

Census of Environment: Water asset account, 2021

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Data on Canada's water assets are now available nationally and by drainage region. The pilot water asset account provides information on available stocks of freshwater, as well as changes in those stocks through natural and human processes. The account establishes foundations for exploring the availability of water to meet demands from the economy and to assess whether water uses are consistent with long-term sustainability of freshwater resources.

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In 2021, three of the top four drainage regions with high water demand have the lowest renewable freshwater available

In 2021, three of the top four drainage regions with the largest demand for freshwater were in the Prairies: the Assiniboine–Red, South Saskatchewan and North Saskatchewan drainage regions. In these drainage regions, water consumption by crops was a major contributor to abstraction—the amount of water removed from the environment. These drainage regions also had the lowest amount of renewable freshwater available in 2021.

When comparing water abstraction with the renewable freshwater supply in these regions, the ratio was 32.5 in the Assiniboine–Red drainage region, 3.3 in the South Saskatchewan drainage region and 2.4 in the North Saskatchewan drainage region. Large demand for freshwater that exceeds renewable supply is an indicator of stress on water resources. These ratios indicate that the freshwater demand in these regions needs to be met by using other water stocks, including soil water, groundwater and managed water sources such as reservoirs.

In contrast, drainage regions with the largest available renewable freshwater resources had lower demand in 2021. The water stress indicators were 0.1% in the Pacific Coastal and 0.2% in the North Shore–Gaspé drainage regions.

In the Great Lakes region—an area with high population and lots of industrial activity—the volume of freshwater abstracted was the second highest overall in 2021 and represented 27.0% of the renewable freshwater supply. Although this region used more water compared with other regions, most of the freshwater abstracted was for thermal-electric power generation and was quickly returned to the environment.

Precipitation recharges coastal water stocks, creating large surpluses for ecosystems and human use

The balance of water inflows from precipitation and outflows from evaporation and evapotranspiration creates natural water deficits and surpluses across drainage regions that are reflected in the environment. This difference, termed the net atmospheric water exchange, is a natural driver of ecosystem health, as it controls the amount of water available for soils, vegetation, wetlands, lakes and rivers.

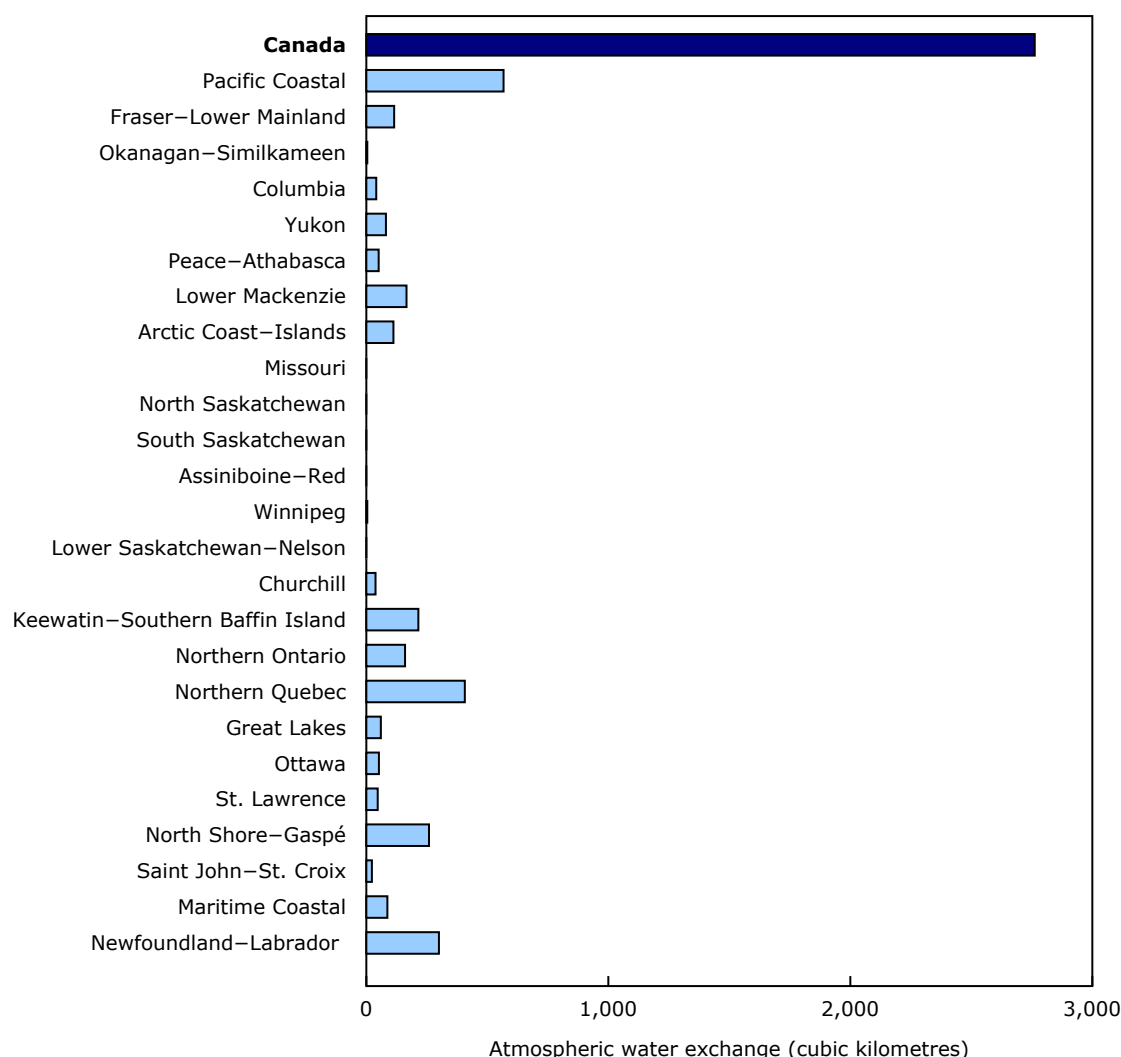
The South Saskatchewan and North Saskatchewan drainage regions had a deficit in the net supply of freshwater coming from precipitation in 2021, indicating a need for surface and groundwater inflows to replace what was lost through evaporation as well as to meet demand.



Coastal regions of the country had significant surpluses in 2021. In the Pacific Coastal drainage region, the net atmospheric exchange was 567 km³, while in Northern Quebec it was 407 km³, and in Newfoundland–Labrador it was 300 km³. In these regions, precipitation exceeded evaporation and evapotranspiration, creating an abundance of freshwater for ecosystem needs and human use. These regions also have a large capacity to provide water to downstream territories that also depend on this supply to meet their demand.

However, the timing of natural water inflows and outflows matters because there may not always be enough water when it is needed. On the island of Newfoundland for instance, runoff in October was about two times larger than in July over the [three preceding decades](#).

Chart 1
Net atmospheric water exchange, by drainage region, 2021



Note(s): The net atmospheric water exchange is calculated as the difference between precipitation and evaporation and evapotranspiration and is an indicator of water availability.

Source(s): Table [38-10-0191-01](#) and custom tabulation.

Table 1
Water abstraction, renewable freshwater supply and water stress indicator for selected drainage regions, 2021

	Abstraction	Renewable freshwater supply	Water stress indicator
	millions of cubic metres		%
Assiniboine-Red	30,100	926	3,249.9
Great Lakes	29,029	107,692	27.0
South Saskatchewan	20,224	6,050	334.3
North Saskatchewan	17,599	7,286	241.5
Peace-Athabasca	6,212	92,907	6.7
St. Lawrence	4,965	49,974	9.9
Ottawa	1,648	55,149	3.0
Fraser-Lower Mainland	978	151,306	0.6
Maritime Coastal	617	100,367	0.6
North Shore-Gaspé	524	275,199	0.2
Pacific Coastal	520	580,103	0.1
Saint John-St. Croix	367	23,790	1.5
Columbia	238	61,425	0.4

Note(s): The water stress indicator is calculated as the ratio of abstraction to the renewable freshwater supply.

Source(s): Table [38-10-0191-01](#) and custom tabulation.

Note to readers

The water asset account is now available in table [38-10-0191](#). This pilot account provides information on available stocks of freshwater, as well as increases and decreases in stocks for the year 2021. Changes in stocks include increases from precipitation and returns from water uses, while decreases in stocks are driven by evaporation, evapotranspiration and abstraction of water. These data allow Canadians to analyze the geographical distribution of and changes in water stocks in order to compare the environmental and economic components of the water assets in each geography. Information is available by drainage region ([Standard Drainage Area Classification](#)).

The pilot account provides estimates of renewable freshwater resources as a proxy for available surface freshwater stocks due to difficulties in estimating the volume of all freshwater assets (e.g., lakes, rivers, snow, ice, glaciers and artificial reservoirs, groundwater and soil water). Additionally, the account captures only some increases (precipitation and returns) and decreases (evaporation, evapotranspiration and abstraction) in stock. Improvements to this account will be made as new data and methods become available.

Additional renewable freshwater resource estimates (water yield) are accessible through related tables: [38-10-0283](#), [38-10-0003](#), [38-10-0091](#), [38-10-0095](#) and [38-10-0174](#). These estimates are derived from data on unregulated flows in Canada's rivers and streams but may include non-renewable water sources such as meltwater from receding glaciers.

Abstraction is the amount of water removed from the environment permanently or temporarily. The estimate represents the amount of water removed from the environment for consumption and production activities, including water use by municipalities, industry use and soil water uptake for crop production. The estimate excludes hydro-electric power generation, soil water uptake for timber production and stormwater runoff. Water stress is calculated as the ratio of water abstraction to renewable freshwater supply.

The **net atmospheric water exchange** is the balance of natural water flows to and from the atmosphere affecting water stocks. It is calculated as the difference between precipitation and evaporation and evapotranspiration.

Statistics Canada's [Census of Environment](#) program reports on ecosystems in Canada, providing information to help Canadians make evidence-based decisions to protect, rehabilitate, enhance and sustain our environment. It follows the internationally accepted environmental-economic standard for producing information on ecosystems' extent, their condition and the services they provide.

Available tables: table [38-10-0191-01](#).

Definitions, data sources and methods: survey numbers [5114](#) and [5331](#).

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; infostats@statcan.gc.ca) or Media Relations (statcan.mediahotline-ligneinfomedias.statcan@statcan.gc.ca).