Output Classification' at the following link: <http://www.statcan.gc.ca/imdb-bmdi/1401-eng.htm>. The hierarchical structure of the Input-Output Commodity Classification (IOCC) and the Input-Output Final Demand Classification (IOFDC) can be found at the same link.

**Source(s):** Statistics Canada, CANSIM tables 153-0031 and 153-0033.

Table 3.50-2

## Energy and greenhouse gas intensity, by industry, Canada — Secondary sector

	Energy intensity <sup>1</sup>				Greenhouse gas intensity <sup>2,3,4</sup>			
	1990	1995	2000	2004	1990	1995	2000	2004
	1990=100							
Electric power generation, transmission and distribution	100.0	92.2	118.8	108.3	100.0	90.0	112.6	104.5
Natural gas distribution, water and other systems	100.0	105.8	69.3	63.7	100.0	95.7	78.5	78.8
Residential building construction	100.0	105.8	95.7	94.9	100.0	107.2	95.2	95.0
Non-residential building construction	100.0	107.2	95.3	97.5	100.0	109.4	96.4	98.1
Transportation engineering construction	100.0	94.4	84.0	88.7	100.0	97.5	87.1	91.3
Oil and gas engineering construction	100.0	94.8	92.9	90.5	100.0	94.3	94.6	93.2
Electric power engineering construction	100.0	98.8	78.4	70.7	100.0	98.8	75.8	66.0
Communication engineering construction	100.0	111.7	102.1	100.1	100.0	112.5	102.9	104.1
Other engineering construction	100.0	103.7	83.2	79.8	100.0	106.5	83.8	79.9
Repair construction	100.0	97.2	82.5	88.5	100.0	99.0	80.9	88.8
Other activities of the construction industry	100.0	101.6	131.7	123.9	100.0	103.5	133.8	122.7
Animal food manufacturing	100.0	104.7	89.8	82.1	100.0	107.8	94.7	92.1
Sugar and confectionery product manufacturing	100.0	95.7	92.0	82.9	100.0	96.4	91.6	85.9
Fruit and vegetable preserving and specialty food manufacturing	100.0	97.7	89.3	81.3	100.0	102.8	93.7	88.9
Dairy product manufacturing	100.0	110.0	93.3	89.7	100.0	109.7	93.6	91.6
Meat product manufacturing	100.0	105.9	94.6	84.2	100.0	101.8	93.2	85.0
Seafood product preparation and packaging	100.0	125.8	142.2	120.6	100.0	131.6	127.3	112.6
Miscellaneous food manufacturing	100.0	101.1	98.5	95.2	100.0	107.8	101.5	101.9
Soft-drink and ice manufacturing	100.0	115.2	94.5	80.3	100.0	120.2	90.6	79.8
Breweries	100.0	87.8	83.7	72.3	100.0	85.8	85.4	74.2
Wineries	100.0	104.5	74.9	62.7	100.0	111.1	83.8	72.6
Distilleries	100.0	86.4	76.8	77.8	100.0	82.6	75.9	77.6
Tobacco manufacturing	100.0	82.7	74.8	63.5	100.0	82.5	67.1	53.3
Textile and textile product mills	100.0	89.6	77.0	70.6	100.0	87.6	50.2	50.5
Clothing manufacturing	100.0	93.0	83.5	72.7	100.0	88.9	60.9	54.2
Leather and allied product manufacturing	100.0	98.8	87.3	85.2	100.0	99.2	79.2	77.3
Wood product manufacturing	100.0	108.1	95.0	85.8	100.0	104.2	91.0	82.5
Pulp, paper and paperboard mills	100.0	87.7	86.2	87.6	100.0	82.2	78.8	82.6
Converted paper products manufacturing	100.0	90.6	79.5	75.7	100.0	87.1	71.7	69.8
Printing and related support activities	100.0	102.0	87.2	82.2	100.0	96.1	82.4	81.2
Petroleum and coal products manufacturing	100.0	90.1	88.2	91.1	100.0	94.3	91.5	91.6
Basic chemical manufacturing	100.0	88.3	101.5	105.4	100.0	103.5	102.6	115.6
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing	100.0	103.2	103.6	97.5	100.0	86.9	39.7	46.5
Pesticides, fertilizer and other agricultural chemical manufacturing	100.0	108.2	110.2	94.0	100.0	108.0	102.2	84.8
Pharmaceutical and medicine manufacturing	100.0	113.3	126.3	107.2	100.0	115.4	109.0	99.4
Miscellaneous chemical product manufacturing	100.0	89.9	105.4	100.9	100.0	97.4	91.0	99.9
Plastics product manufacturing	100.0	96.8	83.2	82.7	100.0	96.5	51.7	58.0
Rubber product manufacturing	100.0	87.1	86.9	79.8	100.0	92.8	78.5	78.9
Cement and concrete product manufacturing	100.0	113.6	84.6	75.5	100.0	125.1	94.8	85.8
Miscellaneous non-metallic mineral product manufacturing	100.0	102.5	85.6	79.3	100.0	101.6	85.0	77.7
Primary metal manufacturing	100.0	96.4	81.3	76.7	100.0	92.8	80.2	75.8
Fabricated metal product manufacturing	100.0	97.7	72.1	74.1	100.0	94.8	73.0	75.1
Machinery manufacturing	100.0	95.9	75.8	78.7	100.0	93.0	76.5	81.0
Computer and peripheral equipment manufacturing	100.0	89.8	63.8	55.1	100.0	101.9	83.0	74.6
Electronic product manufacturing	100.0	91.5	84.3	91.3	100.0	92.6	85.3	95.3
Household appliance manufacturing	100.0	97.3	82.4	84.8	100.0	98.6	82.1	86.2
Electrical equipment and component manufacturing	100.0	103.7	71.7	74.0	100.0	105.5	68.3	71.2
Motor vehicle manufacturing	100.0	88.6	72.2	74.9	100.0	88.3	70.0	74.4
Motor vehicle body and trailer manufacturing	100.0	103.3	82.8	80.5	100.0	100.6	80.1	78.6
Motor vehicle parts manufacturing	100.0	87.9	72.1	75.2	100.0	88.0	70.9	75.5
Aerospace product and parts manufacturing	100.0	72.5	64.4	65.4	100.0	68.5	64.5	65.4
Railroad rolling stock manufacturing	100.0	116.6	91.3	145.1	100.0	112.0	91.8	143.1

See notes at the end of the table.

Table 3.50-2 – continued

## Energy and greenhouse gas intensity, by industry, Canada — Secondary sector

	Energy intensity <sup>1</sup>				Greenhouse gas intensity <sup>2,3,4</sup>			
	1990	1995	2000	2004	1990	1995	2000	2004
	1990=100							
Ship and boat building	100.0	82.7	107.2	92.6	100.0	83.8	100.6	91.8
Other transportation equipment manufacturing	100.0	90.7	87.7	82.7	100.0	89.3	89.8	84.8
Furniture and related product manufacturing	100.0	93.5	81.4	76.0	100.0	92.8	77.1	73.6
Miscellaneous manufacturing	100.0	90.2	77.7	69.7	100.0	90.8	72.2	68.8

- Intensity of energy use is measured in gigajoules per thousand dollars of production. Constant dollar intensity measures are presented as an index, 1990=100; based on gigajoules per thousand chained fisher constant dollars of production. The constant dollar intensity should be used for trend analysis for a given industry.
  - Intensity of greenhouse gas emissions is measured in tonnes per thousand dollars of production. Constant dollar intensity measures are presented as an index, 1990=100; based on tonnes per thousand chained fisher constant dollars of production. The constant dollar intensity should be used for trend analysis for a given industry.
  - Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils; livestock manure and enteric fermentation. Emissions from waste management are excluded.
  - Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.
- Note(s):** Industries in the primary sector produce the raw materials employed in the economy. Industries in the secondary sector carry out activities that produce physical goods from raw materials, and industries in the tertiary sector carry out activities related to the provision of services. Industry aggregation is at the L-level of the input-output accounts of Statistics Canada. The input-output tables are built around three classification systems, namely the Input-Output Industry Classification (IOIC) for industries, the Input-Output Commodity Classification (IOCC) for commodities and the Input-Output Final Demand Classification (IOFDC) for final demand. Each classification has four level of hierarchy, consisting of the 'W' (working) level, the 'L' (historical-link) level, the 'M' (medium) level and the 'S' (small) level. The Input-Output Industry Classification (IOIC) is based on the industrial standard of the day, which is currently the North American Industry Classification System (NAICS) 2002. The IOIC uses a coding scheme that resembles NAICS, but is modified to reflect the hierarchical structure and organization of the IOIC. The NAICS definition of the IOIC classes as well as its hierarchical structure can be found in 'Input-Output Classification' at the following link: <http://www.statcan.gc.ca/imb-bmdi/1401-eng.htm>. The hierarchical structure of the Input-Output Commodity Classification (IOCC) and the Input-Output Final Demand Classification (IOFDC) can be found at the same link.

**Source(s):** Statistics Canada, CANSIM tables 153-0031 and 153-0033.

**Table 3.50-3**  
**Energy and greenhouse gas intensity, by industry, Canada — Tertiary sector**

	Energy intensity <sup>1</sup>				Greenhouse gas intensity <sup>2,3,4</sup>			
	1990	1995	2000	2004	1990	1995	2000	2004
	1990=100							
Wholesale trade	100.0	105.8	128.7	105.6	100.0	103.2	128.2	106.9
Retail trade	100.0	100.2	106.0	82.3	100.0	100.0	108.0	85.2
Air transportation	100.0	102.2	116.2	119.2	100.0	101.8	114.2	117.2
Rail transportation	100.0	81.8	62.1	62.3	100.0	81.9	63.2	63.6
Water transportation	100.0	102.4	100.3	112.8	100.0	103.0	100.0	112.4
Truck transportation	100.0	88.5	86.9	83.5	100.0	88.8	89.8	85.6
Transit and ground passenger transportation	100.0	91.5	79.4	82.1	100.0	91.0	78.9	80.0
Pipeline transportation	100.0	112.2	90.7	66.9	100.0	99.9	82.8	66.8
Scenic and sightseeing transportation and support activities for transport	100.0	96.5	76.5	82.8	100.0	95.4	73.4	80.1
Postal service and couriers and messengers	100.0	113.7	121.4	128.4	100.0	113.4	124.5	132.2
Warehousing and storage	100.0	91.4	79.1	65.0	100.0	89.9	74.7	65.9
Motion picture and sound recording industries	100.0	99.4	93.1	84.3	100.0	100.2	94.2	88.6
Radio and television broadcasting	100.0	99.3	108.6	110.3	100.0	99.0	107.9	112.3
Pay TV, specialty TV and program distribution and telecommunications	100.0	109.8	102.0	93.2	100.0	109.4	105.5	99.1
Publishing industries, information services and data processing service	100.0	94.5	96.0	71.3	100.0	91.8	97.8	76.3
Monetary authorities and depository credit intermediation	100.0	88.6	111.5	110.9	100.0	89.2	109.6	109.9
Insurance carriers	100.0	89.3	79.8	81.1	100.0	89.5	83.0	86.1
Lessors of real estate	100.0	97.6	92.2	96.8	100.0	98.4	90.3	97.5
Owner-occupied dwellings	100.0	82.8	89.3	114.9	100.0	83.5	87.2	116.1
Rental and leasing services and lessors of non-financial intangible associations	100.0	67.0	77.8	66.0	100.0	64.7	72.9	64.1
Other finance, insurance and real estate and management of companies	100.0	91.4	88.0	78.2	100.0	92.3	88.6	79.3
Advertising and related services	100.0	98.1	104.9	62.8	100.0	96.7	105.0	64.5
Architectural, engineering, legal and accounting services	100.0	110.2	142.4	114.4	100.0	110.5	141.3	115.6
Other professional, scientific and technical services	100.0	102.2	124.6	105.4	100.0	104.1	126.9	112.1
Administrative and support services	100.0	103.2	149.4	131.3	100.0	105.2	157.5	141.0
Waste management and remediation services	100.0	42.4	50.5	41.7	100.0	43.2	51.8	43.5
Educational services (except universities)	100.0	90.4	71.7	56.7	100.0	89.7	73.5	58.3
Health care services (except hospitals) and social assistance	100.0	85.8	110.7	102.8	100.0	86.3	104.1	99.3
Arts, entertainment and recreation	100.0	96.4	93.5	86.5	100.0	97.4	92.1	86.2
Accommodation and food services	100.0	96.6	102.6	92.8	100.0	98.4	99.2	91.4
Repair and maintenance	100.0	100.6	140.2	106.3	100.0	100.5	136.8	110.2
Grant-making, civic, and professional and similar organizations	100.0	95.6	94.4	79.0	100.0	94.9	78.6	68.2
Personal and laundry services and private households	100.0	100.8	115.7	102.1	100.0	99.6	103.6	96.1
Operating supplies	100.0	104.4	94.8	99.9	100.0	103.4	87.1	96.1
Office supplies	100.0	104.8	93.9	85.5	100.0	101.6	90.0	85.4
Cafeteria supplies	100.0	104.4	96.2	86.9	100.0	103.0	91.4	83.9
Laboratory supplies	100.0	97.4	98.0	108.3	100.0	104.0	92.2	107.0
Travel and entertainment	100.0	97.7	107.5	101.3	100.0	97.7	106.0	99.4
Advertising and promotion	100.0	97.2	98.0	81.4	100.0	95.4	98.5	84.8
Transportation margins	100.0	86.6	78.6	78.4	100.0	86.5	80.7	80.0
Religious organizations	100.0	95.7	116.0	124.0	100.0	93.7	116.2	126.5
Non-profit welfare organization	100.0	84.7	94.4	87.1	100.0	82.8	91.4	85.5
Non-profit sports and recreation clubs	100.0	94.8	110.0	112.2	100.0	95.6	95.3	96.5
Other non-profit institutions serving households	100.0	87.7	63.4	75.4	100.0	89.2	59.3	70.8
Non-profit education services	100.0	89.2	115.9	112.4	100.0	89.0	110.8	107.3
Hospitals	100.0	104.5	119.7	124.6	100.0	100.0	103.2	109.8
Government residential care facilities	100.0	82.9	76.9	78.3	100.0	83.8	69.4	69.8
Universities	100.0	90.1	123.0	115.5	100.0	89.3	119.5	112.3
Government education services	100.0	88.0	86.9	97.6	100.0	85.5	87.7	99.4

See notes at the end of the table.



Table 3.50-3 – continued

## Energy and greenhouse gas intensity, by industry, Canada — Tertiary sector

	Energy intensity <sup>1</sup>				Greenhouse gas intensity <sup>2,3,4</sup>			
	1990	1995	2000	2004	1990	1995	2000	2004
	1990=100							
Other municipal government services	100.0	86.6	98.4	108.1	100.0	86.3	101.5	112.3
Other provincial and territorial government services	100.0	86.8	92.5	83.4	100.0	89.6	90.5	84.8
Other federal government services and defence services	100.0	87.9	80.4	78.7	100.0	87.0	79.0	78.7

1. Intensity of energy use is measured in gigajoules per thousand dollars of production. Constant dollar intensity measures are presented as an index, 1990=100; based on gigajoules per thousand chained fisher constant dollars of production. The constant dollar intensity should be used for trend analysis for a given industry.

2. Intensity of greenhouse gas emissions is measured in tonnes per thousand dollars of production. Constant dollar intensity measures are presented as an index, 1990=100; based on tonnes per thousand chained fisher constant dollars of production. The constant dollar intensity should be used for trend analysis for a given industry.

3. Emission sources included in these estimates: combustion of fossil fuels; non-combustion uses of fossil fuels; industrial processes; agricultural soils; livestock manure and enteric fermentation. Emissions from waste management are excluded.

4. Carbon dioxide equivalent emissions are estimated using global warming potentials for methane and nitrous oxide of 21 and 310 respectively.

**Note(s):** Industries in the primary sector produce the raw materials employed in the economy. Industries in the secondary sector carry out activities that produce physical goods from raw materials, and industries in the tertiary sector carry out activities related to the provision of services. Industry aggregation is at the L-level of the input-output accounts of Statistics Canada. The input-output tables are built around three classification systems, namely the Input-Output Industry Classification (IOIC) for industries, the Input-Output Commodity Classification (IOCC) for commodities and the Input-Output Final Demand Classification (IOFDC) for final demand. Each classification has four level of hierarchy, consisting of the 'W' (working) level, the 'L' (historical-link) level, the 'M' (medium) level and the 'S' (small) level. The Input-Output Industry Classification (IOIC) is based on the industrial standard of the day, which is currently the North American Industry Classification System (NAICS) 2002. The IOIC uses a coding scheme that resembles NAICS, but is modified to reflect the hierarchical structure and organization of the IOIC. The NAICS definition of the IOIC classes as well as its hierarchical structure can be found in 'Input-Output Classification' at the following link: <http://www.statcan.gc.ca/imdb-bmdi/1401-eng.htm>. The hierarchical structure of the Input-Output Commodity Classification (IOCC) and the Input-Output Final Demand Classification (IOFDC) can be found at the same link.

**Source(s):** Statistics Canada, CANSIM tables 153-0031 and 153-0033.

**Table 3.51**  
**Forest land by province and territory**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
thousands of hectares							
<b>Total forest land</b>	<b>310,134</b>	<b>10,730</b>	<b>265</b>	<b>4,240</b>	<b>6,091</b>	<b>73,360</b>	<b>53,758</b>
Non-reserved	<b>294,836</b>	10,658	264	3,917	6,059	72,667	50,215
Stocked and with access	<b>128,739</b>	2,850	254	3,708	5,546	31,661	23,153
Reserved	<b>15,298</b>	72	1	322	32	693	3,543
	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories	Nunavut
thousands of hectares							
<b>Total forest land</b>	<b>18,968</b>	<b>20,043</b>	<b>27,718</b>	<b>57,910</b>	<b>7,884</b>	<b>28,352</b>	<b>815</b>
Non-reserved	17,623	19,396	24,275	53,786	7,669	27,492	815
Stocked and with access	6,220	6,271	13,250	31,570	1,205	3,051	1
Reserved	1,345	647	3,443	4,124	214	861	..

**Source(s):** Natural Resources Canada, 2007, *Canada's National Forest Inventory (Canfi) - 2001*, <http://cfs.nrcan.gc.ca/subsite/canfi/index-canfi> (accessed March 30, 2009).

**Table 3.52**  
**Forest area harvested by province and territory**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	hectares							
1975	680,301 <sup>r</sup>	15,700 <sup>2</sup>	1,600 <sup>2</sup>	27,260	94,400 <sup>2</sup>	135,094 <sup>3</sup>	196,760 <sup>3</sup>	12,003 <sup>r</sup>
1976	706,120 <sup>2</sup>	14,700 <sup>2</sup>	1,600 <sup>2</sup>	26,285	92,800 <sup>2</sup>	181,737 <sup>3</sup>	156,721 <sup>3</sup>	17,000 <sup>2</sup>
1977	736,138 <sup>2</sup>	14,300 <sup>2</sup>	1,600 <sup>2</sup>	28,335	86,500 <sup>2</sup>	193,295 <sup>3</sup>	187,993 <sup>3</sup>	18,000 <sup>2</sup>
1978	826,507 <sup>2</sup>	17,600 <sup>2</sup>	1,600 <sup>2</sup>	32,120	89,200 <sup>2</sup>	226,127 <sup>3</sup>	194,998 <sup>3</sup>	20,000 <sup>2</sup>
1979	877,750 <sup>2</sup>	17,700 <sup>2</sup>	1,780 <sup>2</sup>	33,703	100,000 <sup>2</sup>	241,826 <sup>3</sup>	218,579 <sup>3</sup>	24,600 <sup>2</sup>
1980	881,004 <sup>r</sup>	15,175	2,500 <sup>2</sup>	36,439 <sup>2</sup>	85,900 <sup>2</sup>	245,000 <sup>3</sup>	242,679 <sup>3</sup>	15,467 <sup>r</sup>
1981	806,011 <sup>r</sup>	13,454	2,700 <sup>2</sup>	36,429 <sup>2</sup>	65,500 <sup>2</sup>	250,000 <sup>3</sup>	227,603 <sup>3</sup>	11,880 <sup>r</sup>
1982	762,656 <sup>r</sup>	8,000	2,700 <sup>2</sup>	35,710 <sup>2</sup>	72,445 <sup>2</sup>	195,000 <sup>3</sup>	222,921 <sup>3</sup>	9,854 <sup>r</sup>
1983	838,688 <sup>r</sup>	13,900	2,500 <sup>2</sup>	20,745 <sup>3</sup>	81,570 <sup>2</sup>	272,085 <sup>3</sup>	183,208 <sup>3</sup>	10,002 <sup>r</sup>
1984	897,714 <sup>r</sup>	17,600	2,500 <sup>2</sup>	30,604 <sup>3</sup>	83,000 <sup>2</sup>	280,739 <sup>3</sup>	217,806 <sup>3</sup>	11,154 <sup>r</sup>
1985	899,245 <sup>r</sup>	16,400	3,200 <sup>2</sup>	29,778 <sup>3</sup>	87,070 <sup>2</sup>	266,180 <sup>3</sup>	217,984 <sup>3</sup>	11,259 <sup>r</sup>
1986	974,606 <sup>3</sup>	17,440	2,350	34,121 <sup>3</sup>	86,898	297,616 <sup>3</sup>	223,517 <sup>3</sup>	11,128
1987	1,054,091 <sup>3</sup>	18,940	2,725	42,266 <sup>3</sup>	88,976	329,300 <sup>3</sup>	228,464 <sup>3</sup>	12,362
1988	1,093,685 <sup>3</sup>	19,628	2,731	41,421 <sup>3</sup>	99,192	337,668 <sup>3</sup>	237,188 <sup>3</sup>	12,378
1989	1,022,950 <sup>3</sup>	19,449	2,421	36,733 <sup>3</sup>	90,114	342,231 <sup>3</sup>	230,308 <sup>3</sup>	12,205
1990	914,783 <sup>r</sup>	22,100 <sup>2</sup>	2,497 <sup>2</sup>	39,898 <sup>2</sup>	88,924 <sup>2</sup>	262,027	238,213	10,349
1991	860,824 <sup>r</sup>	19,044	2,311 <sup>r</sup>	38,169 <sup>2</sup>	89,808 <sup>2</sup>	239,009 <sup>2</sup>	199,720	8,518
1992	917,695 <sup>r</sup>	18,556	2,753 <sup>r</sup>	34,820 <sup>2</sup>	99,751 <sup>2</sup>	262,928	190,676	11,414
1993	965,664 <sup>r</sup>	21,076	3,109 <sup>r</sup>	43,568 <sup>2</sup>	97,793 <sup>2</sup>	293,239	209,370 <sup>r</sup>	10,993
1994	1,011,249 <sup>r</sup>	19,643	3,237 <sup>r</sup>	49,084	92,790 <sup>3</sup>	327,838	211,474 <sup>r</sup>	12,653
1995	1,037,680 <sup>r</sup>	19,737	3,152 <sup>r</sup>	49,968	109,326 <sup>2</sup>	346,258	214,086 <sup>r</sup>	14,176
1996	1,059,123 <sup>r</sup>	17,649	2,787 <sup>2</sup>	59,053	114,639 <sup>2</sup>	342,328	213,235 <sup>r</sup>	15,342
1997	1,084,425 <sup>r</sup>	20,000 <sup>2</sup>	4,338 <sup>r</sup>	69,761 <sup>r</sup>	115,875 <sup>2</sup>	384,370	209,286 <sup>r</sup>	15,544
1998	1,073,951 <sup>r</sup>	17,414 <sup>2</sup>	4,376 <sup>r</sup>	54,203	116,872 <sup>2</sup>	369,907	225,132	16,590
1999	1,059,650 <sup>r</sup>	22,744	5,796 <sup>r</sup>	49,680 <sup>2</sup>	110,525 <sup>2</sup>	370,236	207,671	15,509
2000	1,068,754 <sup>r</sup>	23,216 <sup>p</sup>	5,522 <sup>r</sup>	54,433	113,414 <sup>2</sup>	344,137	213,260 <sup>r</sup>	15,633
2001	1,015,319 <sup>r</sup>	22,980 <sup>r</sup>	4,903 <sup>2</sup>	53,226 <sup>r</sup>	103,460 <sup>2</sup>	323,609	220,607 <sup>r</sup>	14,849
2002	1,000,758 <sup>r</sup>	22,000	4,627 <sup>2</sup>	51,657 <sup>r</sup>	98,567 <sup>2</sup>	339,064 <sup>r</sup>	194,941	15,042
2003	995,040 <sup>r</sup>	22,110	5,754 <sup>2</sup>	52,904 <sup>2</sup>	99,972 <sup>2</sup>	284,563 <sup>r</sup>	231,217 <sup>r</sup>	15,584
2004	1,010,548 <sup>r</sup>	22,867	5,495 <sup>2</sup>	59,504 <sup>2</sup>	98,329 <sup>2</sup>	306,321 <sup>r</sup>	210,226	17,528
2005	1,057,716 <sup>r</sup>	23,664 <sup>2</sup>	2,001 <sup>2</sup>	54,326 <sup>2</sup>	92,756 <sup>2</sup>	323,642 <sup>r</sup>	225,213	13,648
2006	998,286 <sup>r</sup>	17,280 <sup>2</sup>	2,195 <sup>2</sup>	43,682 <sup>2</sup>	92,697 <sup>2</sup>	321,078 <sup>r</sup>	211,874	13,648 <sup>2</sup>
2007	932,320 <sup>2</sup>	16,999 <sup>2</sup>	2,110 <sup>2</sup>	43,682 <sup>2</sup>	92,626 <sup>2</sup>	311,124 <sup>2</sup>	170,248 <sup>2</sup>	13,648 <sup>2</sup>

See notes at the end of the table.

Table 3.52 – continued

## Forest area harvested by province and territory

	Canada	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories <sup>1</sup>
	hectares					
1975	680,301 <sup>r</sup>	17,500	21,682	156,976 <sup>3</sup>	620 <sup>3</sup>	706
1976	706,120 <sup>2</sup>	16,900	21,469	175,952 <sup>3</sup>	560 <sup>3</sup>	396
1977	736,138 <sup>2</sup>	16,200	22,399	166,081 <sup>3</sup>	747 <sup>3</sup>	688
1978	826,507 <sup>2</sup>	21,100	25,601	196,533 <sup>3</sup>	935 <sup>3</sup>	693
1979	877,750 <sup>2</sup>	25,100	26,006	187,547 <sup>3</sup>	280	629
1980	881,004 <sup>r</sup>	16,930	32,280	187,834 <sup>3</sup>	58	742
1981	806,011 <sup>r</sup>	18,280	31,328	147,889 <sup>3</sup>	45	903
1982	762,656 <sup>r</sup>	15,830	37,554	162,172 <sup>3</sup>	43	427
1983	838,688 <sup>r</sup>	19,690	45,569	188,228 <sup>3</sup>	321	870
1984	897,714 <sup>r</sup>	21,910	32,312	198,453 <sup>3</sup>	561	1,075
1985	899,245 <sup>r</sup>	19,693	36,159	210,397 <sup>3</sup>	135	990
1986	974,606 <sup>3</sup>	19,356	41,604	239,877 <sup>3</sup>	299	400
1987	1,054,091 <sup>3</sup>	25,742	43,490	259,982 <sup>3</sup>	1,172	672
1988	1,093,685 <sup>3</sup>	22,089	50,125	270,401 <sup>3</sup>	465	399
1989	1,022,950 <sup>3</sup>	22,281	46,820	218,384 <sup>3</sup>	1,554	450
1990	914,783 <sup>r</sup>	16,543	51,869 <sup>r</sup>	181,530	366 <sup>2</sup>	467
1991	860,824 <sup>r</sup>	17,522	52,314 <sup>r</sup>	193,654 <sup>2</sup>	350 <sup>2</sup>	405
1992	917,695 <sup>r</sup>	18,471	55,569 <sup>r</sup>	221,599	639 <sup>2</sup>	519
1993	965,664 <sup>r</sup>	19,456	58,074 <sup>r</sup>	207,748	634 <sup>2</sup>	604
1994	1,011,249 <sup>r</sup>	24,221	77,507 <sup>r</sup>	190,244	2,056 <sup>2</sup>	502 <sup>2</sup>
1995	1,037,680 <sup>r</sup>	21,907	67,979 <sup>r</sup>	189,608	833	650 <sup>2</sup>
1996	1,059,123 <sup>r</sup>	21,379	71,322 <sup>r</sup>	199,029	1,921 <sup>2</sup>	439
1997	1,084,425 <sup>r</sup>	17,500 <sup>2</sup>	71,899 <sup>r</sup>	173,772 <sup>r</sup>	1,450 <sup>2</sup>	630
1998	1,073,951 <sup>r</sup>	21,169 <sup>2</sup>	71,076 <sup>r</sup>	176,142	489 <sup>r</sup>	581 <sup>2</sup>
1999	1,059,650 <sup>r</sup>	21,169 <sup>2</sup>	79,161 <sup>r</sup>	176,312	603 <sup>r</sup>	244 <sup>2</sup>
2000	1,068,754 <sup>r</sup>	21,169 <sup>2</sup>	73,488 <sup>r</sup>	204,472	7 <sup>2</sup>	3 <sup>2</sup>
2001	1,015,319 <sup>r</sup>	23,222	79,357 <sup>r</sup>	169,055	49 <sup>2</sup>	2 <sup>2</sup>
2002	1,000,758 <sup>r</sup>	25,070 <sup>2</sup>	81,965 <sup>r</sup>	167,774 <sup>r</sup>	42 <sup>2</sup>	9 <sup>2</sup>
2003	995,040 <sup>r</sup>	29,053	79,707 <sup>r</sup>	174,101	44 <sup>2</sup>	31 <sup>2</sup>
2004	1,010,548 <sup>r</sup>	29,241	79,979 <sup>r</sup>	180,959	48	51
2005	1,057,716 <sup>r</sup>	41,825	82,880 <sup>r</sup>	197,599	21 <sup>2</sup>	141 <sup>2</sup>
2006	998,286 <sup>r</sup>	29,183 <sup>2</sup>	68,897 <sup>p</sup>	197,599 <sup>2</sup>	12 <sup>2</sup>	141 <sup>2</sup>
2007	932,320 <sup>2</sup>	29,150 <sup>2</sup>	54,981 <sup>p</sup>	197,599 <sup>2</sup>	12 <sup>2</sup>	141 <sup>2</sup>

1. Includes Nunavut up to 1998. Figures not available for Nunavut from 1999 to 2007.

2. Estimated by provincial or territorial forestry agency.

3. Estimated by the Canadian Forest Service or by Statistics Canada.

Source(s): Canadian Council of Forest Ministers, 2008, *Silviculture - National Tables*, [http://nfdp.ccfm.org/silviculture/national\\_e.php](http://nfdp.ccfm.org/silviculture/national_e.php) (accessed March 5, 2009).

**Table 3.53**  
**Area of stocked timber-productive forest land burned**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
	hectares							
1980	1,355,074 <sup>r</sup>	680	..	559	2,116 <sup>r</sup>	4,902	330,825	304,049
1981	1,306,648 <sup>r</sup>	2,893	22	169	92	2,170	40,817	220,336 <sup>r</sup>
1982	838,789 <sup>r</sup>	4,392	25	359	5,407	7,202	297	7,094
1983	409,489 <sup>r</sup>	107	50	92	1,129	206,952	74,663	66,962
1984	181,013	1,565	8	193	270	2,397	2,219	51,099
1985	132,886 <sup>r</sup>	40,457	4	220	1,348 <sup>r</sup>	1,952	127	5,367
1986	311,367	23,511	85	268	37,216	173,296	50,598	5,495
1987	306,516	10,622	16	312	895	27,849	5,461	84,266
1988	639,777 <sup>r</sup>	7	2	89 <sup>r</sup>	1,778	273,066	35,994	295,930
1989	3,877,394 <sup>r</sup>	2,651	2	159	280	2,108,206	4,990	1,539,180
1990	265,990	2,601	4	477	5,198	76,825	3,200	6,728
1991	623,731	9,576	23	1,022	2,732	356,234	4,971	55,266
1992	262,846	1,014	8	805	4,668	24,295	10,331	185,299
1993	415,885	21	6	120	534	125,211	2,116	43,400
1994	742,240	692	7	67	239	2,830	410	552,571
1995	1,432,488	128	14	149	395	407,299	60,739	445,425
1996	607,686 <sup>2</sup>	8,519	0	172	1,591	410,342	179,207	..
1997	169,484	153	..	184	145	147,417	16,010	..
1998	313,548	4,630	..	168	275	16,721	57,659	..
1999	..	20,779	..	1,174	1,135	88,472	72,481	..
2000	..	68	..	359	269	603	613	..
2001	84,000	184	29	333	565	1,274	1,610	..
2002	..	1,238	9	149	230	405,375	18,468	..
2003	..	1,286	1	943	174	18,421	50,060	..
2004	..	289	6	130	267	717	46	..
2005	..	22	29	163	263	416,027	23,320	..
2006	..	2,526	17	308	310	43,438	43,458	..
2007	..	..	17	..	..	298,708	..	..
	Canada	Saskat- chewan	Alberta	British Columbia	Yukon	Northwest Territories <sup>1</sup>	National parks	
	hectares							
1980	1,355,074 <sup>r</sup>	89,237	465,451 <sup>r</sup>	32,743	111,537	12,975	..	..
1981	1,306,648 <sup>r</sup>	..	944,494 <sup>r</sup>	57,277	12,735	25,643	..	..
1982	838,789 <sup>r</sup>	..	462,674 <sup>r</sup>	280,676	68,127	2,536	..	..
1983	409,489 <sup>r</sup>	9,478	1,215 <sup>r</sup>	32,848	14,805	1,188	..	..
1984	181,013	47,281	35,259	12,227	6,995	134	21,366	..
1985	132,886 <sup>r</sup>	9,020	3,820	54,231	11,407	6	4,927	..
1986	311,367	4,031	1,587	9,474	3,132	11	2,663	..
1987	306,516	129,332	24,295	22,308	1,150	10	..	..
1988	639,777 <sup>r</sup>	24,187	5,149 <sup>r</sup>	3,284	288	3	..	..
1989	3,877,394 <sup>r</sup>	137,404	2,994 <sup>r</sup>	11,089	70,439	..	..	..
1990	265,990	71,198	22,143	52,575	..	..	25,041	..
1991	623,731	118,850	1,357	11,249	61,227	..	1,224	..
1992	262,846	12,768	720	17,212	3,785	..	1,941	..
1993	415,885	227,208	12,894	1,376	..	..	2,999	..
1994	742,240	79,641	8,610	20,737	..	..	76,436	..
1995	1,432,488	320,993	163,376	26,888	..	..	7,082	..
1996	607,686 <sup>2</sup>	4,755 <sup>2</sup>	430	2,670	..	..	..	..
1997	169,484	1,904	3,046	286	..	..	339	..
1998	313,548	..	234,095	..	..	..	..	..
1999	..	..	52,887	..	..	..	..	..
2000	..	..	3,802	14,376 <sup>r</sup>	..	..	..	..
2001	84,000	..	74,538	5,467	..	..	..	..
2002	..	..	361,091	..	..	..	..	..
2003	..	..	25,747 <sup>r</sup>	..	..	..	..	..
2004	..	..	..	..	..	..	..	..
2005	..	..	..	3,953	..	..	..	..
2006	..	..	..	327,042	..	..	..	..
2007	..	..	..	19,473	..	..	..	..

1. Includes Nunavut up to 1998. Figures not available for Nunavut from 1999 to 2007.

2. Estimated by the Canadian Forest Service or by Statistics Canada.

**Source(s):** Canadian Council of Forest Ministers, 2008, *Forest Fires - National Tables*, [http://nfdp.ccfm.org/fires/national\\_e.php](http://nfdp.ccfm.org/fires/national_e.php) (accessed March 6, 2009).

**Table 3.54**  
**Fertilized area, by province**

	1981	1986	1991	1996	2001	2006
	km <sup>2</sup>					
<b>All provinces</b>	<b>185,052.0</b>	<b>231,479.7</b>	<b>215,618.3</b>	<b>249,426.4</b>	<b>240,146.4</b>	<b>253,480.1</b>
Newfoundland and Labrador	44.1	47.6	54.3	64.6	64.0	61.4
Prince Edward Island	1,074.4	1,133.0	1,021.2	1,195.4	1,101.0	1,121.9
Nova Scotia	885.4	850.4	822.7	885.5	883.6	819.2
New Brunswick	760.0	840.5	781.4	907.4	900.6	881.2
Quebec	11,054.0	11,892.3	9,967.2	9,910.6	10,017.2	10,436.3
Ontario	25,338.2	25,911.3	22,734.5	24,075.2	22,317.7	23,762.8
Manitoba	31,964.6	37,263.7	36,883.4	38,303.9	35,311.7	34,522.0
Saskatchewan	55,258.5	81,250.3	76,545.5	100,156.2	99,085.5	108,908.6
Alberta	55,051.7	68,548.8	63,498.8	70,314.3	67,000.2	69,652.3
British Columbia	3,621.0	3,741.9	3,309.4	3,613.2	3,464.9	3,314.4

**Source(s):** Statistics Canada, CANSIM table 153-0039.

Table 3.55

## Manure production by major drainage area and sub-drainage area, 2006

	Drainage area code	Manure production	Phosphorous production	Nitrogen production
	code	tonnes		
<b>Canada</b>	<b>...</b>	<b>180,959,835</b>	<b>303,194</b>	<b>1,097,790</b>
<b>Maritime provinces</b>	<b>01</b>	<b>4,371,656</b>	<b>7,304</b>	<b>27,216</b>
Saint John and Southern Bay of Fundy	01A	1,069,692	1,836	6,805
Gulf of St. Lawrence and Northern Bay of Fundy	01B	703,204	1,070	4,153
Prince Edward Island	01C	1,109,528	1,792	6,564
Bay of Fundy and Gulf of St. Lawrence	01D	1,287,981	2,262	8,402
Southeastern Atlantic Ocean	01E	116,159	208	775
Cape Breton Island	01F	85,092	135	516
<b>St. Lawrence</b>	<b>02</b>	<b>50,472,230</b>	<b>88,298</b>	<b>316,063</b>
Northwestern Lake Superior	02A	104,034	146	596
Northeastern Lake Superior	02B	2,577	4	15
Northern Lake Huron	02C	319,638	497	1,880
Wanapitei and French	02D	138,580	209	811
Eastern Georgian Bay	02E	1,610,709	2,630	9,834
Eastern Lake Huron	02F	8,087,445	14,745	51,221
Northern Lake Erie	02G	9,527,597	18,246	62,506
Lake Ontario and Niagara Peninsula	02H	4,018,577	6,930	25,858
Upper Ottawa	02J	687,343	1,024	4,005
Central Ottawa	02K	1,382,948	2,096	8,037
Lower Ottawa	02L	3,319,481	4,871	19,374
Upper St. Lawrence	02M	1,101,340	1,730	6,661
Saint-Maurice	02N	36,760	62	240
Central St. Lawrence	02O	11,007,008	19,936	69,836
Lower St. Lawrence	02P	7,112,078	12,149	43,214
Northern Gaspé Peninsula	02Q	979,900	1,507	5,886
Saguenay	02R	853,825	1,217	4,922
Betsiamites, coast	02S	15,777	24	91
Manicouagan and aux Outardes	02T	245	0	1
Gulf of St. Lawrence, Natashquan	02W	4,427	7	26
Northern Newfoundland	02Y	71,362	105	426
Southern Newfoundland	02Z	90,579	162	622
<b>Northern Quebec and Labrador</b>	<b>03</b>	<b>30,434</b>	<b>45</b>	<b>175</b>
Nottaway, coast	03A	30,434	45	175
<b>Southwestern Hudson Bay</b>	<b>04</b>	<b>496,778</b>	<b>783</b>	<b>2,952</b>
Missinaibi and Mattagami	04L	4,063	6	24
Abitibi	04M	378,516	590	2,223
Harricaw, coast	04N	114,199	187	706
<b>Nelson River</b>	<b>05</b>	<b>100,828,505</b>	<b>166,283</b>	<b>601,411</b>
Upper South Saskatchewan	05A	13,448,966	21,884	79,867
Bow	05B	5,308,696	8,553	31,387
Red Deer	05C	14,460,039	23,533	85,799
Upper North Saskatchewan	05D	2,355,960	3,749	13,948
Central North Saskatchewan	05E	8,830,882	14,266	52,568
Battle	05F	8,261,766	13,459	49,175
Lower North Saskatchewan	05G	5,425,057	8,876	32,199
Lower South Saskatchewan	05H	6,122,666	10,086	36,606
Qu'Appelle	05J	8,083,721	13,131	47,928
Saskatchewan	05K	1,412,850	2,361	8,406
Lake Winnipegosis and Lake Manitoba	05L	6,537,705	10,651	38,748
Assiniboine	05M	7,456,281	12,447	44,600
Souris	05N	5,776,678	9,298	34,042
Red	05O	5,865,334	11,448	37,197
Winnipeg	05P	432,712	736	2,626
English	05Q	19,235	30	113
Western Lake Winnipeg	05S	1,029,957	1,775	6,204
<b>Western and Northern Hudson Bay</b>	<b>06</b>	<b>3,021,646</b>	<b>4,795</b>	<b>17,754</b>
Beaver, Alberta and Saskatchewan	06A	3,021,646	4,795	17,754
<b>Great Slave Lake</b>	<b>07</b>	<b>10,411,422</b>	<b>16,720</b>	<b>61,543</b>
Upper Athabasca	07A	453,687	711	2,657
Central Athabasca, upper	07B	4,193,751	6,756	24,792
Central Athabasca, lower	07C	616,182	993	3,662
Upper Peace	07F	2,669,783	4,276	15,749
Smoky	07G	1,793,861	2,904	10,656
Central Peace, upper	07H	518,076	815	3,043
Central Peace, lower	07J	166,083	265	984
<b>Pacific</b>	<b>08</b>	<b>7,948,004</b>	<b>13,552</b>	<b>50,743</b>

Table 3.55 – continued

## Manure production by major drainage area and sub-drainage area, 2006

	Drainage area code	Manure production	Phosphorous production	Nitrogen production
	code	tonnes		
Skeena, coast	08E	207,132	321	1,213
Central coastal waters	08F	44,438	70	261
Southern coastal waters	08G	15,109	36	129
Vancouver Island	08H	410,744	659	2,592
Nechako	08J	611,095	964	3,591
Upper Fraser	08K	593,778	947	3,526
Thompson	08L	1,780,808	2,832	10,670
Lower Fraser	08M	3,241,731	6,060	22,501
Columbia	08N	1,043,169	1,662	6,260
Arctic	10	16,294	26	96
Fort Nelson	10C	16,294	26	96
<b>Mississippi River</b>	<b>11</b>	<b>3,215,375</b>	<b>5,158</b>	<b>18,946</b>
Missouri	11A	3,215,375	5,158	18,946
Islands and other unallocated areas		147,491	230	892

**Note(s):** A sub-drainage area, also called a watershed or drainage basin, is an area where all contributing surface waters share the same drainage outlet. Drainage areas channel runoff from precipitation and snow melt into stream flow. The resulting hierarchy of streams and rivers and their associated sub-drainage areas form the National Hydrological Network of Canada. There are 11 major drainage areas and 164 sub-drainage areas in Canada. Canada's entire land and fresh water area has been allocated to individual drainage areas. See map 2.3 and table 2.2 for classification codes and area figures for these sub-drainage areas.

**Source(s):** Statistics Canada, CANSIM table 153-0040.

Table 3.56

## Top ten substances released to land, 2007

	Releases <sup>1</sup>		Share of total
	tonnes		percent
Hydrogen sulphide	253,416.2		62.8
Total Reduced Sulphur (TRS)	33,261.0		8.2
Nitrate (ion in solution at pH >= 6.0)	27,828.7		6.9
Ammonia (total) <sup>2</sup>	18,875.6		4.7
Asbestos (friable form)	13,747.0		3.4
Zinc (and its compounds)	10,966.1		2.7
Methanol	9,384.8		2.3
Phosphorous (total)	7,586.4		1.9
Manganese (and its compounds)	7,375.8		1.8
Lead (and its compounds)	6,011.2		1.4

1. Data include disposals.

2. Refers to the total of both ammonia (NH<sub>3</sub>) and ammonium ion (NH<sub>4</sub><sup>+</sup>) in solution.

**Source(s):** Environment Canada, Pollution Data Branch, 2008, *National Pollutant Release Inventory Databases*, [www.ec.gc.ca/pdb/npri/npri\\_prev\\_dat\\_e.cfm](http://www.ec.gc.ca/pdb/npri/npri_prev_dat_e.cfm) (accessed February 2, 2009).



Table 3.57

## Streamflow and surface fresh water intake in Canada by drainage region

	Code	Total streamflow <sup>1</sup>	Surface fresh water intake				Water intake as share of streamflow
			Municipal	Industrial	Agricultural	Total	
	code	cubic kilometres	millions of cubic metres				percent
<b>Canada</b>		<b>3,315.54</b>	<b>4,872.83</b>	<b>31,491.03</b>	<b>4,098.19</b>	<b>40,462.05</b>	<b>1.22</b>
Pacific Coastal and Yukon	1,5	595.90	192.68	597.69	78.73	869.10	0.15
Fraser - Lower Mainland	2	125.26	428.61	219.81	467.98	1,116.40	0.89
Columbia and Okanagan - Similkameen	4,3	65.69	71.54	109.38	228.17	409.10	0.62
Peace - Athabasca	6	91.55	28.01	169.82	21.69	219.49	0.24
Lower Mackenzie and Arctic Coast - Islands	7,8	507.13	6.57	5.62	0.00	12.22	0.00
North Saskatchewan	10	7.38	142.20	1,457.41	86.57	1,686.19	22.85
South Saskatchewan, Missouri and Assiniboine							
- Red	11,9,12	9.50	435.73	753.62	2,891.82	4,081.17	42.96
Winnipeg	13	23.90	11.48	197.23	1.14	209.85	0.88
Lower Saskatchewan - Nelson	14	60.27	14.09	31.90	24.10	70.09	0.12
Churchill	15	22.11	6.34	3.28	8.36	17.97	0.08
Keewatin - Southern Baffin	16	169.75	0.16	0.00	0.00	0.16	0.00
Northern Ontario	17	189.06	12.47	86.68	0.00	99.54	0.05
Northern Quebec	18	530.75	5.87	59.94	0.00	65.83	0.01
Great Lakes - Ottawa - St. Lawrence	19,20,21	226.96	3,087.12	27,229.02	271.64	30,587.41	13.48
North Shore - Gaspé	22	257.32	78.41	134.29	4.39	216.45	0.08
Saint John - St. Croix	23	24.57	97.39	109.78	2.77	209.93	0.85
Maritime Coastal	24	114.40	139.74	132.07	10.83	282.63	0.25
Newfoundland - Labrador	25	294.04	114.40	193.48	0.00	308.51	0.10

1. Streamflow is represented by the long-term annual average.

**Note(s):** These drainage regions and associated flow measures are adapted from Pearce (1985) (see full reference below). Some of these drainage region aggregates have more than one outflow. Drainage regions at the US-Canada border exclude inflow from United States.

**Source(s):** Environment Canada, 1998, *Municipal Water Use Database*. Pearce, P.H., F. Bertrand and J.W. MacLaren, 1985, *Currents of Change: Final Report of the Inquiry on Federal Water Policy*, Environment Canada, Ottawa. Statistics Canada and Environment Canada, 1996, *Industrial Water Use Survey*. Statistics Canada, Environment Accounts and Statistics Division, special tabulation.

Table 3.58

## Top ten substances released to water, 2007

	Releases		Share of total
	tonnes	percent	
Nitrate (ion in solution at pH >= 6.0)	56,880.6	48.4	
Ammonia (total) <sup>1</sup>	49,281.6	42.0	
Phosphorus (total)	6,504.4	5.5	
Methanol	1,615.4	1.4	
Manganese (and its compounds)	1,410.6	1.2	
Ethylene glycol	484.4	0.4	
Zinc (and its compounds)	253.1	0.2	
Chlorine	204.0	0.2	
Total Reduced Sulphur (TRS)	99.2	0.1	
Copper (and its compounds)	94.7	0.1	

1. Refers to the total of both ammonia (NH<sub>3</sub>) and ammonium ion (NH<sub>4</sub><sup>+</sup>) in solution.

**Source(s):** Environment Canada, Pollution Data Branch, 2008, *National Pollutant Release Inventory Databases*, [www.ec.gc.ca/pdb/npri/npri\\_prev\\_dat\\_e.cfm](http://www.ec.gc.ca/pdb/npri/npri_prev_dat_e.cfm) (accessed February 2, 2009).

**Table 3.59**  
**General status of species in Canada**

	Total	Extirpated <sup>1</sup>	Extinct <sup>2</sup>	At risk <sup>3</sup>	May be at risk <sup>4</sup>	Sensitive <sup>5</sup>	Secure <sup>6</sup>	Undetermined <sup>7</sup>	Not assessed <sup>8</sup>	Exotic <sup>9</sup>	Accidental <sup>10</sup>
	number										
<b>2005</b>											
<b>Species total</b>	<b>7,732</b>	<b>30</b>	<b>5</b>	<b>220</b>	<b>622</b>	<b>655</b>	<b>3,541</b>	<b>534</b>	<b>465</b>	<b>1,254</b>	<b>406</b>
Mammals	218	1	1	12	10	26	139	11	0	11	7
Birds	653	1	3	30	10	41	357	5	0	11	195
Fishes	1,389	2	1	26	16	65	238	395	434	12	200
Amphibians	46	0	0	9	0	7	30	0	0	0	0
Reptiles	47	3	0	15	1	11	12	1	0	2	2
Vascular Plants											
Ferns	124	0	0	5	24	15	78	0	0	2	0
Orchids	76	1	0	8	5	10	49	0	0	3	0
Other	4,874	21	0	105	516	433	2,446	112	30	1,211	0
Freshwater Mussels	55	1	0	9	8	15	19	2	1	0	0
Crayfish	11	0	0	0	0	2	7	0	0	2	0
Odonates	209	0	0	1	27	27	145	7	0	0	2
Tiger Beetles	30	0	0	0	5	3	21	1	0	0	0

1. Species that are no longer present in a given geographic area, but occur in other areas. In *Wild Species 2005* this rank partially replaces the rank of Extirpated or Extinct used in *Wild Species 2000*.
2. Species that are extirpated worldwide (that is, they no longer exist anywhere). In *Wild Species 2005* this rank partially replaces the rank of Extirpated or Extinct used in *Wild Species 2000*.
3. Species for which a formal, detailed risk assessment (COSEWIC status assessment or provincial or territorial equivalent) has been completed and that have been determined to be at risk of extirpation or extinction (i.e. Endangered or Threatened). A COSEWIC designation of Endangered or Threatened automatically results in a Canada General Status Rank (Canada rank) of At Risk. Where a provincial or territorial formal risk assessment finds a species to be Endangered or Threatened in that particular region, then, under the general status program, the species automatically receives a provincial or territorial general status rank of At Risk.
4. Species that may be at risk of extirpation or extinction and are therefore candidates for a detailed risk assessment by COSEWIC, or provincial or territorial equivalents.
5. Species that are not believed to be at risk of immediate extirpation or extinction but may require special attention or protection to prevent them from becoming at risk.
6. Species that are not believed to belong in the categories Extirpated, Extinct, At Risk, May Be At Risk, Sensitive, Accidental or Exotic. This category includes some species that show a trend of decline in numbers in Canada but remain relatively widespread or abundant.
7. Species for which insufficient data, information, or knowledge is available with which to reliably evaluate their general status.
8. Species that are known or believed to be present regularly in the geographic area in Canada to which the rank applies, but have not yet been assessed by the general status program.
9. Species that have been moved beyond their natural range as a result of human activity. In this report, Exotic species have been purposefully excluded from all other categories.
10. Species occurring infrequently and unpredictably, outside their usual range.

**Source(s):** Wild species, 2006, *Wild Species Reports*, [www.wildspecies.ca/rpts.cfm?lang=e](http://www.wildspecies.ca/rpts.cfm?lang=e) (accessed March 30, 2009).

**Table 3.60**  
**Wildlife species extinct and at risk in Canada, 2008**

	Assessment of the Committee on the Status of Endangered Wildlife in Canada					Total
	Extinct <sup>1</sup>	Extirpated <sup>2</sup>	Endangered <sup>3</sup>	Threatened <sup>4</sup>	Special concern <sup>5</sup>	
	number					
<b>Total</b>	<b>13</b>	<b>23</b>	<b>238</b>	<b>146</b>	<b>157</b>	<b>577</b>
Mammals	2	3	21	18	26	70
Birds	3	2	27	18	23	73
Fishes	6	4	37	25	41	113
Amphibians	0	1	7	6	7	21
Reptiles	0	4	14	13	9	40
Molluscs	1	2	17	3	4	27
Arthropods <sup>6</sup>	0	3	17	6	5	31
Vascular plants	0	3	89	52	33	177
Lichens	0	0	2	2	5	9
Mosses	1	1	7	3	4	16

1. A wildlife species that no longer exists.

2. A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.

3. A wildlife species facing imminent extirpation or extinction.

4. A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

5. A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

6. Formerly described as lepidopterans.

**Source(s):** Committee on the Status of Endangered Wildlife in Canada, 2008, *Canadian Wildlife Species at Risk*, [www.cosewic.gc.ca/eng/sct0/rpt/dsp\\_booklet\\_e.htm](http://www.cosewic.gc.ca/eng/sct0/rpt/dsp_booklet_e.htm) (accessed January 29, 2009).

Table 3.61

Legal protection of wildlife species in Canada under the *Species at Risk Act*

	Species risk status							
	Extirpated				Endangered			
	Listing of species under the				<i>Species at Risk Act</i> <sup>1</sup>			
	Assessment not yet forwarded to Minister of the Environment	Under Consideration <sup>2</sup>	Listed <sup>3</sup>	Not listed <sup>3</sup>	Assessment not yet forwarded to Minister of the Environment	Under Consideration <sup>2</sup>	Listed <sup>3</sup>	Not listed <sup>3</sup>
	number							
<b>Total</b>	<b>1</b>	<b>2</b>	<b>21</b>	<b>0</b>	<b>3</b>	<b>32</b>	<b>200</b>	<b>10</b>
Mammals (terrestrial)	0	0	2	0	0	1	10	1
Mammals (marine)	0	0	2	0	0	3	7	2
Birds	0	0	2	0	0	1	26	0
Fish	0	2	2	0	1	12	21	7
Amphibians	0	0	1	0	0	0	7	0
Reptiles	0	0	4	0	0	2	12	0
Molluscs (terrestrial)	0	0	1	0	0	0	2	0
Molluscs (aquatic)	0	0	1	0	0	5	10	0
Arthropods	0	0	3	0	1	2	14	0
Vascular Plants	1	0	2	0	1	6	82	0
Lichens	0	0	0	0	0	0	2	0
Mosses	0	0	1	0	0	0	7	0

	Species risk status							
	Threatened				Special concern			
	Listing of species under the				<i>Species at Risk Act</i> <sup>1</sup>			
	Assessment not yet forwarded to Minister of the Environment	Under Consideration <sup>2</sup>	Listed <sup>3</sup>	Not listed <sup>3</sup>	Assessment not yet forwarded to Minister of the Environment	Under Consideration <sup>2</sup>	Listed <sup>3</sup>	Not listed <sup>3</sup>
	number							
<b>Total</b>	<b>5</b>	<b>24</b>	<b>119</b>	<b>6</b>	<b>7</b>	<b>23</b>	<b>107</b>	<b>7</b>
Mammals (terrestrial)	0	1	7	1	0	3	9	3
Mammals (marine)	1	3	5	1	1	6	7	2
Birds	0	5	14	0	1	4	17	0
Fish	2	10	13	3	2	8	21	2
Amphibians	0	1	5	0	0	0	7	0
Reptiles	0	1	13	0	1	0	8	0
Molluscs (terrestrial)	0	0	1	0	0	0	1	0
Molluscs (aquatic)	0	1	1	0	0	0	3	0
Arthropods	0	0	6	0	1	1	3	0
Vascular Plants	2	0	51	0	0	1	24	0
Lichens	0	1	1	0	1	0	3	0
Mosses	0	1	2	1	0	0	4	0

1. As of March 31, 2009

2. Does not include species that are already on Schedule 1 and are currently having the confirmation of their status considered.

3. Only species listed on Schedule 1 of the *Species at Risk Act* (SARA) receive legal protection. This legal protection varies depending on species status, the types of species and the jurisdiction in which the species is found. The general prohibitions of SARA do not apply to species of special concern. Please see the *Species at Risk Act* for more information (<http://laws.justice.gc.ca/en/s-15.3/text.html>).**Source(s):** Environment Canada, Population Conservation and Management Division, 2009, special tabulation. For more information please consult the SARA Public Registry, [http://www.sararegistry.gc.ca/default\\_e.cfm](http://www.sararegistry.gc.ca/default_e.cfm).

**Table 3.62**  
**Wildlife species extinct and extirpated from Canada, 2008**

Species	Group	Date of extinction <sup>1</sup> or extirpation <sup>2</sup>	Probable cause(s) of extinction <sup>1</sup> or extirpation <sup>2</sup>
<b>Extinct <sup>1</sup></b>			
Benthic Hadley Lake stickleback	fishes (freshwater)	1999	introduced predators
Limnetic Hadley Lake stickleback	fishes (freshwater)	1999	introduced predators
Banff longnose dace	fishes (freshwater)	1986	introduced predators; habitat alteration
Blue walleye	fishes (freshwater)	1965	commercial fishing; introduced predators
Lake Ontario kiyi	fishes (freshwater)	1964	commercial fishing; introduced predators
Deepwater cisco	fishes (freshwater)	1952	commercial fishing; introduced predators
Eelgrass limpet	molluscs	1929	loss of food source
Caribou (dawsoni subspecies)	mammals (terrestrial)	1920s	unknown
Passenger pigeon	birds	1914	hunting and predation
Sea mink	mammals (marine)	1894	trapping
Labrador duck	birds	1875	hunting; habitat alteration
Macoun's shining moss	mosses	after 1864	habitat alteration
Great auk	birds	1844	hunting
<b>Extirpated <sup>2</sup></b>			
Karner blue	arthropods	1991	loss of food source; habitat alteration
Frosted elfin	arthropods	1988	successional change
Greater prairie-chicken	birds	after 1987	habitat alteration
Black-footed ferret	mammals (terrestrial)	1974	loss of food source
Striped bass (St. Lawrence Estuary population)	fishes (freshwater)	after 1968	illegal fishing
Dwarf wedgemussel	molluscs	1968	habitat alteration
Greater sage grouse (phaeos subspecies)	birds	1960s	hunting; habitat alteration
Pacific pond turtle	reptiles	after 1959	commercial harvesting; habitat alteration
Gravel chub	fishes (freshwater)	after 1958	habitat alteration
Pacific gophersnake	reptiles	after 1957	habitat alteration
Spring blue-eyed Mary	plants	after 1954	habitat alteration
Timber rattlesnake	reptiles	1941	hunting; habitat alteration
Oregon lupine	plants	after 1929	habitat alteration
Paddlefish	fishes (freshwater)	1917	habitat alteration; over-fishing
Tiger salamander (Great Lakes population)	amphibians	1915	habitat alteration
Island marble	arthropods	before 1910	loss of food source; habitat alteration
Puget Oregonian snail	molluscs	after 1905	unknown
Pygmy short-horned lizard	reptiles	after 1898	habitat alteration
Atlantic salmon (Lake Ontario population)	fishes (freshwater)	after 1898	habitat destruction and over-exploitation by a food and commercial fishery
Illinois tick-trefoil	plants	after 1888	habitat alteration
Grizzly bear (Prairie population)	mammals (terrestrial)	1880s	hunting
Incurved grizzled moss	mosses	1828	unknown
Grey whale (Atlantic population)	mammals (marine)	1800s	hunting

1. A wildlife species that no longer exists.

2. A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.

**Source(s):** Committee on the Status of Endangered Wildlife in Canada, 2008, *Canadian Wildlife Species at Risk*, [www.cosewic.gc.ca/eng/sct0/rpt/dsp\\_booklet\\_e.htm](http://www.cosewic.gc.ca/eng/sct0/rpt/dsp_booklet_e.htm) (accessed January 29, 2009).

**Table 3.63**  
**Harvest estimates for selected waterfowl species**

	Canada goose	Lesser Snow Goose	Mallard	American Black Duck	American Green-winged Teal	Northern Pintail
	number					
1975	358,177	106,819	1,730,981	307,360	201,827	216,969
1976	317,257	98,487	1,935,903	350,532	236,153	200,589
1977	333,273	101,991	1,557,130	356,496	271,921	191,921
1978	395,569	75,431	1,522,632	380,607	226,202	135,235
1979	416,667	140,795	1,609,618	319,804	161,270	145,622
1980	450,744	138,834	1,533,585	363,873	175,153	128,770
1981	360,969	127,390	1,296,941	321,987	176,127	110,995
1982	396,196	116,778	1,213,941	336,945	203,801	104,798
1983	469,552	169,086	1,327,609	309,139	162,941	101,795
1984	420,091	124,140	1,059,251	306,589	145,664	103,417
1985	452,498	155,360	911,076	299,762	196,599	91,110
1986	453,834	92,074	879,125	296,081	172,010	59,988
1987	507,283	141,705	1,020,609	295,392	134,467	67,182
1988	395,673	113,112	668,554	300,228	145,286	69,357
1989	510,370	138,373	744,007	261,324	195,640	62,960
1990	501,660	102,152	734,613	243,009	200,012	71,637
1991	472,182	101,959	629,139	225,938	113,064	35,220
1992	380,469	58,852	579,810	206,511	99,105	33,417
1993	434,157	88,578	536,999	203,313	132,306	37,753
1994	414,220	102,257	625,412	175,459	126,837	44,442
1995	396,004	105,642	603,342	187,161	145,537	44,313
1996	500,105	92,271	641,090	163,601	93,534	52,697
1997	489,478	150,768	718,695	165,469	111,378	60,761
1998	531,353	155,495	663,919	158,379	124,693	59,854
1999	565,242	154,731	633,196	174,943	154,757	55,693
2000	612,056	122,725	676,376	154,918	116,458	56,431
2001	637,016	146,990	591,760	124,075	89,426	39,654
2002	645,664	130,477	546,594	122,642	111,754	57,038
2003	671,654	152,120	511,486	109,223	90,919	47,959
2004	626,801	105,433	523,728	91,764	71,720	59,950
2005	712,042	106,021	544,006	89,580	71,786	43,815
2006	678,011	165,416	613,626	104,030	69,828	46,517
2007	703,857	106,945	545,952	103,811	91,910	56,800

**Source(s):** Environment Canada, Canadian Wildlife Service, 2007, *Migratory Bird Populations*, [www.cws-scf.ec.gc.ca/harvest/hews\\_e.cfm](http://www.cws-scf.ec.gc.ca/harvest/hews_e.cfm) (accessed April 2, 2009).

**Table 3.64**  
**Pelts harvested by province and territory, 2006**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
	number						
<b>Total wild <sup>1</sup></b>	<b>1,047,428</b>	<b>14,965</b>	<b>6,508</b>	<b>48,956</b>	<b>53,277</b>	<b>278,888</b>	<b>254,108</b>
Badger	1,063	.	.	.	.	.	0
Bear	2,265	0	.	0	51	1,199	63
Beaver	210,398	2,633	507	5,651	14,259	69,593	63,791
Coyote or prairie wolf	84,151	244	395	2,532	2,478	6,852	2,573
Ermine	51,268	2,192	12	1,400	1,662	15,196	8,317
Fisher	19,675	.	.	221	811	5,792	8,164
Fox	34,254	2,303	764	735	1,841	14,265	2,676
Lynx	8,454	107	0	0	.	2,590	1,010
Marten	108,900	1,230	.	.	2,009	21,793	20,424
Mink	27,606	2,811	450	446	1,330	7,473	8,359
Muskrat	362,383	1,808	3,291	25,761	22,250	106,843	94,296
Otter	13,461	676	.	446	487	4,028	6,164
Raccoon	54,090	.	634	3,575	4,843	11,995	28,929
Hair seal	8,858	0	0	0	0	0	.
Skunk	1,009	.	6	66	41	513	254
Squirrel	54,096	886	449	7,223	576	10,029	8,126
Wildcat or bobcat	1,827	.	0	900	639	0	46
Wolf	2,935	75	0	0	.	727	676
Wolverine	497	.	.	.	.	0	2
Other	238	.	.	.	.	.	238
<b>Total ranch-raised <sup>2</sup></b>	<b>1,652,230</b>	<b>112,780</b>	<b>38,600</b>	<b>854,800</b>	<b>41,060</b>	<b>50,000</b>	<b>311,830</b>
Fox	8,830	1,680	1,800	1,200	1,660	1,800	530
Mink	1,643,400	111,100	36,800	853,600	39,400	48,200	311,300

	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories	Nunavut
	number						
<b>Total wild <sup>1</sup></b>	<b>110,203</b>	<b>111,332</b>	<b>95,679</b>	<b>32,621</b>	<b>5,132</b>	<b>23,878</b>	<b>11,881</b>
Badger	211	498	354	0	.	.	.
Bear	676	48	93	69	0	6	60
Beaver	18,393	14,191	16,804	2,882	278	1,416	0
Coyote or prairie wolf	9,730	28,803	28,921	1,580	38	5	0
Ermine	6,510	4,813	6,885	3,161	52	1,068	0
Fisher	1,651	1,225	1,489	278	3	41	0
Fox	2,215	3,542	1,704	431	78	843	2,857
Lynx	686	443	896	1,040	659	1,023	0
Marten	15,318	5,492	10,435	15,671	3,098	13,430	0
Mink	3,333	1,807	613	534	62	388	0
Muskrat	40,579	45,421	15,049	1,914	384	4,787	0
Otter	1,015	356	0	279	6	4	0
Raccoon	2,658	1,159	116	181	.	.	.
Hair seal	.	.	.	.	.	137	8,721
Skunk	0	57	72	0	.	.	.
Squirrel	6,872	3,206	11,940	4,120	223	446	0
Wildcat or bobcat	17	9	10	206	.	.	.
Wolf	315	244	255	155	145	130	213
Wolverine	24	18	43	120	106	154	30
Other	.	.	.	.	0	0	0
<b>Total ranch-raised <sup>2</sup></b>	<b>47,580</b>	<b>x</b>	<b>820</b>	<b>x</b>	.	.	.
Fox	x	x	x	x	.	.	.
Mink	x	0	x	194,700	.	.	.

1. Data on wildlife furs are on a "fur year basis" which is from July 1 to June 30.

2. The ranched fur estimates operate on a calendar year basis, with most ranch peltings occurring in the fall.

**Source(s):** Statistics Canada, Agriculture Division, 2008, *Fur Statistics*, Catalogue no. 23-013-X, vol. 5, no. 1.

**Table 3.65**  
**Value of pelts harvested by province and territory, 2006**

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario
dollars							
<b>Total wild <sup>1</sup></b>	<b>25,777,218</b>	<b>326,465</b>	<b>98,294</b>	<b>657,064</b>	<b>1,067,390</b>	<b>5,949,723</b>	<b>4,884,873</b>
Badger	44,088	.	.	.	.	.	0
Bear	259,383	0	.	0	2,812	102,759	5,109
Beaver	5,214,817	63,139	12,927	144,101	369,631	1,810,810	1,432,746
Coyote or prairie wolf	3,970,971	5,290	12,949	73,023	84,656	229,953	51,357
Ermine	309,297	11,771	37	7,798	12,411	95,127	36,428
Fisher	1,555,586	.	.	17,167	68,379	464,924	606,095
Fox	933,307	58,628	30,944	20,800	55,838	416,194	64,775
Lynx	1,073,150	13,058	0	0	.	293,059	116,544
Marten	7,177,839	82,016	.	.	98,419	1,292,325	1,115,150
Mink	470,556	39,213	7,927	7,033	22,723	123,230	132,741
Muskrat	2,000,576	6,274	23,207	171,053	151,512	668,837	503,541
Otter	701,542	37,903	.	29,793	27,539	208,409	308,015
Raccoon	797,568	.	9,624	46,976	75,365	148,378	449,557
Hair seal	452,336	0	0	0	0	0	.
Skunk	7,122	.	29	412	285	3,806	1,842
Squirrel	66,962	1,054	650	9,101	693	11,433	9,914
Wildcat or bobcat	282,966	.	0	129,807	97,127	0	7,129
Wolf	344,196	8,119	0	0	.	80,479	42,892
Wolverine	114,235	.	.	.	.	0	317
Other	721	.	.	.	.	.	721
<b>Total ranch-raised <sup>2</sup></b>	<b>90,175,964</b>	<b>5,325,236</b>	<b>2,151,180</b>	<b>49,319,928</b>	<b>2,372,572</b>	<b>2,797,645</b>	<b>16,311,587</b>
Fox	1,007,580	191,722	205,416	136,944	189,439	205,416	60,484
Mink	89,168,384	5,133,514	1,945,764	49,182,984	2,183,133	2,592,229	16,251,103
	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Northwest Territories	Nunavut
dollars							
<b>Total wild <sup>1</sup></b>	<b>2,974,128</b>	<b>2,966,864</b>	<b>2,937,729</b>	<b>1,590,413</b>	<b>388,979</b>	<b>1,303,269</b>	<b>632,027</b>
Badger	11,377	22,141	10,570	0	.	.	.
Bear	53,728	4,280	11,282	4,995	0	2,494	71,924
Beaver	509,022	317,453	427,494	84,183	7,784	35,527	0
Coyote or prairie wolf	464,510	1,622,473	1,358,130	66,613	1,824	193	0
Ermine	39,060	40,092	36,972	28,133	400	1,068	0
Fisher	149,894	99,666	119,835	26,224	225	3,177	0
Fox	59,313	82,242	38,651	13,645	1,794	23,727	66,756
Lynx	88,823	51,357	122,483	143,946	96,214	147,666	0
Marten	1,180,711	395,204	695,806	1,097,754	229,252	991,202	0
Mink	72,726	37,296	8,551	11,390	1,178	6,548	0
Muskrat	180,982	205,757	52,220	12,881	1,920	22,392	0
Otter	54,546	19,843	0	14,943	384	167	0
Raccoon	46,169	18,196	1,538	1,765	.	.	.
Hair seal	.	.	.	.	.	8,156	444,180
Skunk	0	433	315	0	.	.	.
Squirrel	8,384	4,617	14,209	5,850	312	745	0
Wildcat or bobcat	1,282	2,756	1,924	42,941	.	.	.
Wolf	48,970	38,489	27,604	11,685	22,040	22,753	41,165
Wolverine	4,631	4,569	10,145	23,465	25,652	37,454	8,002
Other	.	.	.	.	0	0	0
<b>Total ranch-raised</b>	<b>2,441,328</b>	<b>x</b>	<b>48,706</b>	<b>x</b>	<b>.</b>	<b>.</b>	<b>.</b>
Fox	x	x	x	x	.	.	.
Mink	x	0	x	9,400,935	.	.	.

1. Data on wildlife furs are on a "fur year basis" which is from July 1 to June 30.

2. The ranched fur estimates operate on a calendar year basis, with most ranch peltings occurring in the fall.

**Source(s):** Statistics Canada, Agriculture Division, 2008, *Fur Statistics*, Catalogue no. 23-013-X, vol. 5, no.1



## Section 4

### *Annual statistics: Socio-economic response to environmental conditions*

#### 4.1 Legislation

The aim of the *Canadian Environmental Protection Act* (CEPA) is to prevent pollution and protect the environment and human health. It also provides enforcement officers with the authority to address cases of alleged non-compliance with the Act. Enforcement activities include inspection to verify compliance, investigation of alleged violations, measures to compel compliance without resorting to formal court action, and measures to compel compliance through court action.

Enforcement activities declined between 1993/1994 and 1996/1997 but have since risen significantly due to an increase in the number of inspections conducted and warnings issued (Table 4.1). The number of prosecutions varies considerably from year to year with as few as 2 in 1998/1999 to 27 in 2001/2002.

#### 4.2 Protected areas

Data from 2005 indicate that 9.4% of the total land area in Canada is protected (Table 4.2). The share of total land protected varies with jurisdiction; in 2005, it ranged from 2.8% in Prince Edward Island to 13.1% in British Columbia.

#### 4.3 Environmental protection expenditures

Total environmental protection expenditures by Canadian businesses were \$8.6 billion in 2006 (Tables 4.3 and 4.4). The industry with the highest total environmental protection expenditures in 2006 was the Oil and gas extraction industry.

Approximately half of the total capital expenditures on pollution prevention in 2006 were directed towards

processes aimed at preventing the release of substances to air (Table 4.5). Capital expenditures on pollution abatement and control (PAC) projects were also directed largely at mitigating the release of air pollutants, accounting for 60% of PAC capital spending in 2006 (Table 4.6).

#### 4.4 Environmental practices

Pollution prevention attempts to eliminate waste and pollution before it is created in manufacturing processes. It involves continuous improvement through changes in product design, technology, operations and behaviour. Table 4.7 examines pollution prevention methods adopted by industry. In 2006, the most widely used methods of pollution prevention were good operating practices or training (42%), prevention of leaks and spills (41%) and recirculation, recovery, reuse or recycling (41%).

Environmental management practices are used by businesses to facilitate reducing or preventing of pollution or the conserving of resources. In 2006, 34% of reporting establishments indicated using at least one environmental management practice (Table 4.8). The most widely reported practice was the use of an environmental management system (18%), followed by the implementation of a pollution prevention plan (17%).

In 2006, 837 kg of non-hazardous solid waste were generated per capita; an increase of 9% from 2002 (Table 4.9). Nationally, 22% of the total non-hazardous waste generated was diverted from disposal. Nova Scotia had the highest diversion rate (41%) followed by New Brunswick (36%) and British Columbia (32%). In 2006 the lowest disposal rate was in Nova Scotia (428 kg per capita), and the highest disposal rate was in Alberta (1,117 kg per capita). In 2006, 34% of waste came from residential sources (Table 4.10).

More than 7.7 million tonnes of non-hazardous material were processed for recycling in 2006 (Table 4.11). Newsprint (16%), cardboard and boxboard (19%),

and organic material (26%) made up the bulk of the recycled material in 2006.

#### 4.5 Environment industry

Revenues derived from environment-related activities reached \$18.5 billion in 2004 (Table 4.12). Environmental services accounted for 45% of total environmental revenues, while 55% of these revenues were derived from environmental goods. The Wholesale trade industry posted the highest share of business sector total environmental revenues at 29%, followed by the Waste management and remediation services industry at 23% and the Construction industry at 12%.

As in previous years, businesses in Ontario and Quebec reported the highest environmental revenues (Table 4.13).

#### 4.6 Research and development

In 2006/2007, expenditures on research and development in the higher education sector reached approximately \$9.6 billion (Table 4.14). Forty-one percent (\$3.9 billion) was spent in the natural sciences and engineering fields, 39% (\$3.8 billion) in the health sciences and the remaining 20% (\$1.9 billion) in the social sciences and humanities.

In 2006/2007, federal spending on research and development aimed at control and care of the environment reached \$363 million (Table 4.15). This accounted for 6% of total federal research and development expenditures in 2006/2007.

# Notes

**Table 4.1**  
**Canadian Environmental Protection Act enforcement activities**

	1993/1994	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000
	number						
On-site inspections <sup>1</sup>	1,571	1,335	963	708	1,523	1,555	779
Off-site inspections <sup>1, 2</sup>	..	..	..	..	..	1,058	2,526
Investigations <sup>3</sup>	55	64	45	33	56	78	64
Warnings <sup>4</sup>	133	127	85	30	204	421	473
Directives <sup>5</sup>	1	1	0	2	0	8	9
Prosecutions <sup>6</sup>	3	9	13	5	8	2	26
Convictions	11	12	6	7	3	1	1
	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
	number						
On-site inspections <sup>1</sup>	1,446	1,628	1,934	2,334	2,547	2,232	2,698
Off-site inspections <sup>1, 2</sup>	1,801	3,009	2,870	2,079	2,727	2,978	2,434
Investigations <sup>3</sup>	20	57	36	32	43	35	64
Warnings <sup>4</sup>	450	517	347	672	1,162	2,216	1,785
Directives <sup>5</sup>	22	5	3	8	2	8	96
Prosecutions <sup>6</sup>	11	27	4	8	13	11	6
Convictions	7	7	3	14	1	2	3

1. Inspections verify compliance with the *Canadian Environmental Protection Act* (CEPA). They may be on-site (at the site of a facility, plant, structure, border crossing, airport or other port of entry, on a ship, aircraft, or other means of transport) or off-site. Off-site inspections were previously called administrative verifications.
2. The tracking of off-site inspections or administrative verifications only started in 1998/1999. However, on-site inspection numbers prior to this time may have included some administrative verifications.
3. Investigations involve gathering, from a variety of sources, evidence and information relevant to a suspected violation.
4. Written warnings indicate the existence of a minor violation, in order that the alleged offender can take notice and return to compliance.
5. Written directions oblige the regulatee responsible for the potential violation to take all reasonable measures to remedy any dangerous conditions and/or to reduce any danger to the environment.
6. A legal proceeding for the purpose of determining the guilt or innocence of an accused (that is, person and/or organization) under CEPA.

**Note(s):** Data is based on the federal government fiscal year which is from April 1 to March 31.

**Source(s):** Environment Canada, Enforcement Branch, 2008, *Acts Regulations and Agreements – Reports and Statistics*, [www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=5C63F879-1](http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=5C63F879-1) (accessed January 13, 2009).

**Table 4.2**  
**Total terrestrial protected areas by province and territory, 2005**

	Protected areas <sup>1</sup>	Area protected <sup>2</sup>	Amount of land <sup>3</sup>	Percentage of land protected <sup>4</sup>
	number	square kilometres		percent
<b>Canada</b>	<b>8,475</b>	<b>855,973</b>	<b>9,093,507</b>	<b>9.4</b>
Newfoundland and Labrador	63	18,383	373,872	4.9
Prince Edward Island	184	161	5,660	2.8
Nova Scotia	75	4,557	53,338	8.5
New Brunswick	106	2,321	71,450	3.2
Quebec <sup>5</sup>	1,096	75,652	1,365,128	5.5
Ontario <sup>6</sup>	666	94,614	917,741	10.3
Manitoba <sup>7</sup>	122	42,755	553,556	7.7
Saskatchewan	4,608	53,375	591,670	9.0
Alberta	537	82,501	642,317	12.8
British Columbia	948	120,882	925,186	13.1
Yukon	24	52,348	474,391	11.0
Northwest Territories	19	94,894	1,183,085	8.0
Nunavut	27	213,530	1,936,113	11.0

1. Includes protected areas administered federally, provincially and territorially, as well as Aboriginal or privately held conservation lands that are recognized by protected area agencies as being part of their network.

2. Includes a number of terrestrial protected areas that have a marine component totalling 28,995 km<sup>2</sup>.

3. Includes only land area. For example, when freshwater is included, the total area of the country is 9,984,670 km<sup>2</sup>.

4. Percent of land protected differs from the Canadian Protected Areas Status because only land area (not land and water) was used as referenced below.

5. Includes the terrestrial portion of Environment Canada's 28 Migratory Bird Sanctuaries that are found in Quebec, and the marine portion of these Sanctuaries (431 km<sup>2</sup>).

6. Includes 19 sites or 322 km<sup>2</sup> of National Wildlife Areas and Migratory Bird Sanctuaries that are located in Ontario and administered by Environment Canada.

7. Excludes National Wildlife Area properties administered by Environment Canada, and 1,682 km<sup>2</sup> of Prairie Farm Rehabilitation Administration pastures administered by Agriculture and Agri-Food Canada.

**Source(s):** Government of Canada, 2007, *Canadian Protected Areas Status Report 2000-2005*, [www.cws-scf.ec.gc.ca/publications/habitat/cpa-apc/index\\_e.cfm](http://www.cws-scf.ec.gc.ca/publications/habitat/cpa-apc/index_e.cfm), (accessed January 8, 2009). Statistics Canada, 2005, *Land and freshwater area, by province and territory area*, [www40.statcan.ca/101/cst01/phys01-eng.htm](http://www40.statcan.ca/101/cst01/phys01-eng.htm) (accessed January 8, 2009). Statistics Canada, Environmental Accounts and Statistics Division, 2008, special tabulation.

**Table 4.3**  
**Operating expenditures on environmental protection by type of activity and industry**

	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	Waste management and sewerage services	Pollution abatement and control processes (end-of-pipe)	Pollution prevention processes	Fees, fines and licences	Other	Total
millions of dollars										
<b>2006</b>										
<b>Total, all industries</b>	<b>244.3</b>	<b>116.1</b>	<b>533.6</b>	<b>106.7</b>	<b>1,728.2</b>	<b>1,039.8</b>	<b>661.7</b>	<b>117.5</b>	<b>221.1</b>	<b>4,769.0</b>
Logging	2.6	2.5	6.5	32.2	9.3	0.8	5.4	0.8	2.4	62.6
Oil and gas extraction	50.5	43.3	344.1	16.4	198.4	183.6	117.6	25.3	103.4	1,082.6
Mining and quarrying	20.8	8.3	49.8	2.1	54.5	71.3	48.9	11.1	10.2	277.0
Electric power generation, transmission and distribution	37.9	13.5	58.8	14.5	80.1	43.6	78.7	24.9	29.2	381.2
Natural gas distribution	0.8	3.4	1.2	0.1	4.1	x	6.7	x	2.2	22.4
Food manufacturing	10.8	4.7	F	x	239.5	24.4	19.6	9.2	8.2	317.9
Beverage and tobacco product manufacturing	0.2	x	F	x	10.5	F	0.6	3.0	0.2	15.5
Wood product manufacturing	4.1	2.4	12.4	F	F	18.8	9.4	2.8	3.4	181.8
Paper manufacturing	31.1	x	7.8	x	219.0	165.5	56.2	12.3	9.0	508.5
Petroleum and coal product manufacturing	7.6	2.0	6.1	x	48.1	123.7	103.1	x	4.7	297.1
Chemical manufacturing	18.8	5.5	10.1	x	123.7	59.8	32.2	F	13.0	280.5
Non-metallic mineral product manufacturing	6.2	1.5	2.8	0.1	33.9	16.6	6.4	2.7	2.7	73.0
Primary metal manufacturing	34.5	8.6	16.8	1.4	168.6	290.0	76.3	4.5	10.3	610.9
Fabricated metal product manufacturing	2.4	2.9	2.1	F	45.7	5.0	8.0	0.7	1.6	68.5
Transportation equipment manufacturing	3.6	4.0	x	x	94.9	18.8	6.8	x	10.2	142.1
Other manufacturing industries	9.6	5.5	F	F	294.1	13.1	F	2.5	3.8	379.0
Pipeline transportation	2.6	2.7	6.6	2.0	6.6	1.3	39.4	0.4	6.7	68.3

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM table 153-0052.

**Table 4.4**  
**Capital expenditures on environmental protection by type of activity and industry**

	Environmental monitoring	Environmental assessments and audits	Reclamation and decommissioning	Wildlife and habitat protection	Waste management and sewerage services	Pollution abatement and control processes (end-of-pipe)	Pollution prevention processes	Total
millions of dollars								
<b>2006</b>								
<b>Total, all industries</b>	<b>171.9</b>	<b>87.9</b>	<b>433.8</b>	<b>153.7</b>	<b>519.3</b>	<b>908.7</b>	<b>1,561.1</b>	<b>3,836.4</b>
Logging	F	F	F	F	0.5	0.8	F	F
Oil and gas extraction	132.2	43.1	356.2	126.6	286.1	409.8	377.1	1,730.9
Mining and quarrying	5.3	x	9.3	x	26.0	174.5	49.2	269.9
Electric power generation, transmission and distribution	4.1	30.7	13.9	13.5	18.2	65.8	105.9	252.1
Natural gas distribution	x	2.9	x	x	x	3.0	54.1	65.7
Food manufacturing	1.4	0.4	F	x	F	12.8	41.0	123.8
Beverage and tobacco product manufacturing	x	0.0	F	0.0	x	x	3.1	5.4
Wood product manufacturing	F	F	F	F	1.8	30.7	18.3	55.5
Paper manufacturing	1.8	0.1	3.2	0.2	9.5	21.3	52.0	88.0
Petroleum and coal product manufacturing	x	F	x	0.0	10.4	45.7	533.1	596.4
Chemical manufacturing	0.6	x	3.0	x	8.8	25.8	44.0	82.4
Non-metallic mineral product manufacturing	F	F	F	3.3	0.5	16.1	22.7	61.1
Primary metal manufacturing	0.8	x	12.8	x	8.1	68.9	31.1	122.6
Fabricated metal product manufacturing	F	x	x	0.0	10.1	3.0	F	F
Transportation equipment manufacturing	0.1	x	x	x	x	15.7	18.7	42.2
Other manufacturing industries	0.8	F	0.4	x	F	12.8	73.0	150.2
Pipeline transportation	1.6	5.6	21.9	4.8	x	x	39.2	75.3

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM table 153-0052.

Table 4.5

## Distribution of capital expenditures on pollution prevention by medium and industry, 2006

	Air	Surface water	On-site contained solid and liquid waste	Noise, radiation and vibration	Other	Total
millions of dollars						
<b>Total, all industries</b>	<b>885.2</b>	<b>189.2</b>	<b>203.1</b>	<b>11.4</b>	<b>272.2</b>	<b>1,561.1</b>
Logging	F	F	F	F	F	F
Oil and gas extraction	122.9	63.7	x	4.4	x	377.1
Mining and quarrying	3.2	28.1	15.0	x	x	49.2
Electric power generation, transmission and distribution	36.6	22.7	45.3	x	F	105.9
Natural gas distribution	52.6	x	1.3	x	0.0	54.1
Food manufacturing	5.4	F	0.9	x	F	41.0
Beverage and tobacco product manufacturing	x	0.4	0.7	x	x	3.1
Wood product manufacturing	5.9	5.4	F	F	F	18.3
Paper manufacturing	31.8	11.7	2.3	0.8	5.4	52.0
Petroleum and coal product manufacturing	508.1	18.8	x	F	x	533.1
Chemical manufacturing	27.5	4.9	7.6	0.1	4.0	44.0
Non-metallic mineral product manufacturing	12.9	3.0	3.0	F	3.5	22.7
Primary metal manufacturing	19.1	3.8	6.8	0.0	1.5	31.1
Fabricated metal product manufacturing	F	0.3	F	x	F	F
Transportation equipment manufacturing	7.1	1.1	F	F	F	18.7
Other manufacturing industries	24.7	F	F	x	F	73.0
Pipeline transportation	4.4	13.1	16.5	1.6	3.5	39.2

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM table 153-0054.

Table 4.6

## Distribution of capital expenditures on pollution abatement and control (end-of-pipe) by medium and industry, 2006

	Air	Surface water	On-site contained solid and liquid waste	Noise, radiation and vibration	Total
millions of dollars					
<b>Total, all industries</b>	<b>545.6</b>	<b>249.0</b>	<b>94.2</b>	<b>19.9</b>	<b>908.7</b>
Logging	F	F	F	F	0.8
Oil and gas extraction	271.2	61.8	67.4	9.4	409.8
Mining and quarrying	38.4	129.9	x	x	174.5
Electric power generation, transmission and distribution	52.5	x	x	x	65.8
Natural gas distribution	x	x	x	x	3.0
Food manufacturing	8.8	x	F	x	12.8
Beverage and tobacco product manufacturing	x	x	0.0	x	x
Wood product manufacturing	17.1	x	x	F	30.7
Paper manufacturing	15.7	5.2	x	x	21.3
Petroleum and coal product manufacturing	33.0	10.8	1.3	0.6	45.7
Chemical manufacturing	17.6	5.0	1.8	1.6	25.8
Non-metallic mineral product manufacturing	14.8	0.9	x	x	16.1
Primary metal manufacturing	49.5	13.0	5.1	1.2	68.9
Fabricated metal product manufacturing	2.2	0.1	F	x	3.0
Transportation equipment manufacturing	10.7	2.1	F	x	15.7
Other manufacturing industries	10.6	F	F	0.5	12.8
Pipeline transportation	0.2	x	x	x	x

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, CANSIM table 153-0054.

**Table 4.7**  
**Pollution prevention methods by industry**

	Product design or reformulation	Equipment or process modifications	Recirculation, recovery, reuse or recycling	Materials, feedstock or solvent substitution	Improved management or purchasing techniques	Prevention of leaks and spills	Good operating practices or training	Other	Total <sup>1</sup>
	percent <sup>2</sup>								
<b>2006</b>	<b>14</b>	<b>21</b>	<b>41</b>	<b>16</b>	<b>25</b>	<b>41</b>	<b>42</b>	<b>7</b>	<b>68</b>
Logging	9	19	35	9	20	65	61	9	71
Oil and gas extraction	20	53	48	23	26	77	73	9	87
Mining and quarrying	16	31	63	23	37	66	65	9	88
Electric power generation, transmission and distribution	23	19	67	28	45	75	75	6	86
Natural gas distribution	10	41	42	20	37	82	85	25	87
Food manufacturing	9	28	26	4	18	38	42	8	59
Beverage and tobacco products manufacturing	11	30	76	16	24	66	63	4	94
Wood products manufacturing	7	7	33	10	17	32	36	5	61
Paper manufacturing	21	32	56	25	30	41	49	2	81
Petroleum and coal products manufacturing	33	43	58	19	10	61	47	3	87
Chemicals manufacturing	24	32	52	17	29	59	55	8	76
Non-metallic mineral products manufacturing	11	19	47	12	24	45	38	10	78
Primary metals manufacturing	18	46	70	23	28	63	74	5	92
Fabricated metal products manufacturing	10	18	35	13	24	42	33	5	63
Transportation equipment manufacturing	18	32	54	32	39	63	55	1	84
Pipeline transportation	26	60	58	7	37	95	95	7	95
Other manufacturing	16	17	40	19	25	32	37	8	65

1. Percent of establishments that used at least one pollution prevention method.

2. Number of establishments indicating they used the pollution prevention method as a percentage of all establishments that provided a response.

**Note(s):** The methodology for the Survey of Environmental Protection Expenditures (SEPE) underwent a thorough redesign for the 2006 reference year. As a result of these methodological changes and expanded coverage, comparisons with previous estimates from the SEPE are not recommended. To access a compilation of previous SEPE data see Statistics Canada, 2008, *Human Activity and the Environment*, Catalogue no. 16-201-X20070001, Tables 4.3, 4.4, 4.7 and 4.8.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, *Environmental Protection Expenditures in the Business Sector*, Catalogue no. 16F0006X.



**Table 4.8**  
**Environmental management practices by industry**

	Environmental management system	Life cycle analysis	ISO 14000 certification	Implementation of a pollution prevention plan	Environmental voluntary agreements	Green procurement policy	Eco-labelling of products	Annual environmental performance report	Other	Total <sup>1</sup>
	percent <sup>2</sup>									
<b>2006</b>	<b>18</b>	<b>5</b>	<b>7</b>	<b>17</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>10</b>	<b>2</b>	<b>34</b>
Logging	47	6	20	24	22	4	8	8	2	57
Oil and gas extraction	64	25	4	37	44	7	5	55	4	79
Mining and quarrying	51	19	14	35	20	15	4	47	5	63
Electric power generation, transmission and distribution	57	30	29	41	43	46	28	53	5	81
Natural gas distribution	80	24	6	71	26	12	23	51	x	87
Food manufacturing	16	5	x	19	7	5	1	6	1	35
Beverage and tobacco manufacturing products	19	0	x	9	13	3	0	6	x	37
Wood products manufacturing	19	3	8	14	7	6	8	12	5	37
Paper manufacturing	30	3	19	27	10	11	11	23	2	50
Petroleum and coal products manufacturing	54	20	10	51	31	9	13	33	6	74
Chemicals manufacturing	30	15	7	38	18	12	9	19	2	59
Non-metallic mineral products manufacturing	16	3	3	14	7	2	2	10	1	27
Primary metals manufacturing	45	10	31	29	13	4	2	26	x	61
Fabricated metal products manufacturing	10	4	4	15	1	7	3	2	1	27
Transportation equipment manufacturing	36	16	32	44	26	12	x	20	1	54
Pipeline transportation	95	35	14	58	58	14	0	67	x	100
Other manufacturing <sup>3</sup>	8	2	4	8	1	6	5	5	2	23

1. Number of establishments indicating they used at least one environmental practice, as a percentage of the total number of establishments that provided a response.

2. Number of establishments indicating they used the practice, as a percentage of all establishments that provided a response.

3. Includes all other manufacturing industries not already specified.

**Note(s):** The methodology for the Survey of Environmental Protection Expenditures (SEPE) underwent a thorough redesign for the 2006 reference year. As a result of these methodological changes and expanded coverage, comparisons with previous estimates from the SEPE are not recommended. To access a compilation of previous SEPE data see Statistics Canada, 2008, *Human Activity and the Environment*, Catalogue no. 16-201-X20070001, Tables 4.3, 4.4, 4.7 and 4.8.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, *Environmental Protection Expenditures in the Business Sector: 2006*, Catalogue no. 16F0006X.

**Table 4.9**  
**Disposal and diversion of waste, by province and territory, 2002, 2004 and 2006**

	Waste disposed per capita <sup>1</sup>			Diverted materials per capita <sup>2</sup>			Diversion rate		
	2002	2004	2006	2002	2004	2006	2002	2004	2006
	kilograms per capita						percent		
<b>Canada</b>	<b>768.1</b>	<b>789.8</b>	<b>836.5</b>	<b>211.8</b>	<b>222.7</b>	<b>237.9</b>	<b>21.6</b>	<b>22.0</b>	<b>22.1</b>
Newfoundland and Labrador	724.9	773.1	799.0	58.5	68.2	59.5	7.5	8.1	6.9
Prince Edward Island	x	x	x	x	x	x	x	x	x
Nova Scotia	416.2	425.8	428.2	205.4	255.3	294.2	33.0	37.5	40.7
New Brunswick	552.0	590.1	603.8	174.5	185.8	338.2	24.0	24.0	35.9
Quebec <sup>3</sup>	785.7	856.4	892.1	234.3	282.7	321.9	23.0	24.8	26.5
Ontario	797.8	791.7	824.1	187.4	194.9	189.2	19.0	19.8	18.7
Manitoba	775.2	790.9	865.1	186.6	134.2	129.0	19.4	14.5	13.0
Saskatchewan	797.7	797.0	840.4	116.7	114.5	107.7	12.8	12.6	11.4
Alberta	923.9	949.9	1,116.5	220.7	191.4	190.8	19.3	16.8	14.6
British Columbia	655.9	666.1	687.4	297.3	291.0	321.9	31.2	30.4	31.9
Yukon, Northwest Territories and Nunavut	x	x	x	x	x	x	x	x	x

1. Total amount of non-hazardous waste disposed of in public and private waste disposal facilities includes waste that is exported out of the source province or out of the country for disposal. This does not include wastes disposed in hazardous waste disposal facilities or wastes managed by the waste generator on site.
2. This information covers only those companies and local waste management organizations that reported non-hazardous recyclable material preparation activities and refers only to that material entering the waste stream and does not cover any waste that may be managed on-site by a company or household. Additionally, these data do not include those materials transported by the generator directly to secondary processors, such as, pulp and paper mills while bypassing entirely any firm or local government involved in waste management activities.
3. Waste diversion data are derived from a survey administered by RECYC-QUÉBEC.

**Note(s):** Figures may not add up to totals due to rounding. Per capita estimates of waste disposed and diverted materials reflect updates to population estimates.

**Source(s):** Statistics Canada, CANSIM tables 051-0001, 153-0041, 153-0043.

**Table 4.10**  
**Disposal of waste, by source and by province and territory, 2002, 2004 and 2006**

	Residential sources <sup>1</sup>			Non-residential sources <sup>2</sup>			All sources		
	2002	2004	2006	2002	2004	2006	2002	2004	2006
	tonnes								
<b>Canada</b>	<b>8,446,766</b>	<b>8,961,583</b>	<b>9,238,376</b>	<b>15,634,606</b>	<b>16,265,183</b>	<b>18,010,801</b>	<b>24,081,371</b>	<b>25,226,766</b>	<b>27,249,178</b>
Newfoundland and Labrador	216,218	228,004	227,618	160,376	172,044	180,110	376,594	400,048	407,728
Prince Edward Island	x	x	x	x	x	x	x	x	x
Nova Scotia	169,649	179,262	169,337	219,546	220,705	232,333	389,194	399,967	401,670
New Brunswick	203,506	208,120	216,357	210,100	234,053	233,881	413,606	442,173	450,238
Quebec <sup>3</sup>	1,875,235	2,209,000	2,183,788	3,971,225	4,245,000	4,624,653	5,846,459	6,454,000	6,808,440
Ontario	3,438,408	3,489,917	3,705,235	6,207,225	6,319,347	6,732,545	9,645,633	9,809,264	10,437,780
Manitoba	412,612	450,658	455,304	483,944	477,459	568,968	896,556	928,117	1,024,272
Saskatchewan	278,692	279,420	296,062	516,432	515,513	537,691	795,124	794,933	833,753
Alberta	866,398	943,420	973,683	2,023,896	2,133,890	2,846,189	2,890,294	3,077,311	3,819,872
British Columbia	929,101	919,323	956,968	1,758,781	1,848,335	1,960,113	2,687,882	2,767,657	2,917,080
Yukon, Northwest Territories and Nunavut	x	x	x	x	x	x	x	x	x

1. Residential non-hazardous wastes disposed includes solid waste produced by all residences and includes waste that is picked up by the municipality (either using its own staff or through contracting firms), and waste from residential sources that is self-hauled to depots, transfer stations and disposal facilities.
2. Non-residential non-hazardous solid wastes are those wastes generated by all sources excluding the residential waste stream. These include: industrial materials, which are generated by manufacturing, and primary and secondary industries, and is managed off-site from the manufacturing operation; commercial materials, which are generated by commercial operations, such as, shopping centres, restaurants, offices, and others; and institutional materials which are generated by institutional facilities, such as, schools, hospitals, government facilities, seniors homes, universities, and others. These wastes also include construction, renovation and demolition non-hazardous waste, also referred to as DLC (demolition, land clearing and construction waste). These refer to wastes generated by construction, renovation and demolition activities. It generally includes materials, such as, wood, drywall, certain metals, cardboard, doors, windows, wiring, and others. It excludes materials from land clearing on areas not previously developed as well as materials that include asphalt, concrete, bricks and clean sand or gravel.
3. The waste disposal data prior to 2006 were derived from a survey administered by RECYC-QUÉBEC.

**Note(s):** Total amount of non-hazardous waste disposed of in public and private waste disposal facilities includes waste that is exported out of the source province or out of the country for disposal. This does not include wastes disposed in hazardous waste disposal facilities or wastes managed by the waste generator on site.

**Source(s):** Statistics Canada, CANSIM table 153-0041.

Table 4.11

## Materials prepared for recycling by type and by province and territory, 2006

	Canada	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec <sup>1</sup>	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon, Northwest Territories and Nunavut
	tonnes											
<b>All materials</b>	<b>7,749,030</b>	<b>30,385</b>	<b>x</b>	<b>275,983</b>	<b>252,174</b>	<b>2,456,300</b>	<b>2,396,856</b>	<b>152,799</b>	<b>106,868</b>	<b>652,637</b>	<b>1,366,191</b>	<b>x</b>
Newsprint	1,261,891	x	x	33,128	10,011	593,000	380,281	34,240	19,905	65,119	x	x
Cardboard and boxboard	1,471,315	x	x	31,373	9,808	462,540	474,211	44,442	16,925	121,886	280,131	x
Mixed paper	688,003	x	x	8,592	x	130,460	194,698	17,710	3,195	78,657	x	x
Glass	400,003	x	x	1,511	0	117,000	179,341	7,973	x	x	39,406	x
Ferrous metals	278,036	x	0	2,962	x	111,800	80,794	18,360	x	20,034	22,811	x
Copper and aluminum	51,225	x	0	x	x	10,000	21,290	3,227	x	x	x	x
Mixed metals	148,231	x	x	x	x	18,500	22,343	3,779	2,065	14,745	81,595	x
White goods	299,397	x	x	4,700	x	248,000	22,023	x	3,092	12,099	7,158	x
Electronics	11,357	0	0	0	x	3,000	4,251	x	x	2,631	x	0
Plastics	232,339	x	x	4,540	864	95,000	60,195	5,696	4,637	14,852	44,956	x
Tires	138,646	x	x	x	x	70,000	4,948	955	x	2,508	35,987	x
Construction, renovation and demolition	715,364	0	0	51,263	10,633	236,000	187,353	2,704	x	34,300	188,323	x
Organics	2,006,461	0	x	133,934	x	360,000	732,200	12,490	3,627	231,459	292,031	x
Other materials	46,763	x	0	1,808	323	1,000	32,927	353	x	6,099	1,575	x

1. Waste diversion data are derived from a survey administered by RECYC-QUÉBEC.

**Note(s):** This information covers only those companies and local waste management organizations that reported non-hazardous recyclable material preparation activities and refers only to that material entering the waste stream and does not cover any waste that may be managed on-site by a company or household. Additionally, these data do not include those materials transported by the generator directly to secondary processors, such as, pulp and paper mills while bypassing entirely any firm or local government involved in waste management activities.

**Source(s):** Statistics Canada, CANSIM table 153-0043.

**Table 4.12**  
**Environmental revenues by industry, 2004**

	Environmental establishments <sup>1</sup>	Sales of environmental goods (including construction)	Sales of environmental services	Total environmental revenues
	number	millions of dollars		
<b>Canada</b>	<b>8,503</b>	<b>10,070.1</b>	<b>8,383.3</b>	<b>18,453.4</b>
Agriculture, forestry, fishing and hunting	16	7.1	11.6	18.7
Mining and oil and gas extraction	34	4.0	349.5	353.5
Utilities	18	x	x	153.6
Construction	..	2,080.7 <sup>2</sup>	154.7	2,235.5
Chemical manufacturing	57	321.6	35.6	357.2
Plastic and rubber products manufacturing	51	539.9	6.4	546.3
Non-metallic mineral product manufacturing	14	100.1	0.0	100.1
Primary metal manufacturing	8	x	x	51.9
Fabricated metal product manufacturing	57	226.3	6.1	232.4
Machinery manufacturing	143	804.7	26.3	831.0
Computer and electronic product manufacturing	56	196.1	7.9	204.1
Electrical equipment, appliance and component manufacturing	14	x	x	296.2
Other manufacturing	42	205.2	59.5	264.7
Wholesale trade <sup>3</sup>	2,884	4,705.0	627.0	5,331.9
Retail trade	22	45.1	1.9	47.0
Finance and insurance services	21	x	x	79.3
Legal services	51	0.0	174.1	174.1
Architectural and landscape architectural services	15	0.0	3.0	3.0
Engineering services	630	133.0	1,163.3	1,296.3
Surveying and mapping (including geophysical) services	20	x	x	28.2
Testing laboratories	109	40.1	211.6	251.7
Computer systems design and related services	26	12.3	8.3	20.6
Environmental consulting services	1,844	22.0	784.4	806.4
Management consulting and other scientific and technical consulting services	151	x	x	182.6
Scientific research and development services	44	36.9	36.4	73.4
All other professional, scientific and technical services	23	x	x	23.1
Management of companies and enterprises	24	26.6	29.2	55.8
Administrative and support services	44	26.2	92.7	118.9
Waste management and remediation services	1,902	20.1	4,191.7	4,211.9
Other services	54	31.1	73.4	104.5

1. Environmental establishments are defined as establishments that earned revenues from the sale of environmental goods or services. Industry groups are based on the North American Industry Classification System (NAICS). Excludes establishments involved in environmental engineering construction.

2. For reference year 2004, a change was made to the methodology for producing estimates of revenues related to environmental engineering construction. For 2004, estimates of revenues for environmental engineering construction are derived from environmental capital expenditures reported by businesses and governments, supplemented with revenues reported to the Environment Industry Survey for renewable energy production facilities only. Previously, estimates of revenues for environmental engineering construction were derived from environmental capital expenditures reported by businesses and governments, supplemented with revenues reported to the Environment Industry Survey for all types of environmental engineering construction.

3. Includes Recyclable material wholesaler-distributors.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2007, *Environment Industry: Business Sector*, Catalogue no. 16F0008X.

Table 4.13

## Revenues from sales of environmental goods and services, by province or territory, 2004

	Environmental establishments <sup>1</sup>	Sales of environmental goods (including construction) <sup>2</sup>	Sales of environmental services	Total revenues
	number	millions of dollars		
<b>Canada</b>	<b>8,503</b>	<b>10,070.1</b>	<b>8,383.3</b>	<b>18,453.4</b>
Newfoundland and Labrador	148	62.3	84.8	147.1
Prince Edward Island	50	14.4	19.5	33.8
Nova Scotia	384	174	215.3	389.3
New Brunswick	271	197.5	138.1	335.6
Quebec	1,662	2,112.2	1,365.8	3,478.0
Ontario	2,638	4,779.7	3,236.9	8,016.6
Manitoba	268	303.0	189.0	492.0
Saskatchewan	325	215.9	185.1	401.0
Alberta	1,330	1,216.4	1,597.6	2,814.0
British Columbia	1,352	985.4	1,314.8	2,300.2
Yukon, Northwest Territories and Nunavut	75	9.3	36.5	45.8

1. Environmental establishments are defined as establishments that earned revenues from the sale of environmental goods or services. Industry groups are based on the North American Industry Classification System (NAICS).
2. For reference year 2004, a change was made to the methodology for producing estimates of revenues related to environmental engineering construction. For 2004, estimates of revenues for environmental engineering construction are derived from environmental capital expenditures reported by businesses and governments, supplemented with revenues reported to the Environment Industry Survey for renewable energy production facilities only. Previously, estimates of revenues for environmental engineering construction were derived from environmental capital expenditures reported by businesses and governments, supplemented with revenues reported to the Environment Industry Survey for all types of environmental engineering construction.

**Note(s):** Figures may not add up to totals due to rounding.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2007, *Environment Industry: Business Sector*, Catalogue no. 16F0008X.

Table 4.14

## Estimates of research and development expenditures in the higher education sector, 2006/2007

	Total expenditures	Share of total	Source of funds					Foreign
			Federal government	Provincial governments	Business enterprise	Higher education	Private non-profit organizations	
	millions of dollars		percent					
<b>Total</b>	<b>9,624.1</b>	<b>100.0</b>	<b>25.8</b>	<b>10.3</b>	<b>8.4</b>	<b>46.1</b>	<b>8.1</b>	<b>1.3</b>
Social sciences and humanities <sup>1</sup>	1,909.3	19.8	21.0	10.4	1.7	59.3	7.6	0.0
Health sciences <sup>2</sup>	3,783.6	39.3	24.8	7.9	9.0	44.1	12.8	1.3
Other natural sciences and engineering <sup>3</sup>	3,931.3	40.8	29.2	12.6	11.0	41.5	3.7	1.9

1. Social sciences and humanities embrace all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, communications, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political sciences, psychology, religious studies, social work, sociology, and urban and regional studies.
2. Health sciences consist of programmes directed towards the protection and improvement of human health.
3. Other natural sciences and engineering consist of disciplines, other than health sciences, concerned with understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical and physical sciences.

**Source(s):** Statistics Canada, Science, Innovation and Electronic Information Division, 2008, *Science Statistics*, Catalogue no. 88-001-X., Vol. 32 no.4.

**Table 4.15**  
**Federal government research and development expenditures by socio-economic objective**

	Intramural <sup>1</sup>									
	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
	millions of dollars									
<b>Total</b>	<b>1,588</b>	<b>1,627</b>	<b>1,734</b>	<b>1,957</b>	<b>2,000</b>	<b>2,075</b>	<b>1,976</b>	<b>1,983</b>	<b>2,298</b>	<b>2,391</b>
Exploration and exploitation of the earth	178	179	186	207	125	141	85	98	110	98
<b>Infrastructure and general planning of land use</b>										
Transport	34	38	42	37	71	65	56	53	58	50
Telecommunications	33	32	24	28	44	37	35	43	52	51
Other	54	50	42	48	30	39	38	38	46	40
Control and care of the environment	97	98	122	143	142	174	178	181	216	188
Protection and improvement of human health	80	87	103	116	152	186	196	203	210	217
Production, distribution and rational utilization of energy	209	170	171	187	248	214	245	199	229	339
<b>Agricultural production and technology</b>										
Agriculture	317	308	334	333	345	287	275	269	336	340
Fishing	30	42	43	51	47	55	42	44	47	47
Forestry	73	74	77	83	75	74	72	71	75	76
Industrial production and technology	119	123	137	165	164	189	189	174	198	196
Social structures and relationships	110	125	50	53	47	61	60	62	59	81
Exploration and exploitation of space	59	92	68	187	175	179	121	125	162	163
Non-oriented research	51	54	150	150	181	202	206	208	219	219
Other civil research	15	13	14	16	15	14	14	15	23	24
Defence	127	136	167	150	134	152	157	191	245	261
Other	3	4	4	3	5	6	6	10	13	0
	Extramural <sup>2</sup>									
	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
	millions of dollars									
<b>Total</b>	<b>1,659</b>	<b>1,835</b>	<b>2,030</b>	<b>2,070</b>	<b>2,887</b>	<b>2,737</b>	<b>3,379</b>	<b>3,371</b>	<b>3,628</b>	<b>3,577</b>
Exploration and exploitation of the earth	25	29	99	46	69	59	75	55	78	58
<b>Infrastructure and general planning of land use</b>										
Transport	32	28	23	20	24	25	19	27	28	26
Telecommunications	21	35	34	15	23	24	27	30	31	21
Other	13	15	16	20	25	28	31	28	29	29
Control and care of the environment	73	83	88	112	148	141	171	155	185	175
Protection and improvement of human health	282	318	390	519	709	866	960	988	1,106	1,160
Production, distribution and rational utilization of energy	57	65	68	64	117	75	210	181	103	89
<b>Agricultural production and technology</b>										
Agriculture	37	44	67	70	75	90	86	79	102	130
Fishing	8	10	13	14	15	16	23	26	25	19
Forestry	24	24	43	27	27	41	56	49	44	46
Industrial production and technology	429	406	398	518	741	657	778	732	884	831
Social structures and relationships	31	90	87	106	130	149	170	189	203	196
Exploration and exploitation of space	190	270	269	154	193	179	197	190	164	179
Non-oriented research	237	229	256	188	365	213	376	428	496	535
Other civil research	1	2	1	17	17	2	1	2	4	10
Defence	124	120	121	119	142	100	116	94	93	72
Other	74	68	57	62	67	72	82	119	54	0

1. The research and development intramural expenditures are managed and carried out primarily by federal government employees. Non-program (indirect costs) are excluded.

2. The management and conduct of the research and development extramural expenditures are entrusted to a non-federal organization.

**Source(s):** Statistics Canada, Science, Innovation and Electronic Information Division, *Science Statistics*, Catalogue no. 88-001-X, various issues.

# Abbreviations and equivalences

## Abbreviations

°C	degree Celsius
CAC	criteria air contaminant
CAFC	company average fuel consumption
CH <sub>4</sub>	methane
cm	centimetre
CMA	Census metropolitan area
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
g	gram
GDP	gross domestic product
GHG	greenhouse gas
GJ	gigajoule
GW	gigawatt
GWh	gigawatt hour
h	hour
ha	hectare
H <sub>2</sub> O	water
kg	kilogram
km	kilometre
km <sup>2</sup>	square kilometre
km <sup>3</sup>	cubic kilometre
kt	kilotonne
kW	kilowatt
L	litre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
MJ	megajoule
mm	millimetre
Mt	megatonne
MW	megawatt
MWh	megawatt hour
N <sub>2</sub>	nitrogen
N <sub>2</sub> O	nitrous oxide
NAFTA	North American Free Trade Agreement
NAICS	North American Industry Classification System
NH <sub>3</sub>	ammonia
NH <sub>4</sub> <sup>+</sup>	ammonium ion
NO	nitric oxide
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
O <sub>2</sub>	oxygen

PCB	Polychlorinated biphenyl
PJ	petajoule
PM	particulate matter
PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns
PM <sub>10</sub>	particulate matter less than or equal to 10 microns
s	second
SO <sub>2</sub>	sulphur dioxide
SO <sub>x</sub>	sulphur oxides
SUV	sport utility vehicle
t	tonne
TEQ	toxic equivalency
TJ	terajoule
t-km	tonne kilometre
TPM	total particulate matter
VOC	volatile organic compound

## Equivalences

1 hectare =	1 km <sup>2</sup> / 100
1 km <sup>2</sup> =	100 hectares
1 tonne =	1,000 kilograms

## Prefixes of the Metric System

Prefix and (abbreviation)	Multiplication factor
exa (E)	10 <sup>18</sup>
peta (P)	10 <sup>15</sup>
tera (T)	10 <sup>12</sup>
giga (G)	10 <sup>9</sup>
mega (M)	10 <sup>6</sup>
kilo (k)	10 <sup>3</sup>
hecto (h)	10 <sup>2</sup>
deca (da)	10 <sup>1</sup>
deci (d)	10 <sup>-1</sup>
centi (c)	10 <sup>-2</sup>
milli (m)	10 <sup>-3</sup>
micro (μ)	10 <sup>-6</sup>
nano (n)	10 <sup>-9</sup>
pico (p)	10 <sup>-12</sup>
femto (f)	10 <sup>-15</sup>
atto (a)	10 <sup>-18</sup>