Canada's Core Public Infrastructure Survey: Water Infrastructure, 2020

Released at 8:30 a.m. Eastern time in The Daily, Tuesday, July 26, 2022

Water infrastructure is critical for the health and safety of Canadians. It provides safe drinking water, helps maintain clean and healthy environments, and protects our communities from flooding. In 2020, these public systems were composed of 4,126 wastewater treatment plants and lagoon systems, 3,342 water treatment facilities, 472,488 kilometres of underground pipes, and 284,827 kilometres of culverts and open ditches, as well as numerous pump stations, storage facilities, and other assets.

Canada's Core Public Infrastructure Survey measures the stock, condition and performance of assets owned by Canadian governments. According to the Survey of Drinking Water Plants, at least 86% of Canadians were served by drinking water plants that are licensed and regulated by provincial/territorial agencies (excluding First Nations communities) in 2019.

Municipalities are responsible for the vast majority of public water utilities as they accounted for more than 96% of the organizations who reported water infrastructure in 2020. These assets require a significant amount of capital investments. According to the Annual Capital and Repair Expenditures Survey, 28% of total capital spending on infrastructure by municipal, local and regional governments in 2020 was on water and sewer infrastructure.

Table 1
Inventory of publicly owned potable water, stormwater and wastewater linear assets

	2020
	kilometres
Total linear assets	**757,315**
Potable water local pipes	177,576
Potable water transmission pipes	14,931
Potable water pipes of unknown diameter	7,323
Stormwater culverts	25,671
Stormwater open ditches	259,156
Stormwater pipes (diameter less than 450 mm)	52,525
Stormwater pipes (diameter greater than or equal to 450 mm and less than 1,500 mm)	44,975
Stormwater pipes (diameter greater than or equal to 1,500 mm)	4,100
Stormwater pipes (unknown diameter)	6,847
Wastewater pipes (diameter less than 450 mm)	125,668
Wastewater pipes (diameter greater than or equal to 450 mm and less than 1,500 mm)	17,722
Wastewater pipes (diameter greater than or equal to 1,500 mm)	2,600
Wastewater pipes (unknown diameter)	7,040
Wastewater sanitary forcemains	11,181

Source(s): Tables **34-10-0192-01**, **34-10-0210-01** and **34-10-0222-01**.

Table 2
Inventory of publicly owned potable water, stormwater and wastewater non-linear assets

	2020
Total non-linear assets	**49,561**
Potable water treatment facilities	3,342
Potable water reservoirs (including dams) before intake	1,623
Potable water storage tanks (after intake)	3,268
Potable water pump stations	5,273
Stormwater drainage pump stations	1,123
Stormwater management facilities: ponds and wetlands	9,433
Stormwater management facilities: other end-of-pipe facilities	5,676
Wastewater treatment plants	1,866
Lagoon systems	2,260
Wastewater pump stations	7,468
Wastewater lift stations	6,999

Table 2
Inventory of publicly owned potable water, stormwater and wastewater non-linear assets

	2020
Wastewater storage tanks	1,230

Source(s): Tables 34-10-0192-01, 34-10-0210-01 and 34-10-0222-01.

Underground networks are among the oldest water infrastructure

The pace of construction continues to increase with an average of 10,069 kilometres of underground pipe installed per year in 2019 and 2020, compared with around 6,844 kilometres per year from 2000 to 2018. While capital expenditures and the pace of construction of water infrastructure accelerated in recent years, these investments have not kept up with the deterioration of existing assets as the remaining useful life of water and sewage infrastructure assets declined from 2017 to 2021.

A significant portion of linear water infrastructure was over 50 years old in 2020. In fact, close to one in five kilometres of water, sewer and stormwater pipes (86,533 kilometres out of 472,488) was reaching the end of its useful life, having been built prior to 1970. The average expected useful life of new underground pipes installed in 2020 ranged from 50 to 73 years.

Stormwater management facilities such as ponds, wetlands and infiltration basins had the largest share (43%) of total inventory built since 2010. Over one-quarter of the inventory of wastewater non-linear assets except lagoon systems (storage tanks, pump stations, lift stations and treatment plants), and of the inventory of drinking water pump stations and water treatment facilities were constructed in the period from 2010 to 2020.

Unlike most public infrastructure, water, sewer and stormwater pipes are hidden underground, making it challenging to assess conditions. In 2020, the condition of 12% of the length of pipes was unknown, compared with 18% in 2018. Almost three out of five kilometres were rated in good or very good condition in 2020, up from slightly more than half in 2018.

More water infrastructure owners have an asset management plan in place for water infrastructure

The improved data availability in terms of the condition of most water infrastructure assets in 2020 compared with 2018 may be explained by the increase in the implementation of asset management practices. In 2020, there was an almost 10% increase over 2018 in the share of organizations that owned water infrastructure and had an asset management plan. At least four out of five urban municipalities with 30,000 or more residents had an asset management plan for their water infrastructure in 2020, compared with just over two-thirds in 2018.

Note to readers

Canada's Core Public Infrastructure Survey for the year 2020 was conducted in partnership with Infrastructure Canada. The data cover topics such as the stock, condition and performance of core public infrastructure, as well as asset management practices of owners.

The survey results cover nine asset types (public transit; roads; bridges and tunnels; potable water; stormwater; wastewater; solid waste; culture, recreation and sports facilities; public social and affordable housing).

Data are based on responses from approximately 2,260 government organizations. The following organizations are included in the survey:

- *Provincial and territorial departments and agencies*
- *Regional governments*
- *Urban and rural municipalities (excluding First Nations communities)*
- *Selected provincial Crown corporations and public transit authorities*

Due to changes in methodology and improved data availability, the inventory counts are not comparable between years. For additions to the inventory of assets, readers can refer to the distribution of the inventory by year of construction (Tables 34-10-0194, 34-10-0195, 34-10-0224, 34-10-0225, 34-10-0212, 34-10-0213) for assets that completed construction in 2019 and 2020.

Inventory counts for the 2018 reference year for municipalities may be overestimated. Census subdivisions, including unorganized and unincorporated areas, were included in the survey frame whereas only incorporated organizations were included for 2020. Data for prior years may be revised at a later date to reflect this new methodology.

Respondents were provided the following condition rating scale when asked to rate the overall physical condition of their assets:

***Very poor**: Immediate need to replace most or all of the asset. Health and safety hazards exist which present a possible risk to public safety or asset cannot be serviced/operated without risk to personnel. Major work or replacement required urgently.*

***Poor**: Failure likely and substantial work required in the short term. Asset barely serviceable. No immediate risk to health or safety.*

***Fair**: Significant deterioration is evident; minor components or isolated sections of the asset need replacement or repair now, but asset is still serviceable and functions safely at adequate level of service.*

***Good**: Acceptable physical condition; minimal short-term failure risk but potential for deterioration in the long term. Only minor work required.*

***Very good**: Sound physical condition. No short-term failure risk and no work required.*

*An **asset management plan** defines how a group of assets is to be managed over time. The asset management plan describes the characteristics and condition of infrastructure assets, the levels of service expected from the assets, planned actions to ensure the assets are providing the expected level of service, and financing strategies to implement the planned actions.*

Information on other asset types will be released over the coming months.

Available tables: 34-10-0192-01 to 34-10-0235-01 .

Definitions, data sources and methods: survey number 5173.

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**).

For more information about why the survey was conducted and how it will inform infrastructure policy and program development and investment decisions, please contact Infrastructure Canada (toll-free: 1-877-250-7154 or 613-948-1148, or by email at **info@infc.gc.ca**), or Infrastructure Canada Media Relations (toll-free: 1-877-250-7154 or 613-960-9251, or by email at **media-medias@infc.gc.ca**).