



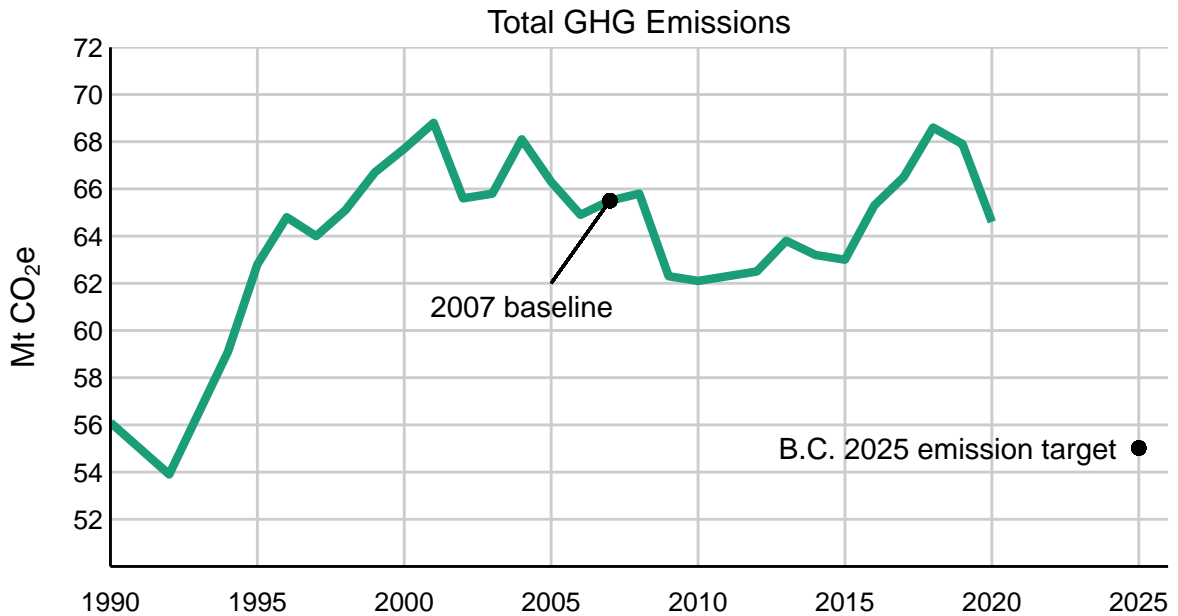
Sustainability

Trends in Greenhouse Gas Emissions in B.C. (1990-2020)

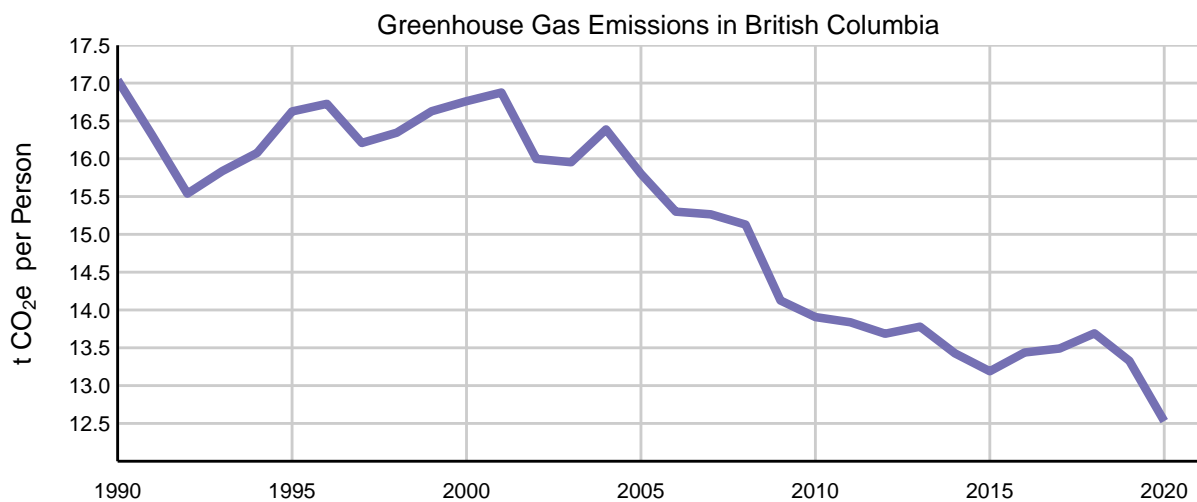
- **Greenhouse gas emissions warm the global atmosphere and cause our climate to change.** Reducing greenhouse gas emissions is a key component to limiting the increase in global average temperature and the resulting changes in climate.
- **Total greenhouse gas emissions in 2020 in B.C. were 64.6 million tonnes of carbon dioxide equivalent.** This is a 4.9% decrease in gross emissions since 2019, a 5.8% decrease in gross emissions since 2018, and a 1.4% decrease in gross emissions since 2007—the Government of British Columbia’s baseline year for assessing reductions in greenhouse gas emissions.
- **The decline in emissions observed in 2020 occurred during the COVID-19 pandemic, which reduced transportation and other activities that produce greenhouse gas emissions.** B.C.’s outlook suggests that emissions are likely to rebound to a degree in 2021 as economic activity (including air travel and road transportation) returns to normal (see page 10 of [B.C.’s 2022 Climate Change Accountability Report](#)¹).
- **B.C. applies forest management carbon offsets to emission totals each year to determine net greenhouse gas emissions and progress to its official legislated targets.** In 2020, carbon offsets totaled 1.1 Mt CO₂e, bringing net greenhouse gas emissions down to 63.5 Mt CO₂e, 3% below 2007 levels. Figures and calculations presented in this indicator use gross totals from the [British Columbia Greenhouse Gas Emission Inventory \(2020\)](#)² and do not account for any emission reductions from offset projects.
- **B.C. has set targets for reducing greenhouse gas emissions over the next 30 years.** The targets are 40% less by 2030, 60% by 2040 and 80% by 2050, compared to 2007 levels. To keep B.C. on track, an interim target of reducing greenhouse gas emissions 16% from 2007 levels by 2025 was also set¹.
- **Greenhouse gas emissions intensity of the economy continues to fall.** Greenhouse gas emissions per million dollars of GDP have been in decline since 1990 with the trend accelerating after 2001. The trend in emissions per person is less consistent, but has been downward for most of the last 20 years.
- **The transportation and fossil fuel sectors produce the most greenhouse gas emissions in B.C.** Major transportation-related sources of greenhouse gas emissions include cars, trucks, heavy-duty trucks, and rail. The major fossil fuel industry source is natural gas production and processing.

Greenhouse Gas Emissions in British Columbia

- In 2020, gross greenhouse gas emissions in B.C. were 1.4% lower than the 2007 baseline year.

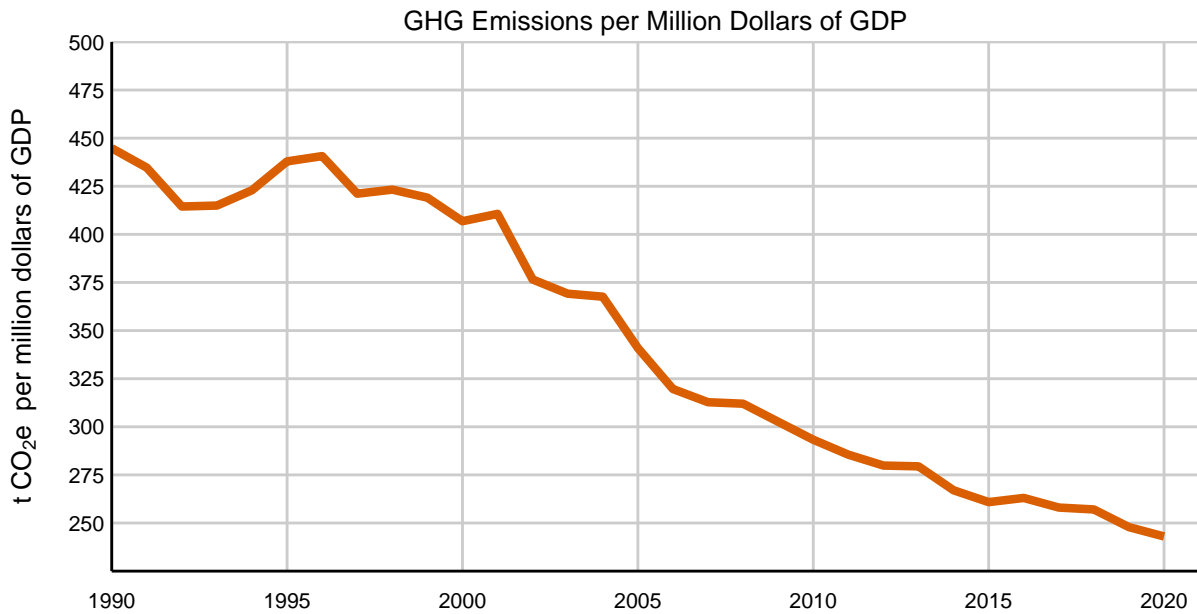


- Overall, the greenhouse gases produced per person in B.C. were less in 2020 than the 2007 baseline year. Much of the decrease in 2020 is likely due to the COVID-19 pandemic.

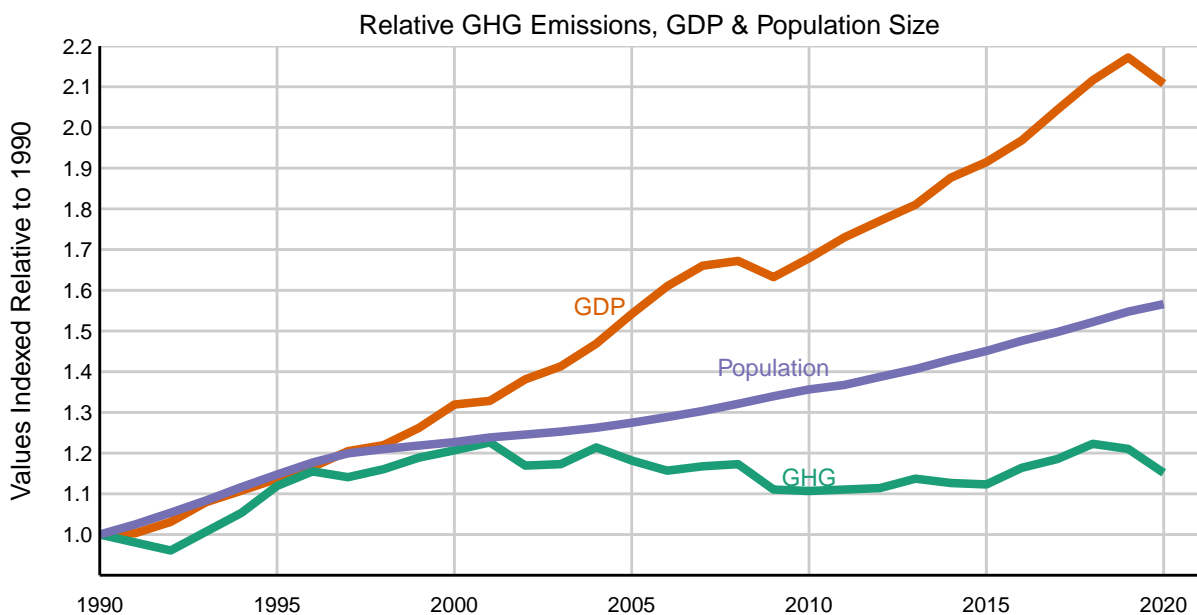


* To compare to per capita emissions from other jurisdictions, the afforestation and deforestation emissions in the B.C. inventory were removed for this calculation, as these emission sources are not tracked everywhere. More details on these emissions are available below.

- Greenhouse gas emissions per million dollars of GDP varied year to year between 1990-2001 and have consistently declined since 2001.

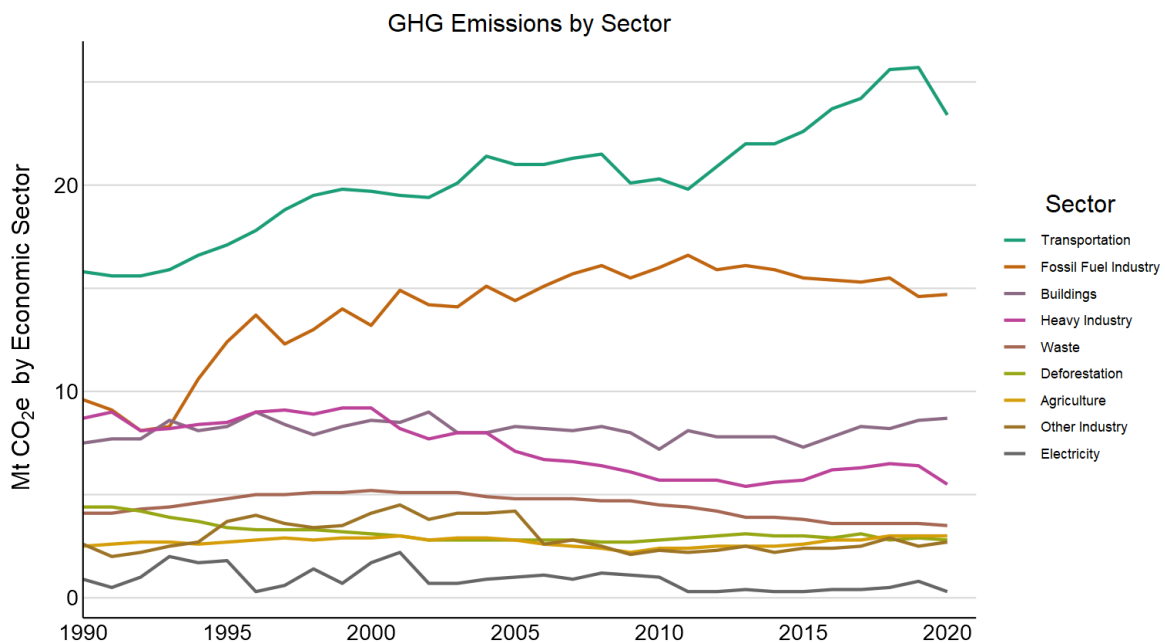


- Population size and gross domestic product in B.C. have continually increased since 1990 (with the exception of GDP in 2009 and 2020), while greenhouse gas emissions have not shown a clear upward or downward trend; both GDP and emissions showed marked reductions in 2020.



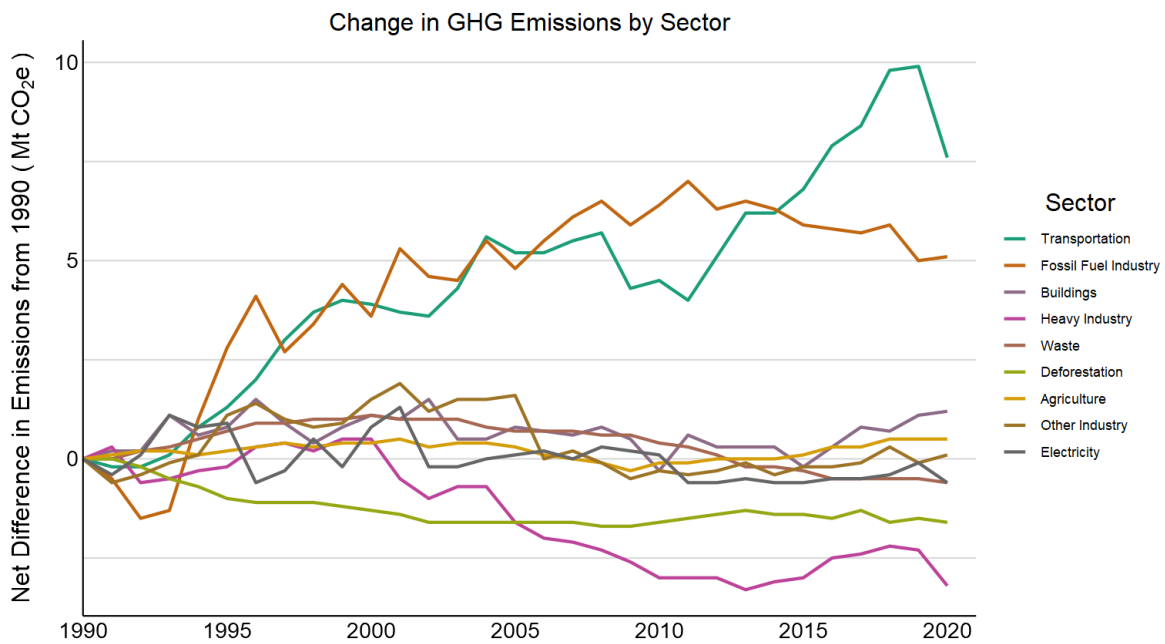
Greenhouse Gas Emissions by Economic Sector

- Greenhouse gas emissions are sorted into the following economic sectors: transportation, fossil fuels, buildings, heavy industry, waste, deforestation, agriculture, electricity generation, and other industry (includes light manufacturing, construction, and forest resources).
- By looking at the greenhouse gas emissions across the different sectors, we can see where the majority of B.C.'s emissions are coming from, as well as the trends in emissions from those sectors.
- The transportation sector produces the largest amount of greenhouse gas emissions in British Columbia. Passenger transport (cars, trucks, motorcycles) and freight transport (heavy duty trucks and rail) produce the most emissions within the transportation sector.
- The transportation sector's emissions shrank by around 9% from 2019 to 2020, likely due to reduced travel during the COVID-19 pandemic.
- The fossil fuel sector produces the second largest amount of greenhouse gas emissions in British Columbia. This sector includes production, refining and distribution activities.



How have greenhouse gas emissions changed within economic sectors?

- The amount of carbon dioxide equivalent emitted annually by each economic sector was compared to 1990 levels. The transportation sector had the largest increase in annual emissions of any sector over the past three decades. The fossil fuel sector also had consistent increases in annual emissions, with levels peaking from 2011 to 2014.
- The transportation sector's emissions shrank by around 9% from 2019 to 2020, likely due to reduced travel during the COVID-19 pandemic.
- Buildings, agriculture, other industry, electricity and waste sectors emitted similar levels of carbon dioxide equivalent in 2020 as 1990.
- Heavy industry's emissions have trended downward since 2000. Deforestation emissions declined from 1990 to 2003, after which they have remained consistent.
- Each economic sector was broken down into more specific categories where available. This information is provided below.



Methods

The [British Columbia Greenhouse Gas Provincial Inventory Methodology](#)³ provides a description of the methodologies and data sources used in preparing B.C.'s greenhouse gas emissions inventory. Currently, most of the Provincial Inventory data and methods come from [Canada's National Inventory Report \(NIR\)](#).⁴ Any deviations from the NIR methodology or categorization is described in detail in the B.C. Provincial Inventory Methodology³. Additional information is also available in the [British Columbia Greenhouse Gas Emission Inventory Report \(2020\)](#)².

Greenhouse gas emissions include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulphur hexafluoride (SF₆), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and nitrogen trifluoride (NF₃) released by human activity—these emissions are reported collectively here as millions of tonnes of carbon dioxide equivalent (Mt CO₂e). British Columbia population estimates ([Table: 17-10-0005-01](#)) and gross domestic product ([Table: 36-10-0222-01](#)) data were sourced from [Statistics Canada](#). Gross domestic product (GDP) is calculated using expenditure-based GDP and reported in millions of chained 2012 dollars.

The [R](#) code for repeating the analysis and data visualizations presented on this page is [available on GitHub](#).

References and Other Useful Links

¹[B.C.'s 2022 Climate Change Accountability Report](#)

²[British Columbia Greenhouse Gas Emission Inventory \(2020\)](#)

²[British Columbia Greenhouse Gas Provincial Inventory Methodology](#)

⁴[Canada's National Greenhouse Gas Inventory](#)

[B.C. Climate Change Home Page](#)

[Canadian Environmental Sustainability Indicators: Air and Climate Indicators](#)

Data

*By accessing these datasets, you agree to the licence associated with each file, as indicated below.

- [British Columbia Greenhouse Gas Emissions](#) (Licence: [Open Government Licence - British Columbia](#))

Published and Available On-Line at Environmental Reporting BC:

<http://www.env.gov.bc.ca/soe/indicators/sustainability/ghg-emissions.html>

Email correspondence to: envreportbc@gov.bc.ca

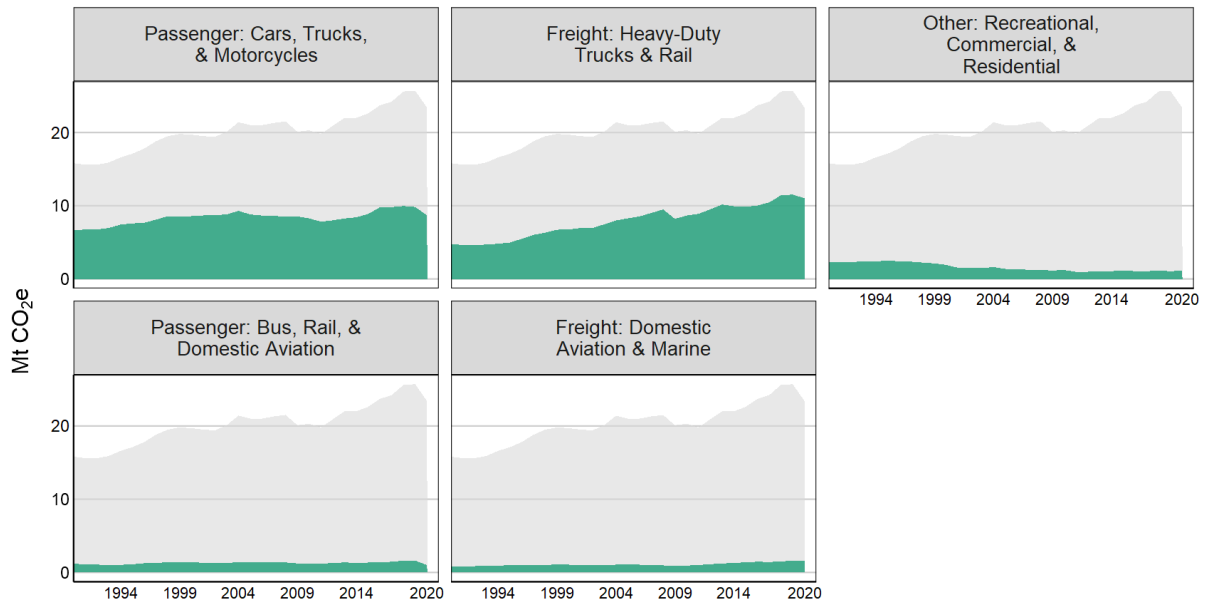
Suggested Citation:

Environmental Reporting BC. 2023. Trends in Greenhouse Gas Emissions in B.C. (1990-2020). State of Environment Reporting, Ministry of Environment and Climate Change Strategy, British Columbia, Canada.

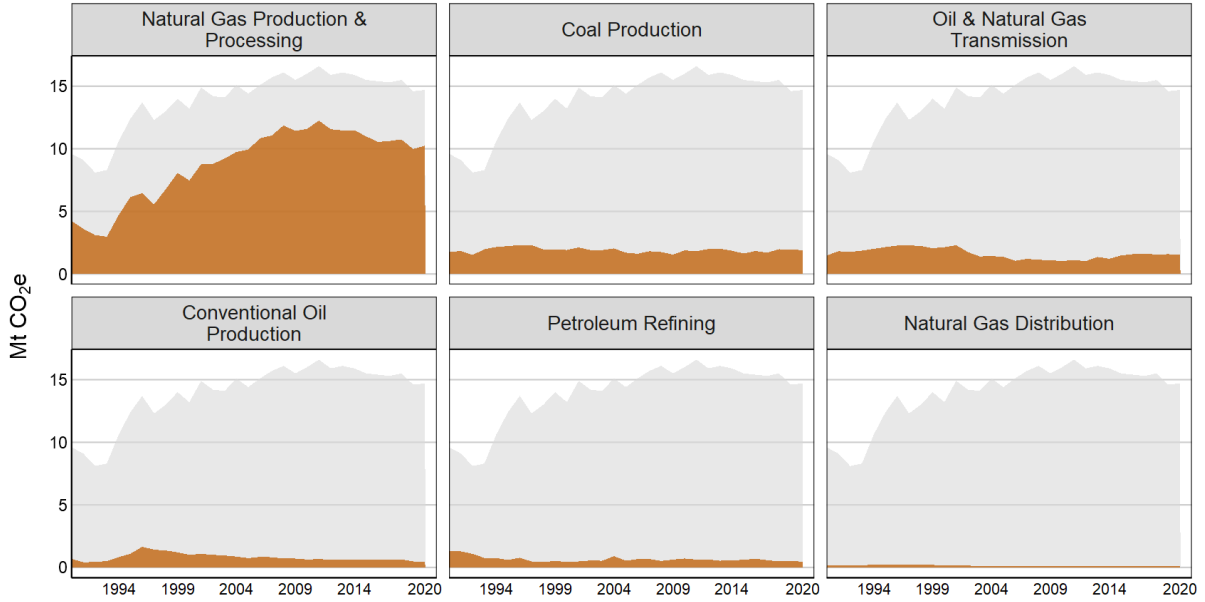
Appendix A: Breakdown of Economic Sectors

- Economic sectors were broken down into subsectors, where subsectors were available. Further information on the emissions categorized in each subsector are provided in the [British Columbia Greenhouse Gas Provincial Inventory Methodology](#)².
- Each subsector contributes varying amounts of emissions to the sector total. Examining these breakdowns further can give us a greater insight into the sources of emissions in B.C.
- In each economic subsector figure below, the grey background shows the total emissions from each sector over time and the color sections show the contribution of each sub-sector compared to the sector total.

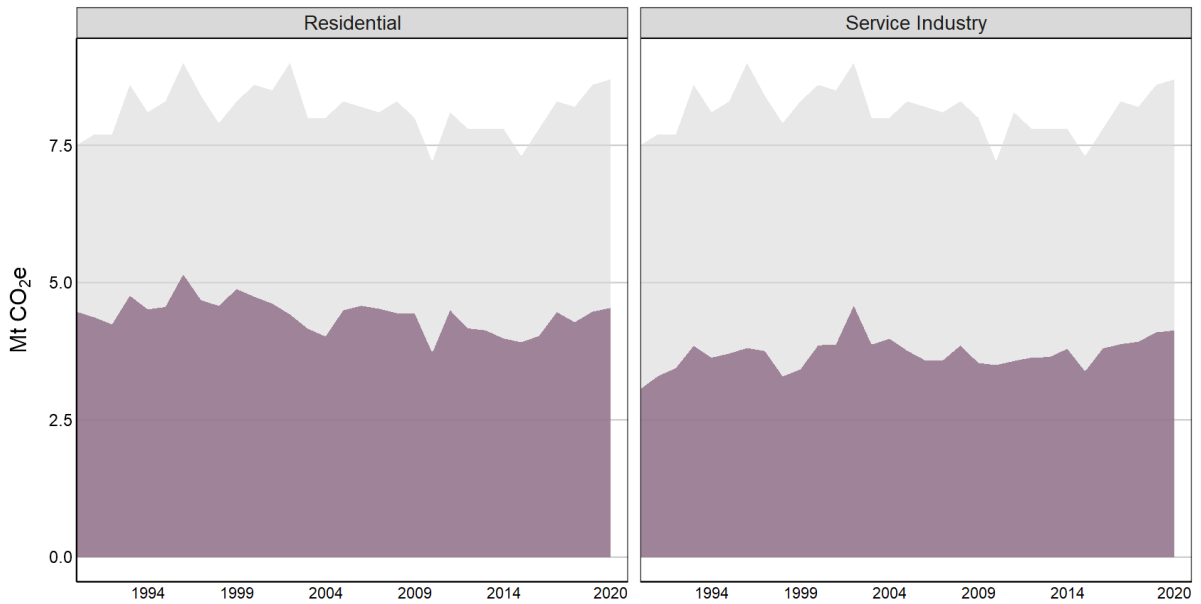
Transportation Sector



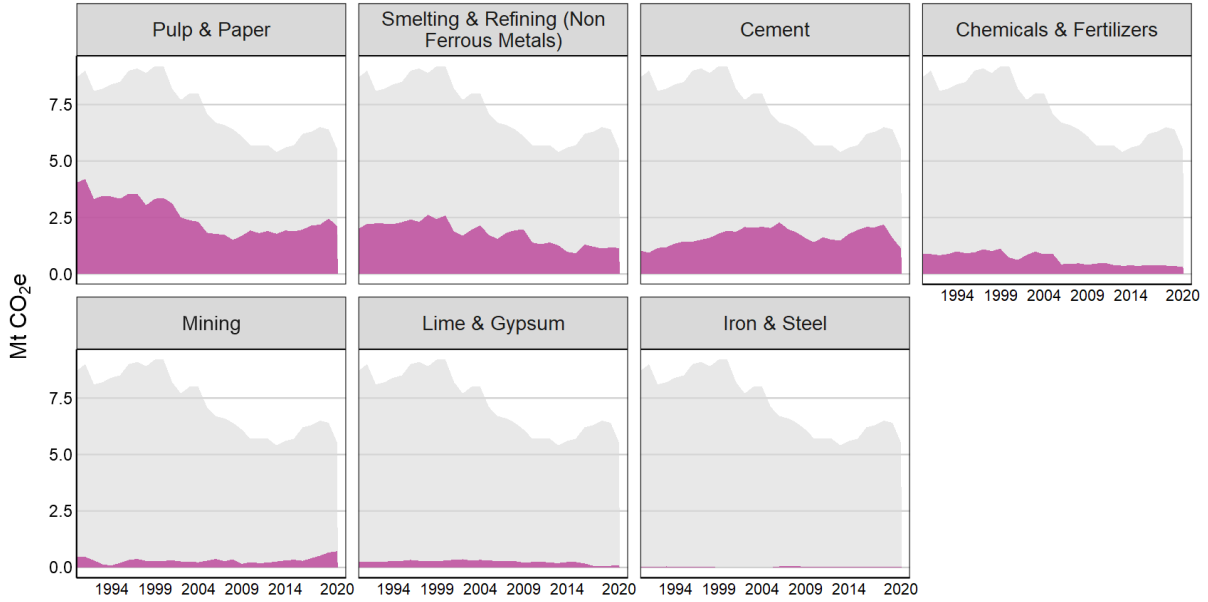
Fossil Fuel Industry Sector



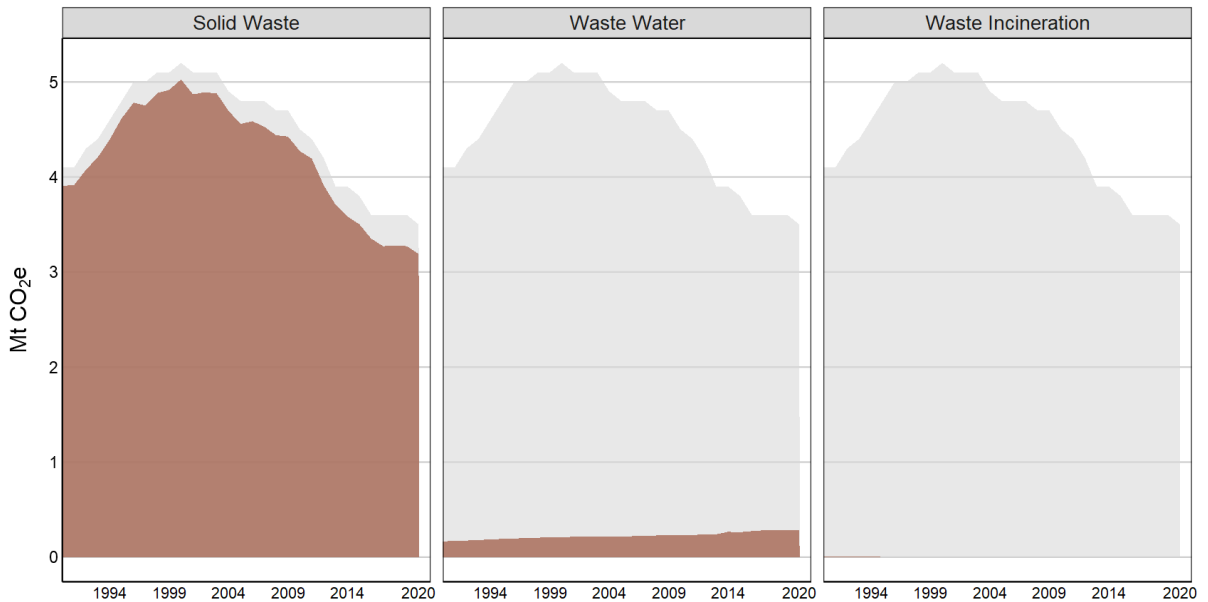
Buildings Sector



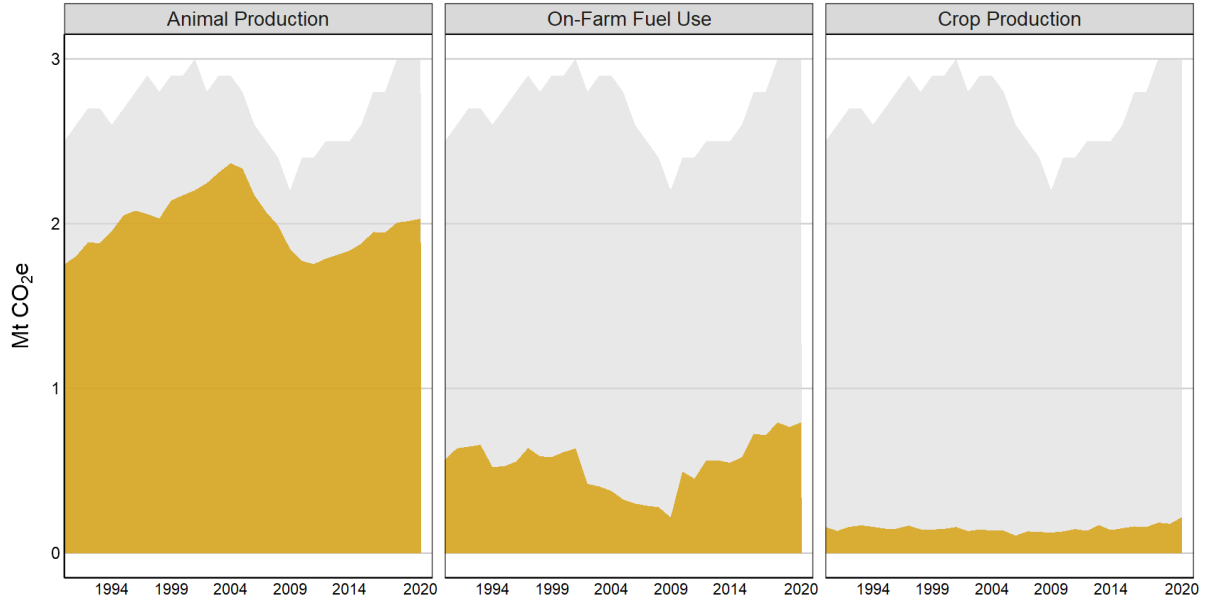
Heavy Industry Sector



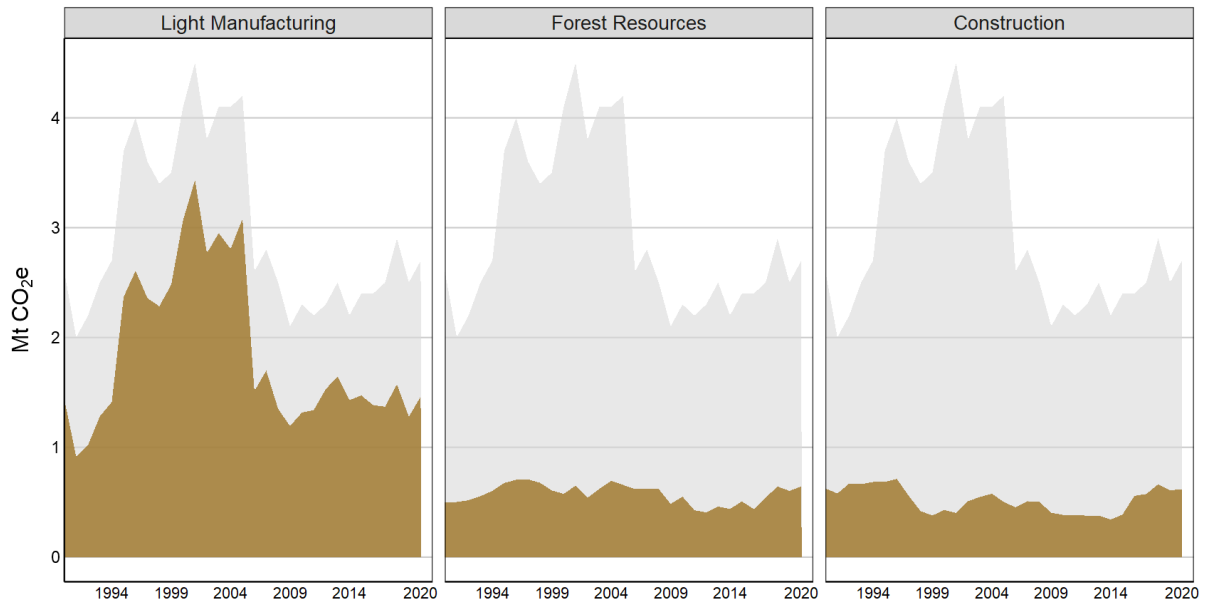
Waste Sector



Agriculture Sector



Other Industry Sector



Deforestation

