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GREENHOUSE GAS EMISSIONS FROM LARGE FACILITIES

CANADIAN ENVIRONMENTAL
SUSTAINABILITY INDICATORS



Canada 

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CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

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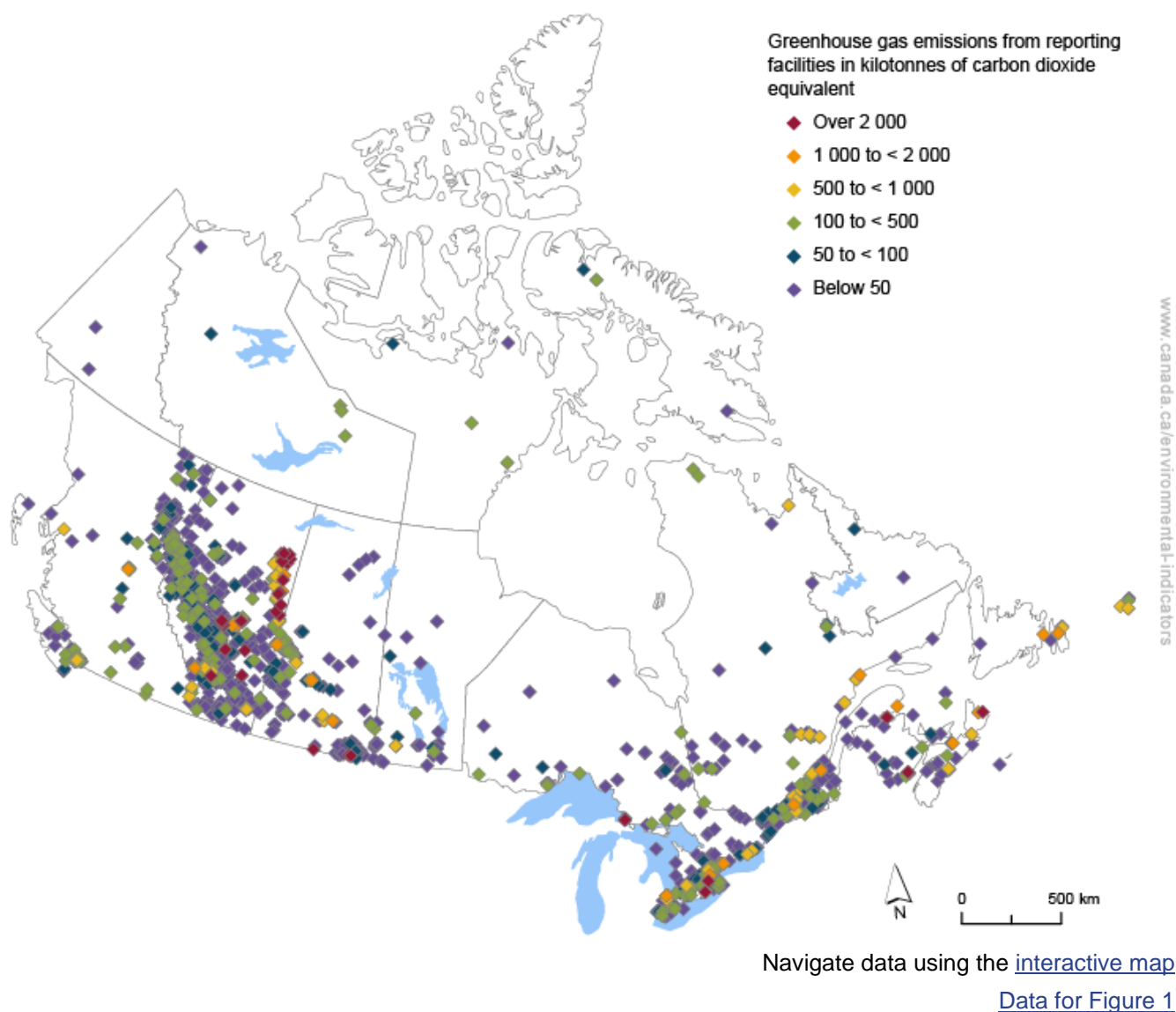
Greenhouse gas emissions from large facilities

Releases of greenhouse gases (GHGs) and their increasing concentrations in the atmosphere are leading to a changing climate. This change has an impact on the environment, human health and the economy. This indicator tracks and provides information on GHG emissions from the largest emitting facilities in Canada.

Key results

- In 2019, 293 megatonnes (Mt) of GHGs in carbon dioxide equivalent (CO₂ eq) were emitted by 1 700 facilities reporting to the Government of Canada's GHG Reporting Program
- Emissions from the reporting facilities account for 40% of Canada's total GHG emissions

Figure 1. Greenhouse gas emissions from large facilities, Canada, 2019



Source: Environment and Climate Change Canada (2021) [Greenhouse Gas Reporting Program - Overview of 2019 Reported Emissions](#).

Total facility-reported emissions in 2019 were similar to the total reported for 2018. In addition, there were slightly fewer facilities reporting to the GHG Reporting Program compared to the previous year¹ (1 700 compared to 1 706). Of the total,

- 116 facilities with emissions below 10 kilotonnes (kt) reported voluntarily²
- 1 030 facilities reported emissions in the 10 to 50 kt range
- 209 facilities reported emissions in the 50 to 100 kt range
- 229 facilities reported emissions in the 100 to 500 kt range
- 55 facilities reported emissions in the 500 to 1 000 kt range
- 61 facilities reported emissions over 1 000 kt

Compared to 2005, total emissions from facilities that reported emitting 50 kt or more decreased by 8 Mt (3%). Over the same period, the number of facilities that reported emitting 50 kt or more has increased from 323 in 2005 to 554 in 2019.³

In 2019, mining, quarrying, and oil and gas extraction accounted for 39% of facility-reported emissions; manufacturing, 30%; and utilities, 24% while in 2005, mining, quarrying and oil and gas extraction accounted for 17%; manufacturing, 33%; and utilities, 44%. Since 2005, emissions from facilities in the utilities and manufacturing sectors have declined overall, while emissions from the mining, quarrying, and oil and gas extraction sector have steadily increased.

About the indicator

What the indicator measures

The indicator reports the total emissions of large GHG emitters in Canada for the year 2019.

In March 2004, the Government of Canada announced the introduction of the Greenhouse Gas Reporting Program to annually collect emission information for facilities across Canada. Unlike Canada's National Inventory Report, which compiles GHG data at the national and provincial/territorial levels and covers all GHG sources and sinks in Canada, the GHG Reporting Program applies only to specific emission sources that exist at large GHG-emitting facilities (industrial and other types of facilities).

The GHG Reporting Program requires all facilities that emit the equivalent of 10 000 tonnes (10 kilotonnes) or more of GHGs (in carbon dioxide equivalent units) per year to submit a report to Environment and Climate Change Canada. Mandatory reporting of GHG emissions by facilities was established by the Minister of the Environment under the authority of section 46 of the *Canadian Environmental Protection Act, 1999*.

Why this indicator is important

The release of GHGs and their increasing concentrations in the atmosphere are having significant impacts on the environment, human health and the economy. The indicator informs the public and decision makers on the release of GHG emissions from the largest emitting facilities in Canada. Consult [Greenhouse gas emissions: drivers and impacts](#) for information on the human health, environmental and economic impacts of greenhouse gas emissions.

The GHG Reporting Program ensures that the GHG emissions from Canada's large emitters are tracked and reported. This mandatory reporting contributes to the development, implementation and evaluation of climate change and energy policies and strategies in Canada.

¹ The number of facilities reporting from 1 year to the next can be affected by facilities not meeting the reporting threshold, facility closures, shut-down periods and new operations starting up.

² The GHG Reporting Program requires all facilities that emit the equivalent of 10 000 tonnes (10 kilotonnes) or more of GHGs (in carbon dioxide equivalent units) per year to submit a report to Environment and Climate Change Canada. Facilities with emissions below 10 kilotonnes per year can voluntarily report their GHG emissions.

³ The increase in the number of facilities reporting emissions is partly due to reporting threshold changes. In 2009, the reporting threshold lowered from 100 kilotonnes to 50 kilotonnes and in 2017, it was further reduced from 50 kilotonnes to 10 kilotonnes.

Greenhouse gas emissions data reported through the GHG Reporting Program are used to inform the development of estimates of GHG emissions in Canada in the National Inventory Report, and to support regulatory initiatives.

Related indicators

The [Greenhouse gas emissions](#) indicators report trends in total anthropogenic (human-made) GHG emissions at the national level, per person and per unit gross domestic product, by province and territory and by economic sector.

The [Global greenhouse gas emissions](#) indicator provides a global perspective on Canada's share of global GHG emissions.

The [Carbon dioxide emissions from a consumption perspective](#) indicator shows the impact of Canada's consumption of goods and services, regardless of where they are produced, on the levels of carbon dioxide released into the atmosphere.

The [Progress towards Canada's greenhouse gas emissions reduction target](#) indicator provides an overview of Canada's projected GHG emissions up to 2030.

The [Land-based greenhouse gas emissions and removals](#) indicator tracks exchanges of GHG emissions and removals between the atmosphere and Canada's managed lands.

Data sources and methods

Data sources

The data used in the indicator are from Environment and Climate Change Canada's [Greenhouse Gas Reporting Program](#).

More information

The Greenhouse gas emissions from large facilities indicator uses data from the GHG Reporting Program. The data are collected on an annual basis. Facilities are required to report their GHG emissions to Environment and Climate Change Canada by June 1 of each year.

The GHG Reporting Program provides local GHG emissions data from large emitters in Canada (those producing 10 kilotonnes (kt) or more of carbon dioxide equivalent emissions per year). Facilities with emissions below 10 kt per year can voluntarily report their GHG emissions.

Starting with the 2017 reporting year, the GHG reporting threshold was lowered from 50 kt to 10 kt. As a result, more facilities were required to report their emissions compared to the previous years. Additional changes made included expanded data and prescribed methodological requirements for facilities in targeted industry sectors. See [Canada's Greenhouse Gas Quantification Requirements](#) for more information.

In addition, the Canadian Environmental Sustainability Indicators' [interactive map](#) provides facility GHG data from 2004 to 2018.

Methods

The quantity of GHGs released by each facility is calculated or measured by the reporting facility. The methods used to determine emissions are based on monitoring or direct measurement, mass balance, emission factors, engineering estimates and/or fuel and activity data. See the [Technical guidance on reporting greenhouse gas emissions](#) for more information.

More information

Environment and Climate Change Canada requires facilities involved in certain industrial activities to follow prescribed methods to determine their emissions. This is part of the reporting program's expansion initiated in 2017 to improve the quality and usability of the facility data. For reporting facilities that are not subject to the expanded requirements, they can choose the quantification methodologies most appropriate to their particular industry or application. However, these facilities must use methods for

estimating emissions that are consistent with the guidelines developed by the Intergovernmental Panel on Climate Change and adopted by the United Nations Framework Convention on Climate Change, for the preparation of national GHG inventories. See the Technical guidance on reporting greenhouse gas emissions for more information.

Caveats and limitations

A facility is required to report to the Greenhouse Gas Reporting Program only if its GHG emissions exceed the reporting threshold of 10 000 tonnes (10 kilotonnes) in carbon dioxide equivalent for a given year. Since 2004, there have been 2 changes to the reporting threshold. In 2009, the reporting threshold was lowered from 100 kilotonnes to 50 kilotonnes and in 2017, it was further reduced from 50 kilotonnes to 10 kilotonnes.

Comparisons among years may be made, bearing in mind that some facilities might not have been required to report in years for which they did not exceed the reporting threshold. Attention to consistency and comparability in the dataset is needed when comparing emissions from year to year. Observed changes in reported emissions may be due to actual changes in emissions or revisions of data from facilities and additional emissions reported from facilities that are newly reporting their emissions (for example, due to the changes in the reporting threshold).

Different facilities in a given type of industry may also use different methods for estimating emissions.

For a complete discussion of the caveats and limitations with respect to facility-reported greenhouse gas emissions data, refer to the [Overview of 2019 Reported Emissions](#).

Resources

References

Environment and Climate Change Canada (2021) [Reporting greenhouse gas emissions data: Technical guidance 2020](#). Retrieved on April 12, 2021.

Environment and Climate Change Canada (2021) [Facility Greenhouse Gas Reporting Program - Overview of 2019 Reported Emissions](#). Retrieved on April 12, 2021.

Additional information can be obtained at:

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