New construction of water infrastructure accelerated in 2017 and 2018

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Beneath the feet of Canadians, there are over 500,000 kilometres of potable water, storm water and wastewater pipes—almost half the total length of all roads in Canada.

Statistics Canada, in partnership with Infrastructure Canada, is pleased to release data for 2018 on the state of the nation's potable water, storm water and wastewater infrastructure. The data cover topics such as stock, condition, performance and asset management strategies.

In 2018, there were over 56,000 water, storm water and wastewater facilities in Canada (treatment facilities, pump stations, lift stations, reservoirs and storage tanks, ponds and wetlands for storm water, and other end-of-pipe facilities) linked to 816,000 kilometres of potable water and sewer pipes, force mains, open ditches, and culverts. This compares to about 39,000 water, storm water and wastewater facilities and 761,000 kilometres of linear assets reported for 2016.

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

	2018
	kilometres
Total linear assets	**815,803**
Potable water local pipes	183,818
Potable water transmission pipes	22,237
Potable water pipes of unknown diameter	8,383
Stormwater culverts	30,384
Stormwater open ditches	278,549
Stormwater pipes (diameter less than 450 mm)	55,482
Stormwater pipes (diameter greater than or equal to 450 mm and less than 1,500 mm)	43,432
Stormwater pipes (diameter greater than or equal to 1,500 mm)	3,619
Stormwater pipes (unknown diameter)	14,981
Wastewater pipes (diameter less than 450 mm)	129,540
Wastewater pipes (diameter greater than or equal to 450 mm and less than 1,500 mm)	20,106
Wastewater pipes (diameter greater than or equal to 1,500 mm)	2,849
Wastewater pipes (unknown diameter)	9,281
Wastewater sanitary forcemains	13,142

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

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

	2018
Total non-linear assets	**56,129**
Potable water treatment facilities	3,583
Potable water reservoirs (including dams) before intake	2,145
Potable water storage tanks (after intake)	3,819
Potable water pump stations	5,659
Stormwater drainage pump stations	1,153
Stormwater management facilities: ponds and wetlands	9,951
Stormwater management facilities: other end-of-pipe facilities	7,756
Wastewater treatment plants	1,926
Lagoon systems	2,511
Wastewater pump stations	8,020
Wastewater lift stations	8,348
Wastewater storage tanks	1,258

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

New construction of water infrastructure accelerated in 2017 and 2018

Results from Canada's Core Public Infrastructure Survey indicated that the construction of water assets of all types accelerated in 2017 and 2018. An average of approximately 13,000 kilometres of new linear water assets were built per year in 2017 and 2018, compared with around 6,000 kilometres per year from 2000 to 2016. Similarly, on average, around 1,590 non-linear water facilities (pump and lift stations, reservoirs and storage tanks, treatment facilities, and other end-of-pipe facilities) were constructed each year during 2017 and 2018, compared with approximately 1,200 facilities per year from 2000 to 2016.

In Budget 2016, the federal government committed $2 billion to renewing water and wastewater systems through the Clean Water and Wastewater Fund (CWWF). The Investing in Canada Plan Project Map indicated that 2,365 projects were approved under the CWWF from 2016 to 2018, representing more than $3.8 billion of total eligible costs. Data from the Annual Survey of Capital and Repair Expenditures (CAPEX) showed that over $18 billion was invested in water and wastewater infrastructure from 2016 to 2018. This is still below the $24.5 billion invested from 2010 to 2012.

In 2007, a study conducted by the Federation of Canadian Municipalities and McGill University estimated that close to $88 billion of investments in water-related infrastructure were required in relation to existing capital stock and for new infrastructure requirements. CAPEX data indicated that $65.8 billion was invested in these assets in the 10-year period from 2007 to 2016.

Little change in the condition of water infrastructure since 2016

Despite recent investments in water infrastructure, the share of linear assets in poor or very poor condition was unchanged in 2018 compared with 2016, at around 11%.

There was a decrease in the share of linear assets reported to be in good condition or better. Less than half of linear assets were deemed to be in good or very good condition in 2018, compared with 53% in 2016.

One-fifth of water and wastewater pipes were 50 years old

About 20% of water distribution and transmission pipes and more than 25% of sanitary sewer pipes (excluding storm water pipes) were built before 1970. In spite of this, around 11% of the total stock of these assets were reported to be in poor or very poor condition, with more than half reported as being in good condition or better.

Potable water treatment facilities, lagoon systems and wastewater treatment plants are newer than the underground infrastructure, with 7% of them having been built before 1970. Among all water treatment facilities, lagoon systems and wastewater treatment plants in Canada, two-thirds were reported as being in good or very good condition.

More than two-thirds of owners in large urban municipalities have an asset management plan

More water infrastructure owners had asset management plans in 2018 compared with 2016 for potable water (57% in 2018, compared with 43% in 2016), storm water (51% in 2018, compared with 34% in 2016) and wastewater assets (56% in 2018, compared with 38% in 2016). Most gains were in municipalities with fewer than 5,000 residents.

In 2018, large urban municipalities (population of 30,000 or more) were more likely than smaller municipalities to have an asset management plan for their water assets. Around 70% of owners in large urban municipalities had an asset management plan in 2018 for potable water (72% in 2018, compared with 66% in 2016), storm water (68% in 2018, compared with 51% in 2016) and wastewater assets (70% in 2018, compared with 65% in 2016).

Note to readers

Canada's Core Public Infrastructure Survey 2018 was conducted in partnership with Infrastructure Canada.

Data are based on responses from approximately 2,520 government organizations selected from Statistics Canada's Business Register, the central repository of information on public and private organizations operating in Canada. It is used as the principal frame for most of Statistics Canada's economic statistical programs. The following organizations are included in the survey:

- *Provincial and territorial departments and ministries*
- *Regional governments*
- *Urban and rural municipalities*
- *Selected provincial Crown corporations and public transit authorities*

Estimates for 2018 may not be comparable to those for 2016 because of improved coverage and definitions, and changes in survey methodology, including an expanded target population. From 2016 to 2018, the questionnaire for Canada's Core Public Infrastructure survey underwent several major changes.

- *The questionnaire was collected through an electronic platform instead of a paper questionnaire.*
- *Questions were streamlined to reduce response burden.*
- *The survey included a census of all municipalities with at least 1,000 inhabitants, and a sample of municipalities with between 500 and 1,000 inhabitants.*
- *For Quebec, the survey was conducted by the Institut de la statistique du Québec.*

The survey results cover nine asset types (roads; bridges and tunnels; culture, recreation and sports facilities; potable water; public transit; public social and affordable housing; solid waste; storm water; wastewater), as well as information on asset management practices.

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. There are health and safety hazards that present a possible risk to public safety, or the asset cannot be serviced or operated without risk to personnel. Major work or replacement is required urgently. The operating asset has less than 10% of its expected service life remaining.*

***Poor**: Failure likely and substantial work required in the short term. Asset barely serviceable. No immediate risk to health or safety. The operating asset has less than 40% of its expected service life remaining.*

***Fair**: Significant deterioration is evident; minor components or isolated sections of the asset need replacement or repair now, but the asset is still serviceable and functions safely at an adequate level of service. The operating asset has at least 40% of its expected service life remaining.*

***Good**: Acceptable physical condition; minimal short-term failure risk, but potential for deterioration in the long term. Only minor work required. The operating asset has at least 80% of its expected service life remaining.*

***Very good**: Sound physical condition. The asset is likely to perform adequately. The operating asset has at least 95% of its expected service life remaining.*

*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; **STATCAN.infostats-infostats.STATCAN@canada.ca**) or Media Relations (613-951-4636; **STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.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 **infc.info.infc@canada.ca**), or Infrastructure Canada Media Relations (toll-free: 1-877-250-7154 or 613-960-9251, or by email at **infc.media.infc@canada.ca**).