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Overview of the Canadian Water Flow Account

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Water Use Accounts in Canada: Basic table

Table 153-0116 [1](#), [2](#), [3](#), [4](#), [5](#), [7](#), [8](#), [9](#)

Physical flow account for water use

every 2 years (cubic metres x 1,000)

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The data below is a part of CANSIM table 153-0116. Use the [Add/Remove data](#) tab to customize your table.

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Geography = Canada

Sector	2009	2011
Total, industries and households	38,836,120	35,350,913
Total, industries	35,159,287	31,777,873
Crop production [BS111]	2,045,300	1,501,614
Animal production [BS112]	279,586	267,789
Forestry and logging [BS11300]	346	525
Fishing, hunting and trapping [BS11400]
Support activities for agriculture and forestry [BS11500]
Oil and gas extraction [BS21100]	293,060	349,362
Coal mining [BS21210]	20,966	33,632
Metal ore mining [BS21220]	319,054	260,066
Non-metallic mineral mining and quarrying [BS21230]	103,073	135,477
Support activities for mining and oil and gas extraction [BS21300]	9	39
Electric power generation, transmission and distribution [BS22110]	26,213,561	23,497,215

Link to the SEEA Central Framework

Table 3.5.1 (cont) Physical supply and use table for water (cubic metres of water)

Physical use table for water	Abstraction of water, Intermediate consumption, Return flows						Final consumption Households	Accumulation	Flows to the rest of the world Exports	Flows to the environment	Total use
	Agriculture, forestry and fishing	Mining & quarrying, Manufacturing and Construction	Electricity, gas, steam and air conditioning	Water collection, treatment and supply	Sewerage	Other industries					
(I) Sources of abstracted water											
Inland water resources											
Surface water	55.3	79.7	301.0	4.5	0.1						440.6
Groundwater	3.1	34.8	3.2	432.9		2.3					476.3
Soil water	50.0										50.0
Total	108.4	114.5	304.2	437.4	0.1	2.3					966.9
Other water sources											
Precipitation				1.0	100.0						101.0
Sea water			100.0	1.1							101.1
Total	0.0	0.0	100.0	2.1	100.0	0.0					202.1
Total use abstracted water	108.4	114.5	404.2	439.5	100.1	2.3					1 169.0
(II) Abstracted water											
Distributed water	38.7	45.0	3.9			51.1	239.5				378.2
Own use	108.4	114.6	404.2	50.4	100.1	2.3	10.8				790.8
(III) Wastewater and reused water											
Wastewater											
Wastewater received from other units					427.1						427.1
Own treatment	12.0	40.7									52.7
Reused water											
Distributed reuse											
Own use											
Total	12.0	40.7			427.1						479.8
(IV) Return flows of water											
Returns of water to the environment											
To inland water resources										668.6	668.6
To other sources										362.4	362.4
Total return flows										1 031.0	1 031.0
(V) Evaporation of abstracted water, transpiration and water incorporated into products											
Evaporation of abstracted water										138.0	138.0
Transpiration											
Water incorporated into products											
Total use	267.5	314.8	812.3	489.9	627.3	55.7	250.3			1 169.0	3 986.8

Note: Dark grey cells are null by definition.

The big picture

▪ National water yield (average annual renewable freshwater supply)	3,500 km³
▪ Hydro-electric power generation	3,000
▪ Timber productive forest land	500
▪ Physiological crop requirements	85
▪ Total water intake	35
▪ <i>Of which thermal electric power</i>	25
▪ <i>Of which municipal</i>	5
▪ <i>Of which irrigation</i>	2

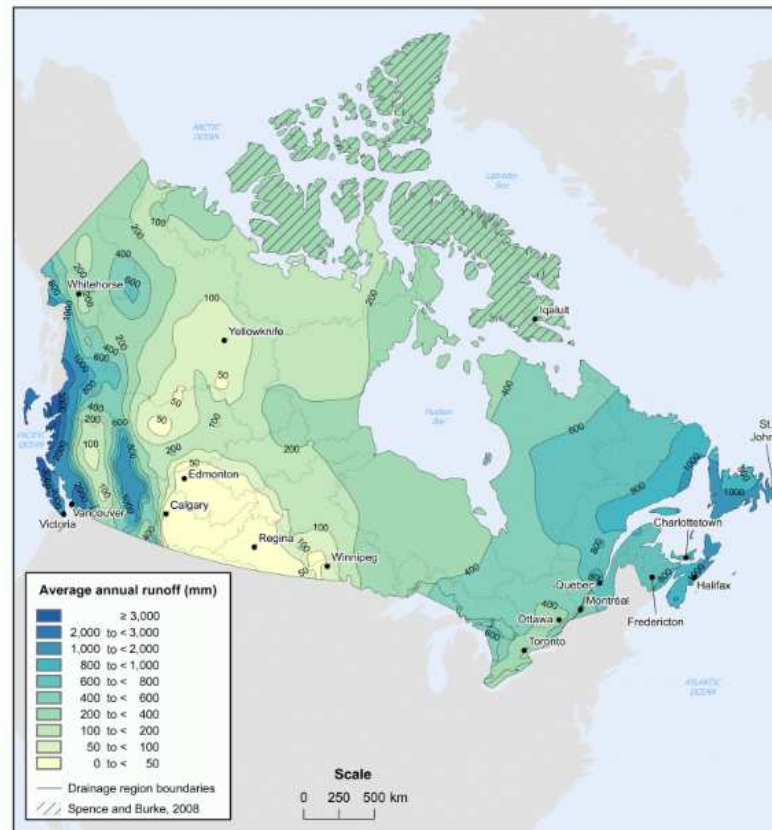
1% of yield (with red arrow pointing to 35)

Order of magnitude estimates based on stock and flow accounts. See Human Activity and the Environment (2010), *Freshwater supply and demand in Canada* (<http://www.statcan.gc.ca/pub/16-201-x/16-201-x2010000-eng.htm>) for more information.

The 1% is important because flows are variable...

Average annual runoff in Canada, 1971 to 2004

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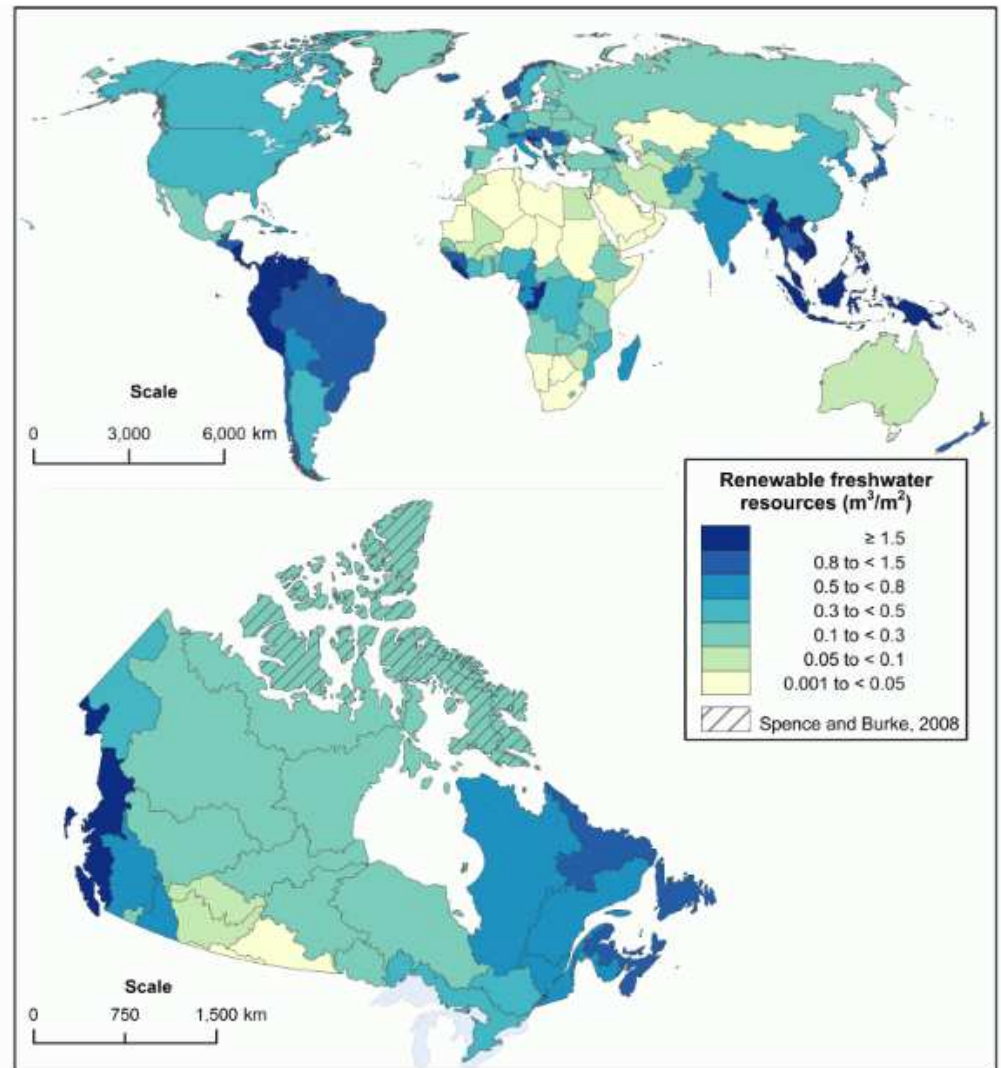
Note(s): Data were derived from discharge values contained in Environment Canada, 2010, Water Survey of Canada, Archived Hydrometric Data (HYDAT) (www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=main_e.cfm).

Source(s): Spence C., and A. Burke, 2008, "Estimates of Canadian Arctic Archipelago Runoff from Observed Hydrometric Data," *Journal of Hydrology*, Vol. 362, pages 247 to 259.
Statistics Canada, Environment Accounts and Statistics Division, 2010, special tabulation.

Renewable freshwater resources by country, and water yield by drainage region within Canada

Next

They are variable
in space...



Note(s) Data for Canada were derived from discharge values contained in Environment Canada, 2010, Water Survey of Canada, Archived Hydrometric Data (HYDAT) (www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=main_e.cfm).

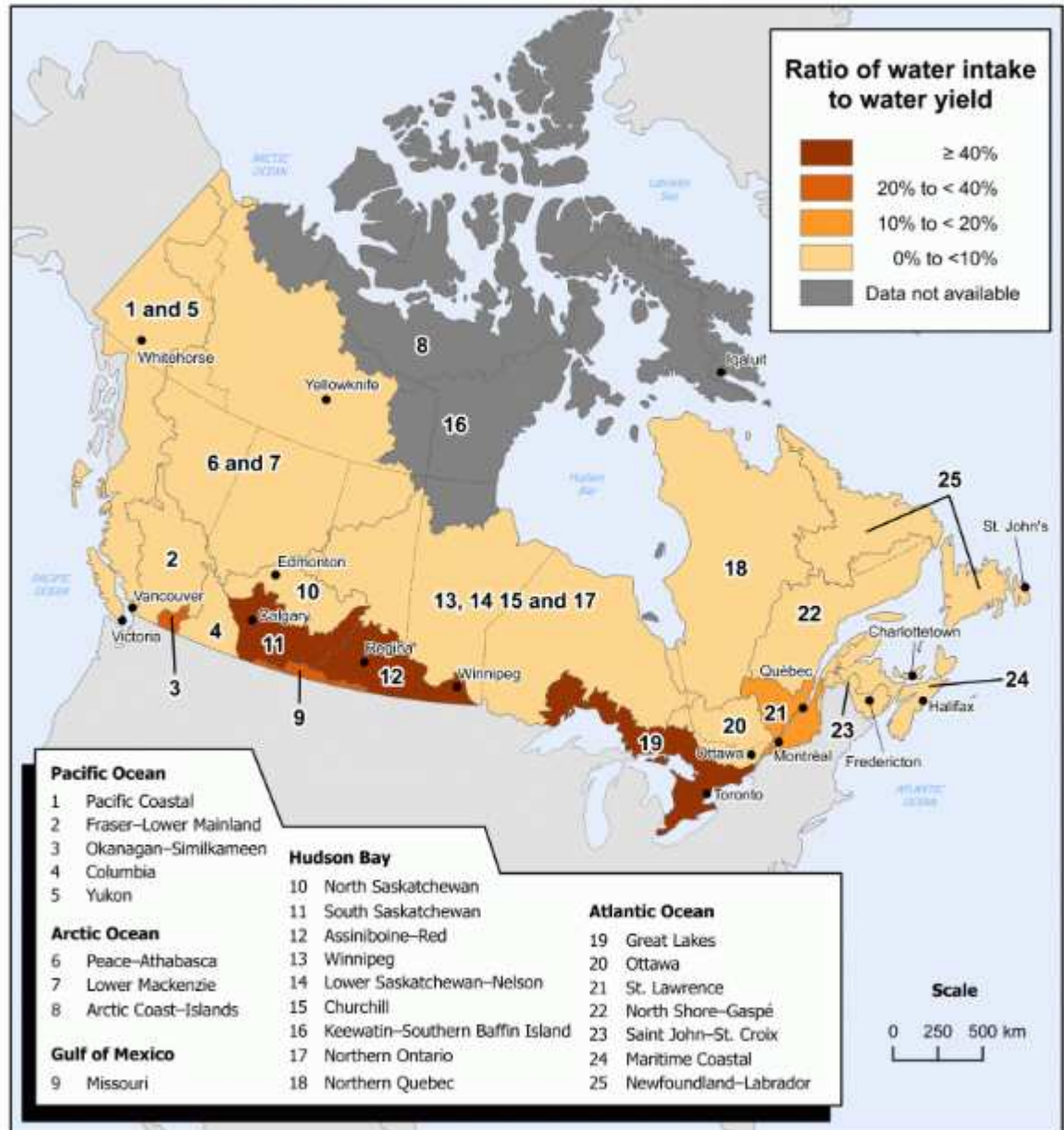
Source(s): Food and Agriculture Organization of the United Nations, 2009, *AQUASTAT main country database*, <http://www.fao.org/nr/water/aquastat/dbase/index.stm> (accessed December 15, 2009).
Spence C., and A. Burke, 2008, "Estimates of Canadian Arctic Archipelago Runoff from Observed Hydrometric Data," *Journal of Hydrology*, Vol. 362, pages 247 to 259.
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Ratio of August 2005 water intake to the August median water yield for 1971 to 2004

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...and they are variable in time.

A key message, therefore, is that space and time are both important dimensions to consider in a water accounting programme.



Overview of main data sources

Industrial Water Use Survey

Mining, Manufacturing, and **Thermal Power**. Oil and gas extraction estimate provided by the Canadian Association of Petroleum Producers.

Agricultural Water Use Survey

Irrigation for all provinces outside Alberta. Alberta estimate from Alberta Agriculture and Rural Development.

Survey of Drinking Water Treatment Plants

Control Total for **municipal supply**. Estimate for losses and commercial, industrial and residential split.

Input-output Tables

Water supplied through mains expenditure based allocation for users not surveyed above

Challenges and solutions

- **Periodicity of source surveys**
 - **Interpolation, estimation, other sources, etc.**
- **Lack of detailed data for industries, particularly in the commercial and institutional sector**
 - **Estimate via expenditure data, consumption studies, etc.**
- **Variability within industries (e.g. Computer chip manufacturing compared to computer assembly)**
 - **Careful sampling, validation**
- **Difficulty of collecting household use data directly (Lack of metering in some jurisdictions)**
 - **Survey producers, although it can be difficult for them to identify customers**



Questions?

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