Catalogue no.16-002-X

EnviroStats

Summer 2009 Vol. 3, no. 2

In this issue:

Latest indicators

Population 2007 to 2008 Percentage change	1.2%	Particulate matter ($PM_{2.5}$) 2000 to 2006	No significant trend
Gross domestic product, monthly March 2009 Percentage change	-0.3%	Ground-level ozone 1990 to 2006 Median percent change per year	0.7%
Greenhouse gas emissions 2006 to 2007 Percentage change	4.0%	Natural resource wealth 2007 to 2008 Percentage change	19.0%

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Canada

EnviroStats

Summer 2009 Vol. 3, no.2

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Symbols

The following standard symbols are used in Statistics Canada publications:

.	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^s	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

Measuring renewable water assets in Canada: Initial results and research agenda

François Soulard and Mark Henry, Environment Accounts and Statistics Division

Water is a basic necessity of life—access to clean water in sufficient quantity is an integral part of our well-being. It has had a strong influence on Canada's development as a country and it remains a precious part of our natural wealth. However, owing perhaps to a general but misleading impression of abundance, few attempts have been made in the past to measure Canada's assets of renewable fresh water.

These attempts to measure renewable water assets have been produced using a variety of methods and do not generate results that can be compared over time and space. However, this information is necessary to manage water resources adequately. This is especially true in a context where water resources are affected by competing uses and changes in the climate.

This article describes the results of a research study estimating Canada's annual average water renewal. The estimate, the Fresh Water Yield for Canada, is coherent through space and time, and will allow further study of the monthly regional renewal of water resources. For information about the methodology used, please see "The Water Yield for Canada as a Thirty-year Average (1971 to 2000): Concepts, Methodology and Initial Results." [1]

A new measure of Canada's renewable fresh water assets

Canada's renewable water assets can be measured as the water that flows in the network of streams, rivers and lakes. A portion of this water originates from groundwater as it flows back to the surface. However, most of it is created when rain and melted snow flow over the ground, eventually reaching a surface water body.

Map 1 shows the distribution of average runoff across Canada. The national estimate of the volume of water runoff is calculated to be, on average, 3,435 km^3 per year. To put this number in perspective, experts estimate that, worldwide, irrigation consumes 2,664 km^3 of water each year.[2] Or, as another example, Lake Huron contains 3,540 km^3 of water.[3]

This result could seem to indicate that Canada's water resources are abundant and do not present an environmental, social or economic barrier. Indeed, the water yield for Canada is equivalent to approximately 100,000 cubic meters per capita. The Canadian economy withdraws only about 1.4% of this volume annually—industrial activities such as energy generation, mining and manufacturing withdrew 40 km^3 in 2005;[4] agriculture, an estimated 4 km^3 in 2001;[5] and Canadian households, institutions and services, roughly another 4 km^3.[6] Moreover, much of these withdrawals are not for consumption: with the exception of agricultural water use, water is withdrawn from the aquatic environment and discharged back, generally in the same watershed.

However, these national figures do not capture two important dimensions: the location and the timing of the withdrawals, and the location and the timing of the availability of water resources.

A first attempt at mapping the relationship between the availability and demand for water in Canada demonstrated that water used by the Canadian economy could represent more than 40% of the water flows in some areas of the country, on an

1. R. Bemrose , L. Kemp, M. Henry, and F. Soulard, 2009, "The Water Yield for Canada as a Thirty-year Average (1971 to 2000): Concepts, Methodology and Initial Results," *Environment Accounts and Statistics Analytical and Technical Paper Series,* Statistics Canada Catalogue no. 16-001-MWE2009007 (accessed June 4, 2009).
2. FAO, 2006, *AQUASTAT database*, www.fao.org/nr/water/aquastat/dbase/AquastatWorldDataEng.xls (accessed March 10, 2009)
3. United States Environmental Protection Agency, 2006, *Great Lakes Fact Sheet*, http://epa.gov/grtlakes/factsheet.html (accessed March 10, 2009).
4. F. Soulard and A. Shinnan, 2007, "The cost of water in the manufacturing sector," *EnviroStats,* Fall 2007, Statistics Canada Catalogue no. 16-002-X (accessed March 10, 2009).
5. F. Soulard, M. Beaulieu and C. Fric, 2008, "Agricultural water use in Canada," *EnviroStats*, Spring 2008, Statistics Canada Catalogue no. 16-002-X (accessed March 10, 2009).
6. Statistics Canada, 2003, *Human Activity and the Environment: Annual Statistics 2003*, Catalogue no. 16-201-X (accessed March 10, 2009).

average annual basis.[7] For instance, the water intake to streamflow ratio reached 43% in the South Saskatchewan, Missouri and Assiniboine – Red drainage region. Water intake was also a high proportion of streamflow in the North Saskatchewan drainage region and in the Great Lakes/ St. – Lawrence drainage region.

The availability of Canada's renewable water assets therefore needs to be examined on a regional basis, for specific time periods. By creating a model that produces data that can be compared spatially over time, the Water Yield Model will allow Statistics Canada to evaluate water withdrawal in reference to water availability at that exact time period.

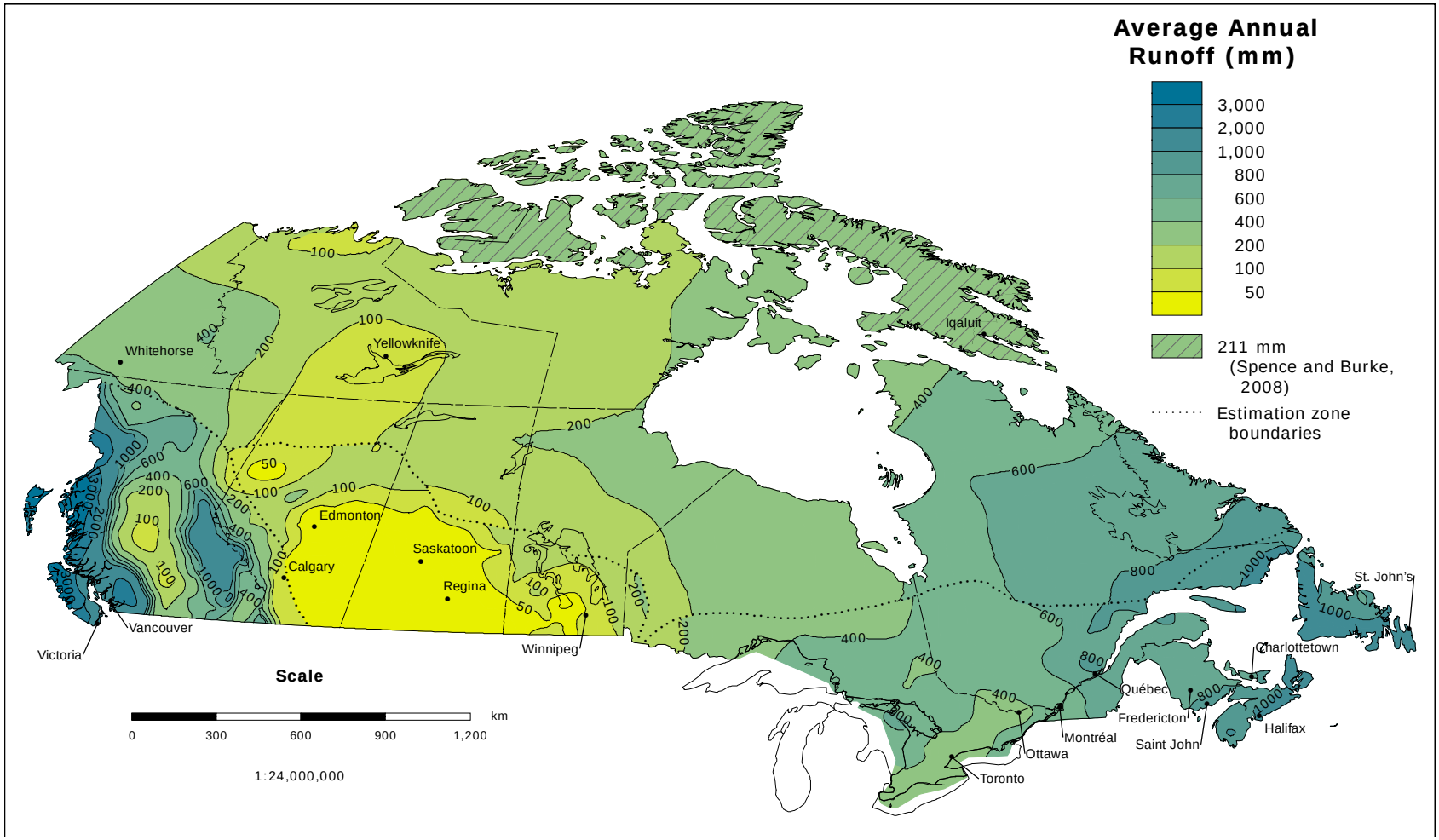
For example, Map 2 displays the variability of renewable water assets over time. The variability is calculated as the average annual departure[8] from the long term average. The map points to a spatial trend in the variability of water availability over time, with the Prairie Provinces and parts of central and south-east British Columbia representing the areas of highest variability. This variability will be the subject of future study, in order to analyse it in the context of changing, and often competing, demands for water resources.

Next steps: Determining water yield trends

One major benefit of this work is the development of a robust methodology producing consistent national estimates of Canada's renewable water assets. Further research in the Water Yield Model approach will determine the degree to which the model produces statistically significant results for various regions, including drainage regions, ecozones, parks, climate regions, and the like. Last, but not least, the model will be tested against its capacity to produce water yield *trends* for the aforementioned areas. These results might provide fresh insights with regards to the challenges and opportunities of adapting to a changing climate.

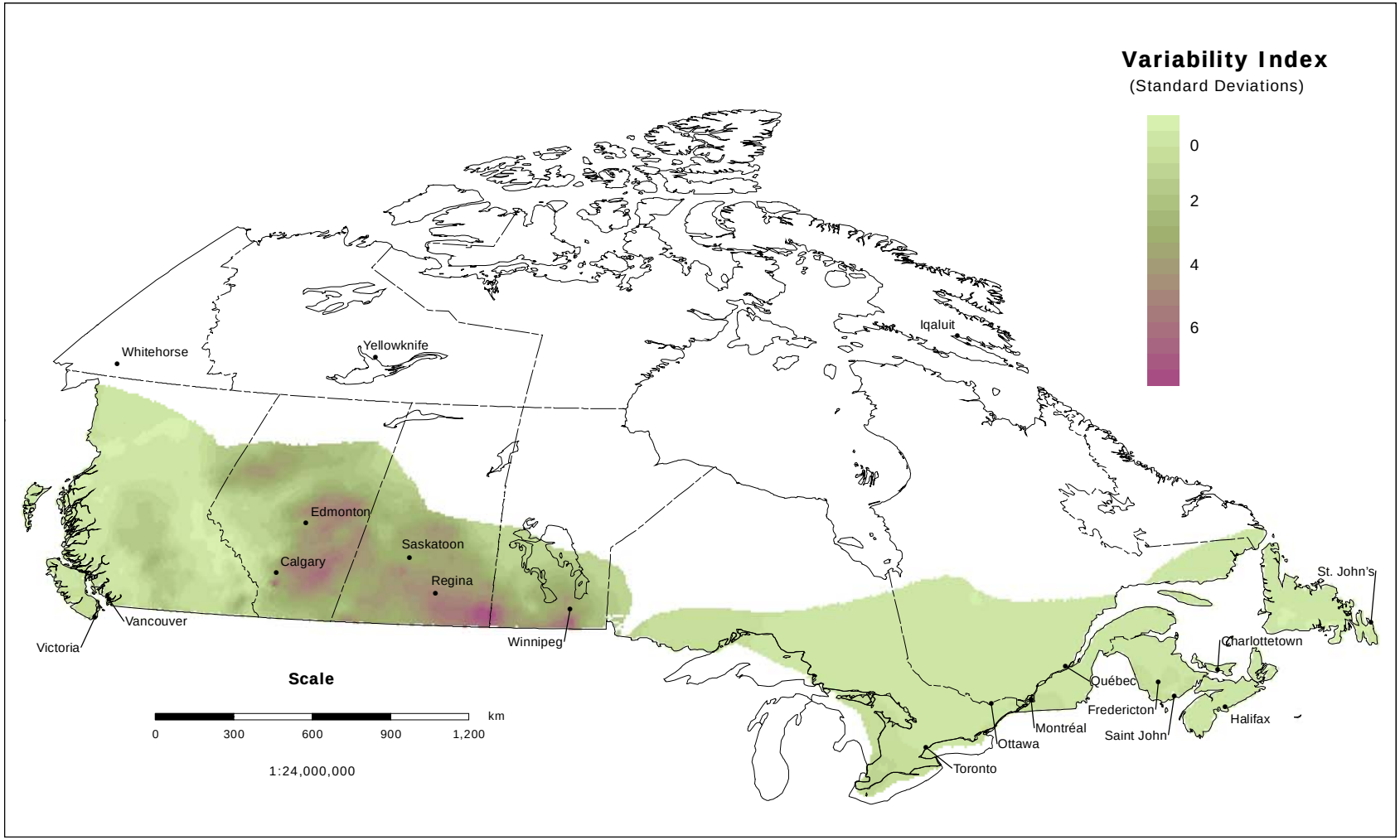
7. Statistics Canada, 2004, "Map B.1: Water use and availability, by drainage area," *Human Activity and the Environment: Annual Statistics 2004*, Catalogue no. 16-201-X (accessed March 10, 2009); reproduced by Environment Canada, www.ec.gc.ca/Water/en/manage/use/e_ratio.htm (accessed March 10, 2009).
8. Average annual departure is measured as the standard deviation.

Map 1
Annual average runoff depth, 1971 to 2000



Note:
This is a composite of four maps, as described in Bemrose et al., 2009.
Source:
Bemrose, R., L. Kemp, M. Henry and F. Soulard, 2009, "The Water Yield for Canada as a Thirty-year Average (1971 to 2000): Concepts, Methodology and Initial Results," *Environment Accounts and Statistics Analytical and Technical Paper Series,* Statistics Canada Catalogue no. 16-001-MWE2009007 (accessed on June 4, 2009).
Spence, C. and A. Burke, 2008, "Estimates of Canadian Arctic Archipelago Runoff from Observed Hydrometric Data," *Journal of Hydrology*, vol. 362, pp. 247-259.

Map 2
Variability of renewable water assets, 1971 to 2000



Source:
Bemrose, R., L. Kemp, M. Henry and F. Soulard, 2009, "The Water Yield for Canada as a Thirty-year Average (1971 to 2000): Concepts, Methodology and Initial Results," E*nvironment Accounts and Statistics Analytical and Technical Paper Series,* Statistics Canada Catalogue no. 16-001-MWE2009007 (accessed June 4, 2009).

Targeting environmental protection expenditures in the manufacturing sector

Michael Bordt, Environment Accounts and Statistics Division, Statistics Canada; Markus Biehl, Schulich School of Business, York University; and Robert D. Klassen, Ivey Business School, University of Western Ontario

Note: this article is based on *Building the Business Case for Sustainable Manufacturing: Linking Lean and Green Management to Performance* a report for Industry Canada by Markus Biehl and Robert Klassen.

Canadian industry makes significant expenditures to reduce its impact on the environment. In 2004, Canadian manufacturers spent approximately $6.8 billion to comply with environmental regulations.[1] Depending on which aspect of the firm was targeted by these investments, a broader range of business performance benefits was also realized.

Investments can be made in pollution control, pollution prevention or environmental management practices (see text box "Detailed expenditure categories" for more detail):

- **Pollution control** comprises "end-of-pipe" installations that are not an integral part of production, and site reclamation and decommissioning.
- **Pollution prevention** encompasses technologies, equipment or processes that reduce or eliminate pollution at the source. This includes the redesign or reformulation of materials, components or products.
- **Environmental management practices** include monitoring, assessments and auditing, administering environmental programs, environmental training, and information programs.

Although these investments could, in general, be made for a variety of reasons including compliance with regulations, price changes or corporate policy, the Survey of Environmental Protection Expenditures (SEPE) includes only expenditures

1. Statistics Canada, 2007, *Environmental Protection Expenditures in the Business Sector, 2004,* Catalogue no. 16F0006X. The analysis was based on 2004 data. A report on the 2006 data was released in 2008.

What you should know about this study

The study combined data from two Statistics Canada surveys and one Environment Canada database. Environmental expenditures data for 2004 were drawn from the biennial Survey of Environmental Protection Expenditures (SEPE). This survey uses a sampling design that is weighted toward larger establishments with detailed questionnaires being administered to 10 manufacturing sub-sectors (at the 3-digit NAICS level). Environmental protection expenditures that are covered include only those made to comply with or to anticipate Canadian and international environmental regulations, conventions or voluntary agreements

Business performance data were then matched at the establishment-level using data from the Annual Survey of Manufactures and Logging (ASML) from 2003 to 2005 for manufacturing revenue, cost, profitability, and inventory levels. Cost data in specific areas were scaled by total direct manufacturing costs, defined as the sum of raw materials, packaging, labour and energy costs.

In parallel, environmental performance was derived from the publicly available National Pollution Release Inventory (NPRI). The NPRI database contains data on more than 300 toxic pollutants that are released, recycled or disposed of by individual manufacturing plants. These data also were matched to the specific establishments.

Data quality

The ASML contains two types of data: self-reported and imputed. Because imputed data are developed using industry ratios and a variety of other means that may mask important individual differences between establishments, only self-reported data were used to estimate regression models for business performance. This combined dataset included approximately 450 establishments with detailed environmental expenditure and business performance data.

The NPRI dataset presented more complex challenges, as the quality of corporate reporting to Environment Canada appears to vary considerably between firms and industries.

Methodology

Regression models were employed to analyze relationships between environmental expenditure variables (level and allocation) and business and environmental performance outcomes. For business performance, additional variables were included to control for prior performance, industry, size, revenue growth, spending on research and development, and depreciation.

Regression models involving NPRI variables displayed severe levels of non-normality. This required the use of very conservative estimation methods. These methods detect only the most statistically significant relationships.

This paper represents the views of the authors and does not necessarily reflect the opinions of Statistics Canada.

Detailed expenditure categories in the Survey of Environmental Protection Expenditures

1. Pollution control

- Examples of these types of equipment or processes include scrubbers at the end of emission stacks, biological and chemical systems for treating water (such as a water treatment plant), filtration systems, cyclones or other barrier systems.

2. Pollution prevention

- Product design or reformulation
- Equipment or process modifications (integrated process)
- Recirculation, on-site recycling or reuse or recovery of materials or substances
- Materials or feedstock substitution, solvent reduction, elimination or substitution
- Prevention of leaks and spills
- Other

3. Environmental management practices

- Environmental management system
- Life Cycle Management, Life Cycle Assessment or Design for Environment for decision making
- ISO 14000 certification
- Plan to obtain ISO 14064 certification
- A pollution prevention plan
- Good operating practices or pollution prevention training[1]
- An environmental voluntary agreement or voluntary environmental program (Examples include Environmental Performance Agreements, Canadian GHG Reductions Registry© or Canadian Industry Program for Energy Conservation)
- Improved inventory management or purchasing techniques, including a "green" procurement policy[1]
- Goods certified by an environmental program, such as the "Enviro Choice Program" and Ecologo
- Annual or other reports on environmental performance or sustainable development

1. These two groups appear on the questionnaire as pollution prevention practices but were reclassified by the study as management practices.

made to anticipate or comply with regulations, conventions or voluntary agreements.

Pollution control accounted for 58% of environmental protection expenditures. Pollution prevention (21%) and environmental management practices (21%) made up the remainder.

The study found that investments in environmental management practices were more beneficial to the firm than expenditures on pollution prevention or pollution control. Firm benefits were measured both in terms of environmental and financial performance.

No statistically significant relationship was found between the firm's bottom line and expenditures on either pollution prevention or pollution control. The same also was true for pollution reduction. One exception was in the area of energy efficiency, where expenditures on pollution prevention reduced energy consumption. However, across a broad range of establishment sizes, locations and industries, expenditures on environmental management practices generated significant improvements in both environmental and financial performance.

The analysis states results in terms of the effect of reallocating a fixed environmental protection budget among the three expenditure categories. For example, a dollar that is reallocated to environmental management practices could come from prevention or from control.

With respect to environmental performance, reallocating 1% of a firm's environmental expenditures from pollution prevention and control to management practices translated into a 1.3 tonne reduction in toxic pollutant releases over two years. Alternatively, spending one additional dollar on management practices yielded a reduction of 0.34 tonnes of releases. While results generally pointed into the same direction for pollution prevention and control, they were not as strong and not significant.

In terms of business outcomes, for every dollar additionally invested in management practices, raw material costs were reduced by over $3 per two-year period. Also, a change in allocation of $1 to environmental management practices (from pollution prevention and control) translated into a two-year reduction of over $1 in total inventory holding costs, and over $2 in labour costs. In addition, for small establishments, a $1 greater allocation of environmental expenditures toward management practices yielded almost $3 in reduced energy costs.

It is possible that effective environmental management works by heightening awareness of opportunities for pollution prevention. However, one overarching message is clear: environmental management practices provide a very effective return on investment.

Environment and sustainable development indicators

Table 1
Population indicators

	2003	2004	2005	2006	2007	2008
Population (number)[1]	31,639,670	31,940,676	32,245,209	32,576,074	32,927,372	33,311,389
Percentage change	0.9	1.0	1.0	1.0	1.1	1.2
Aged 65 and over (percent of total)	12.8	13.0	13.1	13.3	13.5	13.7
Urban (percent of total)	..	..	..	80.2	..	..
Density (per square kilometre)	3.5	3.5	3.6	3.6	3.7	3.7

1. Population data is based on the Estimates of Population program, except for data on urban population, which is based on the Census of Population.

Sources:
Statistics Canada, CANSIM table 051-0001, accessed May 13, 2009.
Statistics Canada, 2007, *Population and Dwelling Count Highlight Tables, 2006 Census*, www12.statcan.ca/english/census06/data/popdwell/Tables.cfm (accessed May 13, 2009).

Table 2
Economy indicators

	2003	2004	2005	2006	2007	2008
Gross Domestic Product (million chained 2002 dollars)	1,174,592	1,211,239	1,246,064	1,284,819	1,319,681	1,325,718
Percentage change	1.9	3.1	2.9	3.1	2.7	0.5
Per capita (chained 2002 dollars)	37,124	37,922	38,643	39,441	40,079	39,798
Consumer Price Index (2002 = 100)	102.8	104.7	107.0	109.1	111.5	114.1
Unemployment rate (percent)	7.6	7.2	6.8	6.3	6.0	6.1

Sources:
Statistics Canada, CANSIM tables 380-0017, 051-0001, 326-0021 and 282-0002, accessed May 13, 2009.

Table 3
Social indicators

	2003	2004	2005	2006	2007	2008
Average household spending[1] (current dollars)						
Total	60,088	62,464	65,575	67,736	69,946	..
Water and sewage	202	204	211	221	253	..
Electricity	1,026	1,040	1,070	1,111	1,147	..
Food	6,618	6,772	6,978	7,046	7,305	..
Gasoline and other motor fuels	1,665	1,854	2,024	2,079	2,223	..
Personal expenditure on consumer goods and services (million chained 2002 dollars)	675,443	697,566	723,181	754,179	788,224	811,690
Residential waste						
Production per capita (kilograms)	..	386	..	399	..	..
Disposal (tonnes)	..	8,961,583	..	9,238,376	..	..
Disposal per capita (kilograms)	..	281	..	284	..	..
Diversion (tonnes)	..	3,363,803	..	3,744,843	..	..
Diversion per capita (kilograms)	..	105	..	115	..	..
Diversion rate (percent of waste production)	..	27	..	29	..	..
Distance driven by light vehicles[2] (million kilometres)	286,803	285,164	289,717	296,871	300,203	..
Asthma (percent of population age 12 and over)	8.4	..	8.3	..	..	..

1. Data on average household spending is based on the Survey of Household Spending (SHS). For information on the difference between the SHS and personal expenditure data please see: Statistics Canada, 2008, *Guide to the Income and Expenditure Accounts*, Catalogue no. 13-017-X.

2. Distance driven for vehicles weighing less than 4.5 tonnes, excluding the territories.

Source(s):
Statistics Canada, CANSIM tables 203-0001, 203-0003, 203-0002, 203-0007, 380-0017, 153-0041, 153-0042, 051-0001, 405-0063 and 105-0400, accessed May 13, 2009.

Table 4
Energy indicators

	2003	2004	2005	2006	2007	2008
Primary energy availability (terajoules)	11,478,526	11,527,500	11,307,113	11,176,879	11,654,755	..
Primary and secondary energy (terajoules)						
Export	9,444,883	9,810,695	9,641,137	9,833,549	10,246,727	..
Residential consumption	1,338,166	1,313,015	1,296,644	1,243,425	1,344,404	..
Established reserve, closing stock[1]						
Crude bitumen (million cubic metres)	1,720	1,660	1,620	3,340	3,500	..
Crude oil (million cubic metres)	590.0	603.8	752.3	712.6	..	..
Natural gas (billion cubic metres)	1,469.5	1,497.5	1,553.7	1,577.7	..	..
Recoverable reserves, closing stock[1]						
Coal (million tonnes)	4,423.1	4,404.2	4,315.6	4,468.8	4,395.1	..
Uranium (tonnes)	429,000	444,000	431,000	423,400	..	..
Total electricity generation (megawatt hours)	564,218,465	571,291,905	597,810,875	585,097,531	603,572,420	603,059,380
Hydro (percent of total)	59.0	58.7	60.1	60.0	60.6	61.8
Nuclear (percent of total)	12.5	14.9	14.5	15.8	14.6	14.7
Generation from fossil fuel and other fuel combustion (percent of total)	28.5	26.4	25.4	24.2	24.8	23.5

1. The size of the reserve at year-end.

Source(s):
Statistics Canada, CANSIM tables 128-0009, 153-0012, 153-0013, 153-0014, 153-0017, 153-0018, 153-0019 and 127-0001, accessed May 13, 2009.

Table 5
Environment and natural resources indicators

	2003	2004	2005	2006	2007	2008
Total greenhouse gas (GHG) emissions (megatonnes of carbon dioxide equivalent)	741	741	731	718	747	..
GHG emissions per capita (tonnes)	23.4	23.2	22.7	22.0	22.7	..
GHG emissions by final demand						
Total household[1] (megatonnes of carbon dioxide equivalent)	430	418[p]	..	..	..	..
Total household per capita (tonnes)	13.6	13.1[p]	..	..	..	..
Direct household[2] (megatonnes of carbon dioxide equivalent)	113	112[p]	..	..	..	..
Indirect household[3] (megatonnes of carbon dioxide equivalent)	317	306[p]	..	..	..	..
Exports (megatonnes of carbon dioxide equivalent)	268	270[p]	..	..	..	..
Annual temperature departures,[4] Canada (degrees Celsius)	1.1	0.1	1.7	2.4	0.9	0.7
Value of selected natural resources (million current dollars)						
Land	1,095,419	1,227,819	1,358,968	1,506,869	1,675,870	1,800,566
Timber	297,474	311,771	290,511	275,462	263,459	257,266
Subsoil resource stocks	465,083	566,179	807,913	938,630	1,008,028	1,449,454
Average farm pesticide expenditures (current dollars)	7,232	7,602	7,792	8,268	9,147	..
Air quality[5]						
Ozone (population-weighted, parts per billion)	40	36	39	37	..	..
$PM_{2.5}$ (population-weighted, micrograms per cubic metre)	9	9	9	8	..	..

1. Total household greenhouse gas emissions are the sum of direct plus indirect household greenhouse gas emissions.
2. Direct household greenhouse gas emissions include all greenhouse gas emissions due to energy use in the home and for private motor vehicles.
3. Indirect household greenhouse gas emissions are those business-sector emissions due to the production of the goods and services purchased by households. An estimate of the greenhouse gas emissions from foreign companies due to the production of the imported goods purchased by Canadian households is included.
4. Annual departures from the 1951-1980 temperature normals.
5. Ground-level ozone and fine particulate matter ($PM_{2.5}$) are two key components of smog that have been linked to health impacts ranging from minor respiratory problems to hospitalizations and premature death. Exposure studies indicate that adverse health effects can occur even with low concentrations of these pollutants in the air. Annual data are revised, based on the latest release of the *Canadian Environmental Sustainability Indicators* report.

Source(s):
Statistics Canada, CANSIM tables 153-0046, 051-0001, 378-0005, and 002-0044, accessed May 13, 2009.
Environment Canada, 2009, *Canada's 2007 Greenhouse Gas Inventory – A Summary of Trends*, www.ec.gc.ca/pdb/ghg/inventory_report/2007/som-sum_eng.cfm (accessed May 13, 2009).
Environment Canada, 2009, *Temperature and Precipitation in Historical Perspective*, www.msc-smc.ec.gc.ca/ccrm/bulletin/annual08/national_e.cfm (accessed May 13, 2009).
Environment Canada, 2009, *Canadian Environmental Sustainability Indicators 2008 – Air Quality,* www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=B4B7C8F6-1#AIRchart1Edetails (accessed May 13, 2009).
Statistics Canada, Environment Accounts and Statistics Division, Material and Energy Flow Accounts.

Updates

New releases

Human Activity and the Environment: Annual Statistics 2009

Human Activity and the Environment: Annual Statistics 2009 is Statistics Canada's flagship publication for environmental statistics. It includes a data compendium of maps, tables and figures punctuated with simple analysis and interpretation.

The publication also includes a feature article, "Food in Canada," which explores the impact of the Canadian food system on the environment. The 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. This article combines new research done within Statistics Canada with information from a variety of sources, including other federal government departments, international bodies and scientific journals.

Highlights:

Spending on food and non-alcoholic beverages 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 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.

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.

Released June 9, 2009 (Statistics Canada Catalogue no. 16-201-X).

CANSIM tables and updates

CANSIM is Statistics Canada's key socio-economic database.

Updates have been made to the following CANSIM tables:

CANSIM table 153-0031, Direct plus indirect energy intensity, by industry, annual

CANSIM table 153-0032, Energy use, by sector, annual

CANSIM table 153-0033, Direct plus indirect greenhouse gas emissions intensity, by industry, annual

CANSIM table 153-0034, Greenhouse gas emissions, by sector, annual

CANSIM table 153-0040, Manure production, Canada, major drainage areas and sub-drainage areas, every 5 years

CANSIM table 153-0046, Direct and indirect household energy use and household greenhouse gas emissions, annual

The Water Yield for Canada as a Thirty-year Average (1971 to 2000): Concepts, Methodology and Initial Results

This paper describes the methodology developed by Statistics Canada to calculate average annual water yield for Canada. Water yield is defined in this study as the quantity of water derived from measurements of non-regulated flow rates (m^3s^{-1}) for a given region and time. The methodology is applied to the period from 1971 to 2000. The results of the methodology indicate that Canada's annual average water yield over 30 years is 3,435 km^3.

Released June 1, 2009 (Statistics Canada Catalogue no. 16-001-M2009007).

Upcoming releases

Agricultural Water Use Survey 2007, Methodology Report

In 2008, Statistics Canada conducted the first Agricultural Water Use Survey. This pilot survey is part of the Canadian Environment Sustainability Indicators initiative and collects information on water volumes used for irrigation, irrigated areas, irrigation practices and the quality of water used for agricultural purposes.

This technical paper describes the methodology used for the pilot survey and includes recommendations for future cycles of the survey.

To be released shortly (Statistics Canada Catalogue no. 16-001-M2009008).

Industrial Water Survey, 2007

The information collected for the Industrial Water Survey measures, by volume, the sources of water used, the purposes of water use, whether or not water was re-circulated or re-used, where the water was discharged, the types of treatments establishments applied to intake water prior to use and the types of treatments establishments applied to their wastewater prior to discharge. Water acquisition costs, treatment costs and operating and maintenance expenses related to water intake and discharge are also collected.

The results of this survey are used in the development of environmental accounts, aid in tracking the state of stocks of water and contribute to national indicators of water quality.

To be released summer 2009 (Statistics Canada Catalogue no. 16-401-X).

New developments

Current Status of the Canadian Vehicle Survey

John Marshall, Environment Accounts and Statistics Division

The Canadian Vehicle Survey (CVS) provides quarterly and annual estimates of the amount of road travel, broken down by types of vehicles and characteristics, such as age and sex of driver, time of day and season. The results are the prime source of road vehicle use information for researchers and interested members of the public. For the 2007 reference year, Environment Accounts and Statistics Division provided funding for some additional questions and an augmented sample size.

A Technical Report has been completed that focuses on the comparability of the CVS fuel consumption data with data from other sources. This report will be published later in 2009. Work is under way on an analytical report. This will be published in early 2010.

Socio-economic Conference 2009

The Statistics Canada Socio-economic Conference provides an annual forum for empirical research focusing on issues of concern in Canadian public policy. At the May 4-5, 2009 conference there were eight environment-related presentations. The titles of the presentations listed here are written in the language in which they were presented.

The Environmental and Distributional Effects of the Proposed Carbon Tax in New Brunswick
Joe Ruggeri and Jean-Philippe Bourgeois, University of New Brunswick, Fredericton, New Brunswick

Estimating Supply Chain of CO_2 Emissions Using Input-Output Models: Challenges and Opportunities
Edward Crummey, Ontario Ministry of Natural Resources, Toronto, Ontario

The Impact of Changing Demographics and Consumer Lifestyle Behaviour on Greenhouse Gas Emissions in Canada
Hans Messinger, Industry Accounts Division, Statistics Canada, Joe St. Lawrence, Environment Accounts and Statistics Division, Statistics Canada and Chantal Hicks, Socio-economic Modelling and Analysis Division, Statistics Canada

Investment in Farm Environmental Protection and Management Practices
Emmanuel K. Yiridoe and David Thibodeau, Nova Scotia Agricultural College
Verna Mitura, Agriculture Division, Statistics Canada

Linking the Canadian Tourism Satellite Account and the Canadian System of Environmental and Resource Accounts to Measure the Environmental Impact of Tourism in Canada: An Exploratory Study for Two Pilot Industries
Chris Jackson, Demi Kotsovos and Charles Morissette, Income and Expenditure Accounts Division, Statistics Canada

Bien et services écologiques et agroforesterie : l'intérêt du producteur agricole et de la société
Maria Olar, J. Nolet, C. Sauvé, M. Hernandez, C. Simard, M. Ablain, P. Etcheverry, A. Vézina and N. De Baets, ÉcoRessources Consultants, Québec, Quebec

Non Market Valuation of Aquatic Species at Risk in Canada: Overview of Two Studies and Interpretation of the Results
Alejandro De Maio and Keldi Forbes, Fisheries and Oceans Canada, Ottawa, Ontario

Plenary: The State of Canada's Environment
Nancy Olewiler, Simon Fraser University, Burnaby, British Columbia

The complete program is available on Statistics Canada's website at: www.statcan.gc.ca/conferences/socioecon2009/index-eng.htm. For further information please contact the presenters directly.