



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada

MUNICIPAL WASTEWATER TREATMENT

CANADIAN ENVIRONMENTAL
SUSTAINABILITY INDICATORS



Canada 

Suggested citation for this document: Environment and Climate Change Canada (2020) Canadian Environmental Sustainability Indicators: Municipal wastewater treatment. Consulted on *Month day, year*. Available at: www.canada.ca/en/environment-climate-change/services/environmental-indicators/municipal-wastewater-treatment.html.

Cat. No.: En4-144/8-2020E-PDF
ISBN: 978-0-660-36892-4

Unless otherwise specified, you may not reproduce materials in this publication, in whole or in part, for the purposes of commercial redistribution without prior written permission from Environment and Climate Change Canada's copyright administrator. To obtain permission to reproduce Government of Canada materials for commercial purposes, apply for Crown Copyright Clearance by contacting:

Environment and Climate Change Canada
Public Inquiries Centre
12th Floor Fontaine Building
200 Sacré-Coeur Blvd
Gatineau QC K1A 0H3
Telephone: 1-800-668-6767 (in Canada only) or 819-938-3860
Fax: 819-938-3318
Email: ec.enviroinfo.ec@canada.ca

Photos: © Environment and Climate Change Canada

© Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change, 2020

Aussi disponible en français

CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS MUNICIPAL WASTEWATER TREATMENT

December 2020

Table of contents

Municipal wastewater treatment.....	5
Population served by municipal wastewater systems	5
Key results	5
Population served by municipal wastewater systems by province and territory	7
Key results	7
Population served by municipal wastewater systems in selected countries	8
Key results	8
Municipal wastewater volume discharged by treatment category	9
Key results	9
Municipal wastewater volume discharged by treatment category by province and territory	10
Key results	10
About the indicators.....	11
What the indicators measure.....	11
Why these indicators are important.....	11
Related indicators.....	11
Data sources and methods	11
Data sources	11
Methods.....	12
Recent changes	14
Caveats and limitations.....	14
Resources	14
References.....	14

Related information.....	15
Annex	16
Annex A. Data tables for the figures presented in this document.....	16
 List of Figures	
Figure 1. Proportion of population served by municipal wastewater systems, Canada, 2013 to 2017	5
Figure 2. Proportion of population served by municipal wastewater systems by province and territory, Canada, 2017	7
Figure 3. Proportion of population served by municipal wastewater systems, selected countries, 2017.....	8
Figure 4. Proportion of municipal wastewater volume discharged by treatment category, Canada, 2013 to 2017	9
Figure 5. Volume and proportion of municipal wastewater discharged by treatment category by province and territory, Canada, 2017	10
 List of Tables	
Table 1. Description of wastewater treatment category.....	12
Table A.1. Data for Figure 1. Proportion of population served by municipal wastewater systems, Canada, 2013 to 2017.....	16
Table A.2. Data for Figure 2. Proportion of population served by municipal wastewater systems by province and territory, Canada, 2017	16
Table A.3. Data for Figure 3. Proportion of population served by municipal wastewater systems, selected countries, 2017	17
Table A.4. Data for Figure 4. Proportion of municipal wastewater volume discharged by treatment category, Canada, 2013 to 2017	17
Table A.5. Data for Figure 5. Volume and proportion of municipal wastewater discharged by treatment category by province and territory, Canada, 2017.....	18

Municipal wastewater treatment

Every day, millions of cubic metres of wastewater are discharged from homes, businesses, institutions and industries into city sewer systems. Municipal wastewater is one of the largest sources of pollution to surface water in Canada. Before being released to the environment, wastewater needs to be treated. A higher level of wastewater treatment leads to a cleaner effluent and a smaller impact on the environment. The indicators show the level of wastewater treatment provided to the Canadian population.

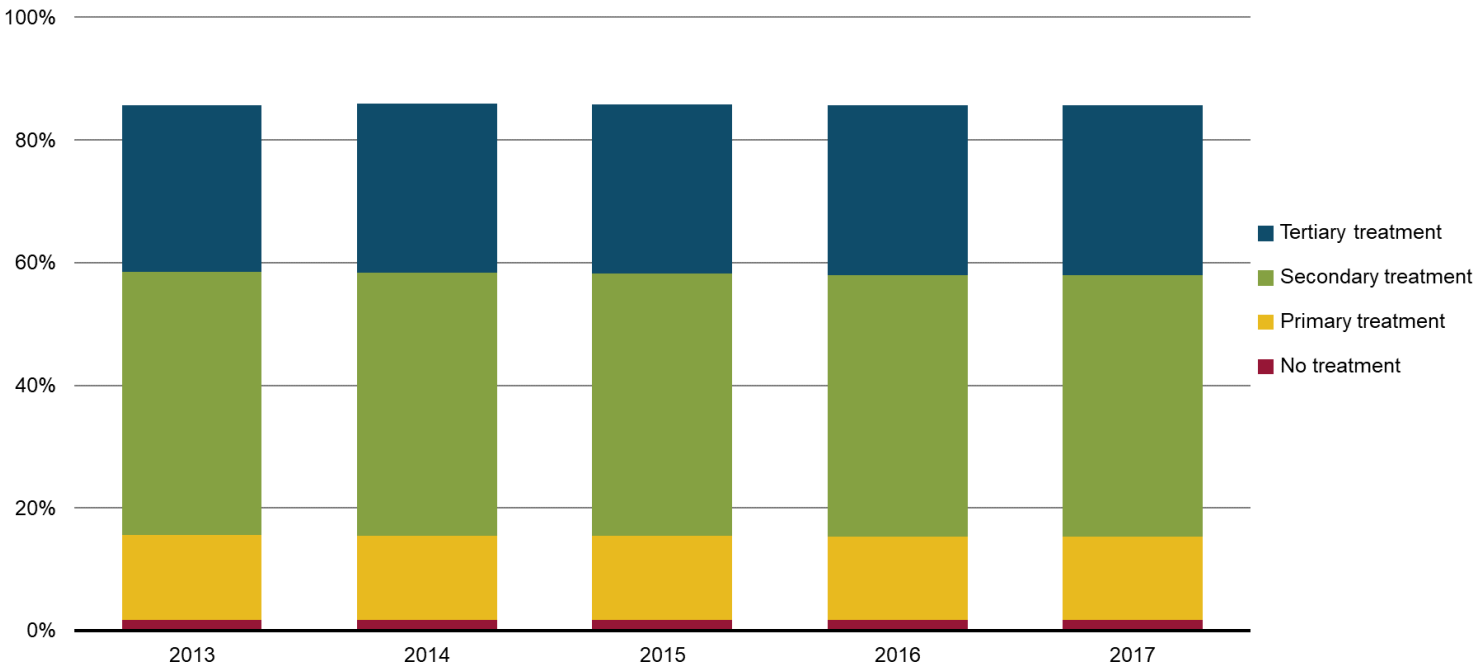
Population served by municipal wastewater systems

Key results

- Over the 2013 to 2017 period, the proportion of the population served by municipal wastewater systems remained stable at 86%
- Since 2013, the proportion of population served by each treatment category remained stable:
 - Around 28%, 43% and 14% for tertiary, secondary and primary treatments, respectively
 - Around 2% of the population was served by systems discharging untreated wastewater
- In 2017, 14% of the population was not served by municipal wastewater systems¹

Figure 1. Proportion of population served by municipal wastewater systems, Canada, 2013 to 2017

Proportion of population served by municipal wastewater systems



[Data for Figure 1](#)

Note: Only the population served by municipal wastewater systems with a daily flow of 100 cubic metres or more was considered. Data were unavailable for the populations located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador.

Source: Statistics Canada (2020) [Table 38-10-0125-01 Population served by municipal wastewater systems by treatment category](#) and Statistics Canada (2017) [Population and dwelling count highlight tables, 2016 census](#).

¹ The population not served by municipal wastewater systems corresponds to the population that either had their own on-site wastewater system (such as septic systems) or were served by other systems with daily flows of less than 100 cubic metres per day, or by other facilities outside the scope of the surveys.

Municipal wastewater refers to used water from homes, businesses, industries and institutions that drain into sewers. It contains sanitary sewage and is sometimes combined with stormwater from rain or melting snow draining off rooftops, lawns, parking lots and roads. Municipal wastewater can contain human and other organic waste, nutrients, pathogens, microorganisms, suspended solids and household and industrial chemicals. Treating wastewater before it is released into lakes and rivers reduces the risks posed to human health and the environment.²

The treatment processes presented in Figure 1 can be summarized as follows:

- No treatment: No treatment process or only screening and/or grit removal
- Primary treatment: Removing a portion of suspended solids and organic matter by physical and/or chemical processes
- Secondary treatment: Removing organic matter and suspended solids using biological treatment processes and secondary settlement
- Tertiary treatment: Removing specific substances of concern (solids, nutrients and/or contaminants) after secondary treatment using a number of physical, chemical or biological processes

A variety of factors, including Canada's physical geography and population density influence the proportion of population served by municipal sewers. For example, communities where population is spread over a large geographical area are challenged when it comes to providing centralized infrastructures to collect and treat wastewater. Those communities tend to rely on independent systems, such as septic systems, or small scale collective systems. In this indicator, their populations would be considered as "not served" by municipal wastewater systems. The efficiency of those treatment systems can be similar to larger municipal wastewater systems.

² Canadian Council of Ministers of the Environment (2020) [Municipal Wastewater Effluent Strategy](#). Retrieved on 7 August, 2020.

Population served by municipal wastewater systems by province and territory

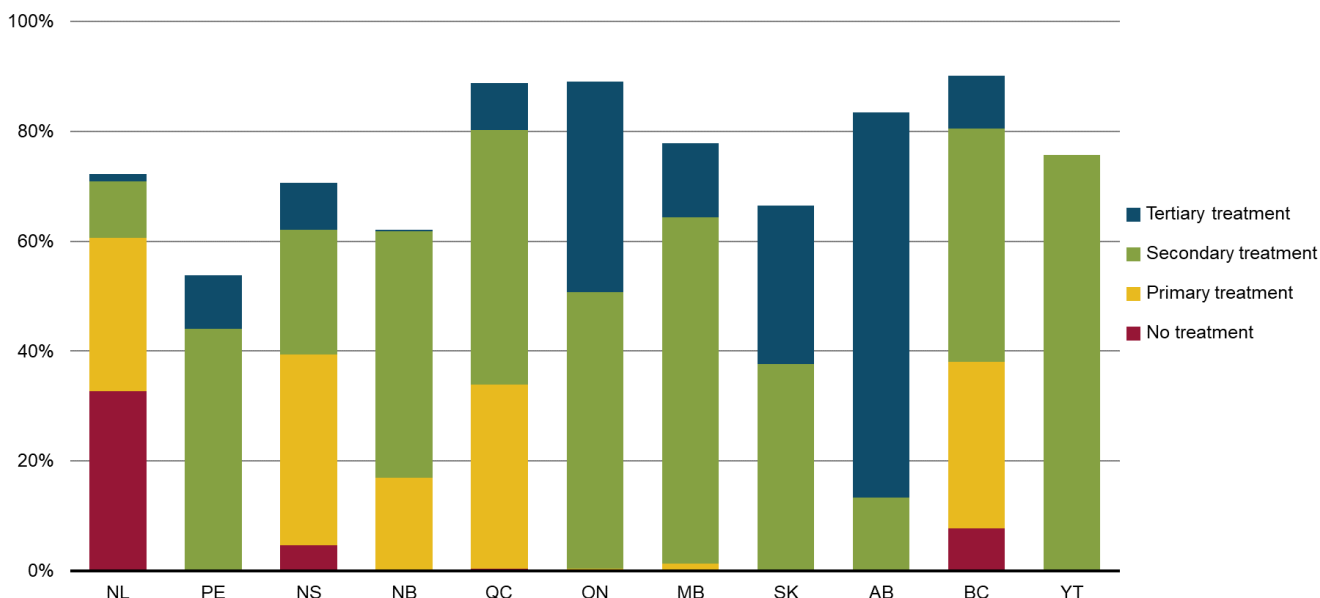
Key results

In 2017,

- The proportion of population served by municipal wastewater systems varied from 54% in Prince Edward Island to 90% in British Columbia³
- Alberta had the highest proportion of population (70%) served by tertiary-level wastewater treatment
- Nova Scotia had the highest proportion of population (35%) served by primary-level wastewater treatment
- A significant proportion of the Newfoundland and Labrador population (33%) was served by municipal systems that discharge wastewater to the environment with no prior treatment

Figure 2. Proportion of population served by municipal wastewater systems by province and territory, Canada, 2017

Proportion of population served by municipal wastewater systems



[Data for Figure 2](#)

Note: Only the population served by municipal wastewater systems with a daily flow of 100 cubic metres or more was considered. Data were unavailable for the populations located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador.

Source: Statistics Canada (2020) [Table 38-10-0125-01 Population served by municipal wastewater systems by treatment category](#) and Statistics Canada (2017) [Population and dwelling count highlight tables, 2016 census](#).

Much of the Canadian population is served by wastewater collection and treatment systems; however, the proportion of population served and the level of treatment applied to wastewater varies widely by province and territory. The majority of systems that discharge untreated wastewater are located in coastal communities. Inland provinces tend to have higher levels of treatment in order to protect freshwater resources.

³ The population not served by municipal wastewater systems corresponds to the population that either had their own on-site wastewater system or were served by other systems with daily flows of less than 100 cubic metres per day, or by other facilities outside the scope of the surveys.

Population served by municipal wastewater systems in selected countries

This indicator compares the proportion of the population served by municipal wastewater systems in Canada with the 24 countries from the Organisation for Economic Co-operation and Development for which data were available for the year 2017.

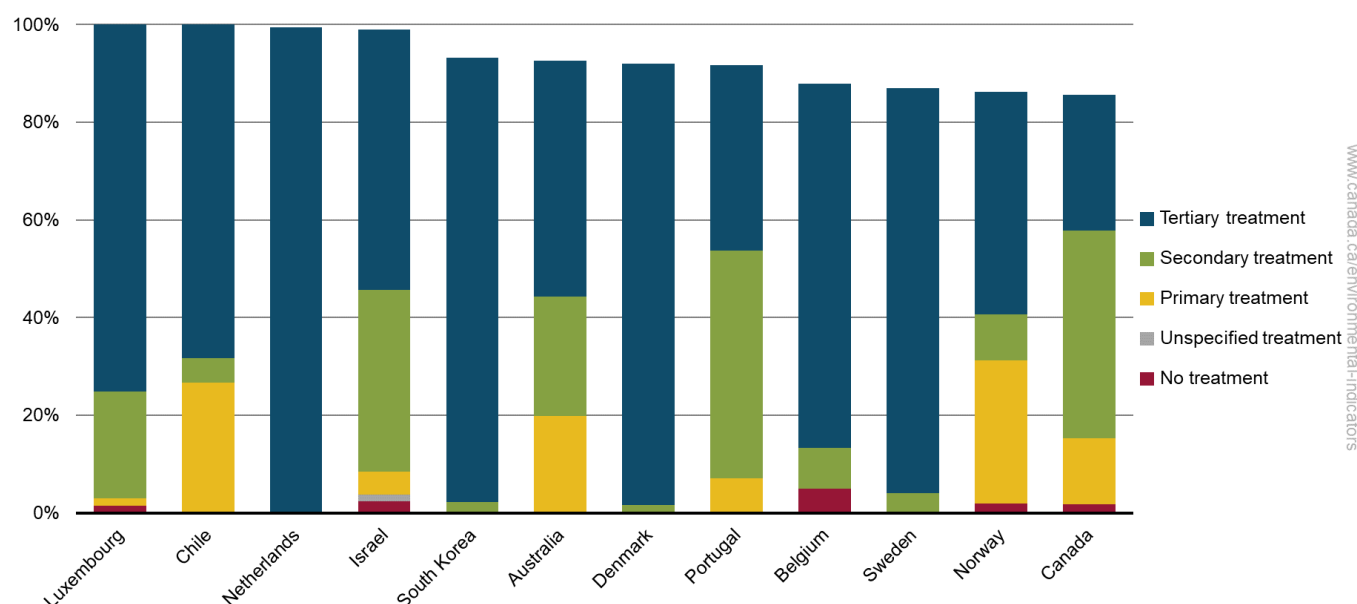
Key results

In 2017:

- Canada ranked 12th out of 24 countries for proportion of population served by municipal wastewater systems at 86%^{4,5}
- Luxembourg and Chile reported that 100% of their population was served by a municipal wastewater system
- 38% to 99% of the population from the selected countries were served by a municipal wastewater system using a tertiary treatment, which is more than in Canada (28%)

Figure 3. Proportion of population served by municipal wastewater systems, selected countries, 2017

Proportion of population served by municipal wastewater systems



[Data for Figure 3](#)

Note: The graph shows the 12 member countries from the Organisation for Economic Co-operation and Development with the highest proportion of population served by public sewerage systems in 2017. The year 2017 was the most recent year for which data was available for Canada in the Organisation for Economic Co-operation and Development's database. For Canada, only the population served by municipal wastewater systems with a daily flow of 100 cubic metres or more was considered.

Source: Organisation for Economic Co-operation and Development (2020) [Wastewater treatment](#) database.

⁴ For Canada, the population not served by municipal wastewater systems corresponds to the population that either had their own on-site wastewater system or were served by other systems with daily flows of less than 100 cubic metres per day, or by other facilities outside the scope of the surveys.

⁵ Canada's proportion of the population served by municipal wastewater systems differs from the data presented in the national indicator because different population estimates were used. For more information, please consult the [Caveats and limitations](#) section.

The countries with the highest proportion of population connected by treatment category were:

- Chile for the primary treatment with 27%
- Portugal for the secondary treatment with 47%
- the Netherlands for the tertiary treatment with 99%

After Australia, Canada has the lowest population density among the selected countries and one of the lowest proportion of urban population.⁶ These factors could have an influence on the development of centralized wastewater treatment infrastructures.

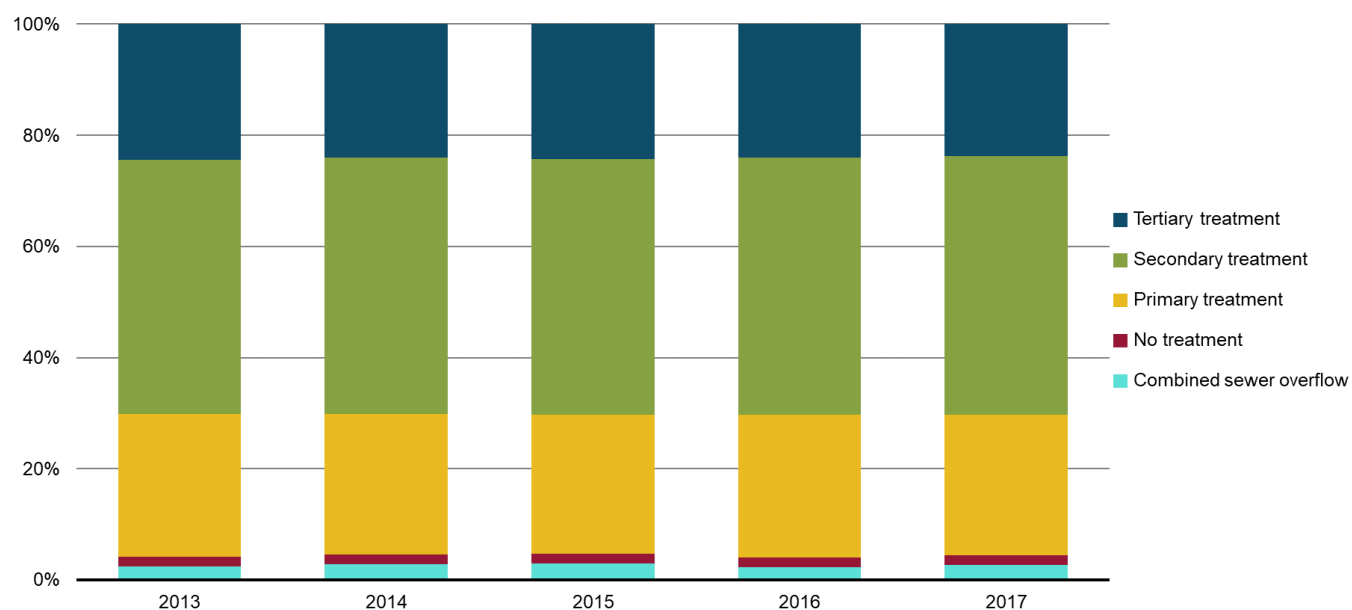
Municipal wastewater volume discharged by treatment category

Key results

- Over the 2013 to 2017 period, 95.3% to 96.0% of the municipal wastewater collected underwent a treatment (primary, secondary or tertiary) before being discharged
- In 2017, 4.4% of the volume of municipal wastewater discharged was untreated⁷

Figure 4. Proportion of municipal wastewater volume discharged by treatment category, Canada, 2013 to 2017

Proportion of municipal wastewater volume discharged by treatment category



[Data for Figure 4](#)

Note: Combined sewer overflows correspond to the stormwater and wastewater conveyed into a combined sewer that are discharged directly into receiving waters because they exceed the capacity of the sewer system or treatment plant. Data were unavailable for the sewer systems located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador.

Source: Statistics Canada (2020) [Table 38-10-0124-01 Wastewater volumes discharged from municipal sewage systems by treatment category \(x 1,000,000\)](#) and [Table 38-10-0100-01 Combined sewer overflow discharge volumes \(x 1,000,000\)](#).

Between 2013 and 2017, the volume of municipal wastewater discharged remained relatively stable, ranging from 5 689 million cubic metres to 6 074 million cubic metres.

⁶ World Bank (2020) [World Development Indicators](#). Retrieved on August 4, 2020.

⁷ The wastewater considered untreated includes combined sewer overflows. Combined sewer overflows correspond to the stormwater and wastewater conveyed into a combined sewer that are discharged directly into receiving waters because they exceed the capacity of the sewer system or treatment plant.

In 2017, the volume of municipal wastewater discharged with no treatment was 270 million cubic metres, corresponding to 4.4% of the total volume discharged. This includes 164 million cubic metres from combined sewer overflows. In 2016, the volume of untreated wastewater discharged amounted to 233 million cubic metres (including 134 million cubic metres from combined sewer overflows), or 4.0% of the total volume conveyed by municipal wastewater systems in Canada.

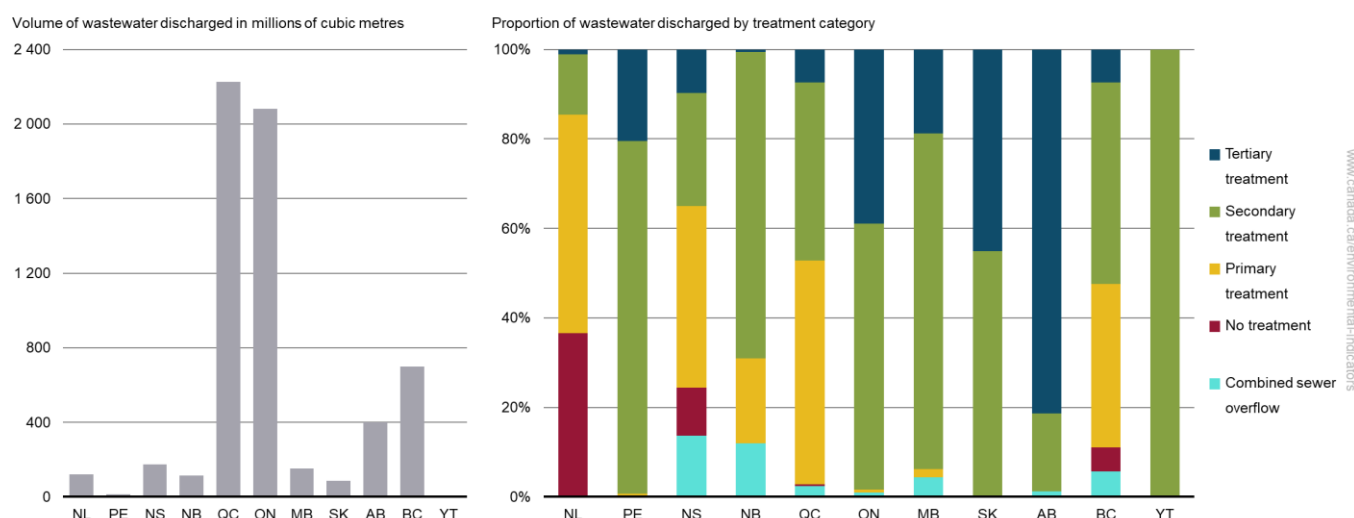
Municipal wastewater volume discharged by treatment category by province and territory

Key results

In 2017:

- Quebec and Ontario accounted for the majority of wastewater discharged nationally, with respective volumes of 2 227 and 2 082 million cubic metres
- Municipal wastewater was almost entirely treated at secondary or tertiary levels in Alberta, Ontario, Prince Edward Island, Saskatchewan, Yukon, and, to a lesser extent, Manitoba
- Municipal wastewater in Newfoundland and Labrador, Nova Scotia, and Quebec were mostly, at best, treated at a primary level

Figure 5. Volume and proportion of municipal wastewater discharged by treatment category by province and territory, Canada, 2017



[Data for Figure 5](#)

Note: Combined sewer overflows correspond to the stormwater and wastewater conveyed into a combined sewer that are discharged directly into receiving waters because they exceed the capacity of the sewer system or treatment plant. Data were unavailable for the sewer systems located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador.

Source: Statistics Canada (2020) [Table 38-10-0124-01 Wastewater volumes discharged from municipal sewage systems by treatment category \(x 1,000,000\)](#) and [Table 38-10-0100-01 Combined sewer overflow discharge volumes \(x 1,000,000\)](#).

The level of treatment applied to wastewater varies widely by province and territory. In 2017, the provinces and territory with the highest proportion of wastewater discharged by treatment category were:

- Newfoundland and Labrador for untreated wastewater with 37%
- Quebec for primary treatment, with 50%
- Yukon for secondary treatment, with 100%
- Alberta for tertiary treatment, with 81%

About the indicators

What the indicators measure

The Municipal wastewater treatment indicators measure the level of wastewater treatment provided to the Canadian population. Higher treatment levels of wastewater reduce the risk of raw wastewater pollutants entering the environment, where they pose risks to human health and the environment. These indicators are not a measure of municipalities' compliance with municipal, provincial, territorial or federal wastewater regulations or treatment standards.

Why these indicators are important

Municipal wastewater is one of the largest sources of pollution, by volume, to surface water in Canada.⁸ Despite treatment, pollutants remain in treated wastewater discharged into surface waters. Treated wastewater may contain grit, debris, biological wastes, disease-causing bacteria, nutrients, and hundreds of chemicals such as those found in drugs and in personal care products like shampoo and cosmetics. The higher the level of treatment provided by a wastewater system, the cleaner the effluent and the lesser the impact on the effluent receiving environment.

Insufficient wastewater treatment could result in environmental, human health and economic impacts, such as oxygen depletion, beach closures and other restrictions on recreational water use, on fish and shellfish harvesting and consumption and on drinking water.



Pristine lakes and rivers

These indicators support the measurement of progress towards the following [2019 to 2022 Federal Sustainable Development Strategy](#) long-term goal: Clean and healthy lakes and rivers support economic prosperity and the well-being of Canadians.

In addition, the indicators contribute to the [Sustainable Development Goals of the 2030 Agenda for Sustainable Development](#). They are linked to Goal 6, Clean water and sanitation, and Target 6.3, "By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally."

Related indicators

The [Water quality in Canadian rivers](#) indicators provide a measure of the ability of river water across Canada to support plants and animals.

The [Metal and diamond mining effluent quality](#) indicator summarizes the results achieved since the *Metal and Diamond Mining Effluent Regulations* came into effect in 2002.

The [Pulp and paper effluent quality](#) indicator summarizes the degree of compliance achieved since 1985 under the *Pulp and Paper Effluent Regulations*.

Data sources and methods

Data sources

Data for 2013 to 2017 come from Statistics Canada's [Municipal Wastewater Systems in Canada](#) statistical program.

⁸ Government of Canada (2012) [Wastewater Systems Effluent Regulations](#). Retrieved on November 3, 2020.

The 2017 data for the international comparison of population served by municipal wastewater systems indicator were retrieved from the Organisation for Economic Co-operation and Development's [Wastewater treatment](#) database.

More information

Spatial coverage

The Municipal Wastewater Systems in Canada statistical program captures data from all the wastewater systems that collect a daily average volume of 100 cubic metres or more. These estimates exclude systems that service First Nations reserves, government institutions, commercial and industrial establishments, and provincial parks.

Temporal coverage

The Municipal Wastewater Systems in Canada was published for the first time in 2019 and presented the data for the years 2013 to 2017. It will be updated annually.

Data completeness

The Municipal Wastewater Systems in Canada lists approximately 2 000 wastewater (sewage) systems serving communities with a daily flow of 100 cubic metres or more. This list is established from owners of wastewater systems that report under the federal *Wastewater Systems Effluent Regulations*. Other systems not reporting under these regulations, such as those in northern regions under an equivalency agreement are also considered. In 2017, the listed systems were serving 30 415 372 Canadians.

Methods

The [Municipal Wastewater Systems in Canada](#) data are presented under 5 datasets:

- Population served by municipal wastewater systems
- Population served by municipal wastewater systems by treatment category
- Wastewater volumes processed by municipal sewage systems
- Wastewater volumes discharged from municipal sewage systems by treatment category, and
- Combined sewer overflow discharge volumes

The treatment levels are categorized as none, primary, secondary, secondary with additional phosphorous removal or tertiary treatment.

For the purposes of these indicators, the population not served by municipal wastewater systems corresponds to the population that either had their own on-site wastewater system (such as septic systems) or were served by other systems with daily flows of less than 100 cubic metres per day, or by other facilities outside the scope of the surveys.

In 2012, the *Wastewater Systems Effluent Regulations* were established under the *Fisheries Act* and included mandatory minimum effluent quality standards that can be achieved through secondary wastewater treatment. The regulations apply to wastewater systems that collect an average daily volume of 100 cubic metres or more.

More information

Wastewater treatment levels for this indicator were categorized based on the definitions used in the Municipal Wastewater Systems in Canada.⁹

Table 1. Description of wastewater treatment categories

Treatment category	Definition
No treatment	No treatment processes are applied, or only screening and/or grit removal are applied

⁹ Statistics Canada (2019) [Municipal Wastewater Systems in Canada](#) and Statistics Canada (2020) [Table 38-10-0124-01 Wastewater volumes discharged from municipal sewage systems by treatment category \(x 1,000,000\)](#).

Treatment category	Definition
Primary treatment	<p>Primary treatment removes a portion of suspended solids and organic matter by physical and/or chemical processes. At least 1 of the following processes is applied:</p> <ul style="list-style-type: none"> • Chemical flocculation • Primary sedimentation/clarification • Skimming
Secondary treatment	<p>Secondary treatment removes biodegradable organic matter and suspended solids using biological treatment processes and secondary settlement. At least 1 of the following processes is applied:</p> <ul style="list-style-type: none"> • Activated sludge system (with or without extended aeration) • Activated sludge system (with or without pure oxygen) • Lagoon systems (any one or combination of aerated, aerobic, anaerobic, facultative, non-aerated, non-aerated filtered) • Oxidation ditch • Rotating biological contactor • Storage ponds (polishing ponds) • Sequencing batch reactor • Trickling filter • Integrated systems that combine the above technologies • Chemical precipitation for phosphorus
Tertiary treatment	<p>Tertiary treatment further removes residual suspended solids, nutrients and/or other contaminants using various physical, chemical or biological processes. At least 1 of the following processes is applied in addition of secondary treatment processes:</p> <ul style="list-style-type: none"> • Biofiltration • Biological ammonia removal – nitrification only • Biological nitrogen removal – nitrification and denitrification • Biological nutrient removal (nitrogen and phosphorus) • Biological phosphorus removal • Filtration • Peat filter • Integrated systems that combine the above technologies with secondary treatment technologies, or some systems that only apply tertiary technologies

The data were derived from administrative records collected by Environment and Climate Change Canada via the Effluent Regulatory Reporting Information System, as required by the *Wastewater Systems Effluent Regulations*. Those records provide information on each sewage system, including the volume of wastewater discharged and the treatment-level. The population served by each sewage system was estimated using census population data. The regulations do not apply to any wastewater system located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador; therefore, no data were available for these populations.

The percentages of population served by municipal wastewater systems at the national and provincial and territorial levels were calculated using the [population served by municipal wastewater systems by treatment category](#) data which was developed based on the [2011 and 2016 census of population](#). The population for 2017 was extrapolated using the 2016 census data. The same process applies for the calculation of the national, and provincial and territorial proportions of municipal wastewater discharged by treatment category. The [volume of wastewater discharged for each treatment category](#), as established

by the Municipal Wastewater Systems in Canada statistical program, was divided by the total volume of wastewater discharged. For the purposes of these indicators, the [volumes corresponding to the combined sewer overflows](#) were added to the total volume of wastewater and were considered as untreated water.

Recent changes

The indicators cover the years 2013 to 2017 and do not include data from previous years. The methodology used by the Municipal Wastewater Systems in Canada differs from the previous surveys, making the data not directly comparable.

Two (2) new indicators on the population served by municipal wastewater treatment systems were added to provide comparisons by treatment category at the provincial and territorial level and at the international level. Two (2) additional indicators were added to provide information on the volume of wastewater being treated by treatment category at the national level and at the provincial and territorial level.

Caveats and limitations

The Municipal Wastewater Systems in Canada statistical program excludes communities that have their own on-site wastewater system, or that are served by other systems with daily flows of less than 100 cubic metres per day or by other facilities outside the scope of the survey. The *Wastewater Systems Effluent Regulations* do not apply to any wastewater system located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador; therefore, no data are available for these populations.

Although these indicators assume municipal wastewater treatment plants are functioning at their design level, equipment failure and weather conditions may prevent them from doing so. Severe storms can cause overflows in combined sanitary and stormwater sewer systems. During such events, the everyday treatment level is not applied and raw sewage is released directly to surface waters.

The Municipal Wastewater Systems in Canada statistical program does not provide information on sewage treated by private septic systems or other independent installations. Treatment levels depend on the efficiency and maintenance of the septic system. Similarly, no information is collected on the destination of hauled sewage or its treatment level.

These indicators are not a measure of compliance with municipal, provincial, territorial or federal wastewater regulations or treatment standards. For more information on the Government of Canada's role in wastewater management, see Environment and Climate Change Canada's [Wastewater](#) website. For more information on national efforts to develop a harmonized regulatory framework for municipal wastewater treatment, see the Canadian Council of Ministers of the Environment's [Canada-wide strategy for the management of municipal wastewater effluent](#).

Resources

References

Environmental Protection Agency (2016) [Learn about small wastewater systems](#). Retrieved on November 3, 2020.

Organisation for Economic Co-operation and Development (2020) [Wastewater treatment](#) database. Retrieved on November 3, 2020.

Statistics Canada (2017) [Population and Dwelling Count Highlight Tables. 2016 Census](#). Retrieved on November 3, 2020.

Statistics Canada (2020) [Table 38-10-0100-01 Combined sewer overflow discharge volumes \(x 1,000,000\)](#). Retrieved on November 3, 2020.

Statistics Canada (2020) [Table 38-10-0124-01 Wastewater volumes discharged from municipal sewage systems by treatment category \(x 1,000,000\)](#). Retrieved on November 3, 2020.

Statistics Canada (2020) [Table 38-10-0125-01 Population served by municipal wastewater systems by treatment category](#). Retrieved on November 3, 2020.

Related information

[Canada-wide strategy for the management of municipal wastewater effluent](#)

[Wastewater management](#)

[Wastewater](#)

[*Wastewater Systems Effluent Regulations*](#)

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Proportion of population served by municipal wastewater systems, Canada, 2013 to 2017

Year	Total population estimated	No treatment (percentage)	Primary treatment (percentage)	Secondary treatment (percentage)	Tertiary treatment (percentage)	Total (percentage)
2013	34 146 704	1.8	13.9	42.9	27.2	85.7
2014	34 481 712	1.7	13.7	43.0	27.5	85.9
2015	34 816 720	1.7	13.7	42.8	27.5	85.8
2016	35 151 728	1.7	13.7	42.6	27.7	85.7
2017	35 486 736	1.7	13.6	42.6	27.8	85.7

Note: Totals may not add up due to rounding. Only the population served by municipal wastewater systems with a daily flow of 100 cubic metres or more was considered. Data were unavailable for the populations located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador.

Source: Statistics Canada (2020) [Table 38-10-0125-01 Population served by municipal wastewater systems by treatment category](#) and Statistics Canada (2017) [Population and Dwelling Count Highlight Tables, 2016 Census](#).

Table A.2. Data for Figure 2. Proportion of population served by municipal wastewater systems by province and territory, Canada, 2017

Province/Territory	Total population estimated	No treatment (percentage)	Primary treatment (percentage)	Secondary treatment (percentage)	Tertiary treatment (percentage)	Total (percentage)
Newfoundland and Labrador	520 752	32.7	28.0	10.3	1.3	72.2
Prince Edward Island	143 448	0.0	0.2	43.9	9.7	53.8
Nova Scotia	923 972	4.7	34.7	22.7	8.5	70.6
New Brunswick	746 287	0.0	17.0	44.9	0.2	62.1
Quebec	8 216 633	0.4	33.4	46.4	8.6	88.8
Ontario	13 567 829	0.0	0.3	50.4	38.4	89.1
Manitoba	1 292 384	0.0	1.3	63.0	13.5	77.8
Saskatchewan	1 111 346	0.0	0.0	37.5	28.9	66.4
Alberta	4 151 559	0.0	0.1	13.3	70.0	83.4
British Columbia	4 697 655	7.7	30.3	42.4	9.6	90.1
Yukon	36 269	0.0	0.0	75.7	0.0	75.7

Note: Totals may not add up due to rounding. Only the population served by municipal wastewater systems with a daily flow of 100 cubic metres or more was considered. Data were unavailable for the populations located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador. Percentages may not add up to 100 due to rounding.

Source: Statistics Canada (2020) [Table 38-10-0125-01 Population served by municipal wastewater systems by treatment category](#) and Statistics Canada (2017) [Population and Dwelling Count Highlight Tables, 2016 Census](#).

Table A.3. Data for Figure 3. Proportion of population served by municipal wastewater systems, selected countries, 2017

Country	No treatment (percentage)	Unspecified treatment (percentage)	Primary treatment (percentage)	Secondary treatment (percentage)	Tertiary treatment (percentage)	Total (percentage)
Luxembourg	1.4	0.0	1.6	21.8	75.2	100.0
Chile	0.0	0.0	26.7	4.9	68.4	100.0
Netherlands	0.0	0.0	0.0	0.2	99.3	99.5
Israel	2.3	1.4	4.8	37.1	53.4	99.0
South Korea	0.0	0.0	0.0	2.3	90.9	93.6
Australia	0.0	0.0	19.8	24.5	48.4	92.7
Denmark	0.0	0.0	0.2	1.4	90.4	91.9
Portugal	0.0	0.1	7.0	46.7	38.0	91.8
Belgium	5.0	0.0	0.0	8.4	74.6	88.0
Sweden	0.0	0.0	0.0	4.0	83.0	87.0
Norway	1.9	0.0	29.3	9.4	45.6	86.2
Canada	1.7	0.0	13.6	42.6	27.8	85.7
Estonia	0.0	0.0	0.0	3.3	79.6	82.9
Czech Republic	0.0	0.0	0.1	8.4	73.9	82.3
France	0.0	2.0	0.0	11.0	69.0	82.0
Latvia	0.0	0.1	1.2	18.5	62.1	81.8
Hungary	0.0	0.1	0.1	7.1	72.0	79.3
Japan	0.0	0.0	0.0	49.3	29.5	78.8
Turkey	0.0	0.0	13.8	24.2	36.3	74.2
Lithuania	0.0	0.0	0.1	6.7	67.1	73.9
Poland	0.1	0.0	0.0	14.0	59.5	73.6
Slovenia	4.8	0.0	0.0	24.3	41.7	70.8
Slovak Republic	0.5	0.0	2.2	63.2	1.8	67.7
Ireland	1.6	0.7	0.8	40.2	20.9	64.2

Note: Totals may not add up due to rounding. The countries presented in the table correspond to all the members countries for which data are available for 2017 in the Organisation for Economic Co-operation and Development's wastewater treatment database. The year 2017 was the most recent year for which data was available for Canada in the database. For Canada, only the population served by municipal wastewater systems with a daily flow of 100 cubic metres or more was considered. Percentages may not add up to 100 due to rounding.

Source: Organisation for Economic Co-operation and Development (2020) [Wastewater treatment](#) database.

Table A.4. Data for Figure 4. Proportion of municipal wastewater volume discharged by treatment category, Canada, 2013 to 2017

Year	Volume of municipal wastewater discharged (millions of cubic metres)	Combined sewer overflow (percentage)	No treatment (percentage)	Primary treatment (percentage)	Secondary treatment (percentage)	Tertiary treatment (percentage)
2013	5 951	2.4	1.7	25.7	45.8	24.4
2014	6 036	2.9	1.7	25.3	46.0	24.0
2015	5 689	3.0	1.7	25.0	46.0	24.3
2016	5 808	2.3	1.7	25.8	46.2	24.0
2017	6 074	2.7	1.7	25.3	46.5	23.7

Note: Combined sewer overflows correspond to the stormwater and wastewater conveyed into a combined sewer that are discharged directly into receiving waters because they exceed the capacity of the sewer system or treatment plant. No data were available for the sewer systems located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador. Percentages may not add up to 100 due to rounding.

Source: Statistics Canada (2020) [Table 38-10-0124-01 Wastewater volumes discharged from municipal sewage systems by treatment category \(x 1,000,000\)](#) and [Table 38-10-0100-01 Combined sewer overflow discharge volumes \(x 1,000,000\)](#).

Table A.5. Data for Figure 5. Volume and proportion of municipal wastewater discharged by treatment category by province and territory, Canada, 2017

Province/Territory	Volume of municipal wastewater discharged (millions of cubic metres)	Combined sewer overflow (percentage)	No treatment (percentage)	Primary treatment (percentage)	Secondary treatment (percentage)	Tertiary treatment (percentage)
Newfoundland and Labrador	120	0.0	36.6	48.7	13.5	1.1
Prince Edward Island	14	0.0	0.0	0.7	78.9	20.4
Nova Scotia	176	13.7	10.8	40.5	25.3	9.7
New Brunswick	114	12.0	0.0	19.1	68.5	0.5
Quebec	2 227	2.4	0.3	50.0	39.8	7.4
Ontario	2 082	1.0	0.0	0.6	59.4	39.0
Manitoba	151	4.4	0.1	1.7	75.1	18.8
Saskatchewan	87	0.0	0.1	0.0	54.8	45.1
Alberta	400	1.2	0.0	0.1	17.3	81.4
British Columbia	700	5.7	5.4	36.5	45.1	7.3
Yukon	5	0.0	0.0	0.0	100.0	0.0

Note: Combined sewer overflows correspond to the stormwater and wastewater conveyed into a combined sewer that are discharged directly into receiving waters because they exceed the capacity of the sewer system or treatment plant. No data were available for the sewer systems located in the Northwest Territories, Nunavut and north of the 54th parallel in the provinces of Quebec and Newfoundland and Labrador. Percentages may not add up to 100 due to rounding.

Source: Statistics Canada (2020) [Table 38-10-0124-01 Wastewater volumes discharged from municipal sewage systems by treatment category \(x 1,000,000\)](#) and [Table 38-10-0100-01 Combined sewer overflow discharge volumes \(x 1,000,000\)](#).

Additional information can be obtained at:

Environment and Climate Change Canada
Public Inquiries Centre
12th Floor Fontaine Building
200 Sacré-Coeur Blvd
Gatineau QC K1A 0H3
Telephone: 1-800-668-6767 (in Canada only) or 819-938-3860
Fax: 819-938-3318
Email: ec.enviroinfo.ec@canada.ca