NATIONAL INVENTORY REPORT 1990–2023: GREENHOUSE GAS SOURCES AND SINKS IN CANADA

CANADA'S SUBMISSION TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

PART 3

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LIST OF COMMON ABBREVIATIONS AND UNITS

Abbreviations

AAFC ..... Agriculture and AgriFood Canada
BCER ..... British Columbia Energy Regulator
BCOGC ..... British Columbia Oil and Gas Commission
CAC ..... criteria air contaminant
CAPP ..... Canadian Association of Petroleum Producers
CBM-CFS3 ..... Carbon Budget Model of the Canadian Forest Sector version 3
CCS ..... carbon capture and storage
CCTUS ..... carbon capture, transport, use and storage
CEEDC ..... Canadian Energy and Emissions Data Centre
CEPA 1999 ..... *Canadian Environmental Protection Act, 1999*
CEPEI ..... Canadian Energy Partnership for Environmental Innovation
CFC ..... chlorofluorocarbon
CFS ..... Canadian Forest Service
COA ..... *Census of Agriculture*
CRT ..... Common Reporting Tables
DOC ..... degradable organic carbon or dissolved organic carbon
DOM ..... dead organic matter
ECCC ..... Environment and Climate Change Canada
EF ..... emission factor
EFW ..... energy from waste
EO ..... Earth Observation
EOR ..... enhanced oil recovery
FRD ..... facility-reported data
GDP ..... gross domestic product
GHG ..... greenhouse gas
GHGRP ..... Greenhouse Gas Reporting Program
GWP ..... global warming potential
HCFC ..... hydrochlorofluorocarbon
HFC ..... hydrofluorocarbon
HWP ..... harvested wood products
ICSR ..... Industrial Chemicals and Synthetic Resins
IEA ..... International Energy Agency
IPCC ..... Intergovernmental Panel on Climate Change
IPPU ..... Industrial Processes and Product Use
LDAR ..... Leak Detection and Repair

LMC ..... Land Management Change

LTO ..... landing and takeoff

LULUCF ..... Land Use, Land-Use Change and Forestry

MMV ..... Measurement, Monitoring and Verification

MPGs ..... modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement

MSW ..... municipal solid waste

N/A ..... not available

NFCMARS-HWP ..... National Forest Carbon Monitoring, Accounting and Reporting System for Harvested Wood Products

NIR ..... National Inventory Report

NMVOC ..... non-methane volatile organic compound

NRCan ..... Natural Resources Canada

ODS ..... ozone-depleting substance

OECD ..... Organisation for Economic Co-operation and Development

PFC ..... perfluorocarbon

QA ..... quality assurance

QC ..... quality control

RESD ..... *Report on Energy Supply and Demand in Canada*

RU ..... reconciliation unit

SCR ..... selective catalytic reduction

SLC ..... Soil Landscapes of Canada

SMR ..... steam methane reformation

SOC ..... soil organic carbon

StatCan ..... Statistics Canada

UOG ..... upstream oil and gas

VKT ..... vehicle kilometres travelled

UNFCCC ..... United Nations Framework Convention on Climate Change

Chemical Formulas

C ..... carbon

$CaCO_3$ ..... calcium carbonate; limestone

CaO ..... calcium oxide; lime; quicklime; calcined limestone

CF_4 ..... carbon tetrafluoride; perfluoromethane

C_2F_6 ..... carbon hexafluoride; perfluoroethane

CH_4 ..... methane

CO ..... carbon monoxide

CO_2 ..... carbon dioxide

CO_2 eq ..... carbon dioxide equivalent

H_2S ..... hydrogen sulphide

Mg ..... magnesium

$MgCO_3$ ..... magnesite; magnesium carbonate

MgO ..... magnesia; magnesium oxide

N ..... nitrogen

NF_3 ..... nitrogen trifluoride
NH_3 ..... ammonia
NH_4^+ ..... ammonium
NH_4NO_3 ..... ammonium nitrate
N_2O ..... nitrous oxide
N_2O-N ..... nitrous oxide emissions represented in terms of nitrogen
NO_3^- ..... nitrate
NO_x ..... nitrogen oxides
SF_6 ..... sulphur hexafluoride
SiC ..... silicon carbide

Notation Keys

IE ..... included elsewhere
NA ..... not applicable
NE ..... not estimated
NO ..... not occurring

Units

g ..... gram
Gg ..... gigagram
GWh ..... gigawatt-hour
ha ..... hectare
kg ..... kilogram
kha ..... kilohectare
km ..... kilometre
kt ..... kilotonne
kWh ..... kilowatt-hour
m ..... metre
Mg ..... megagram
Mha ..... million hectares
ML ..... megalitre
Mt ..... megatonne
PJ ..... petajoule
TJ ..... terajoule
t ..... tonne
TWh ..... terawatt-hour

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE SECTOR ROUNDING PROTOCOL

A rounding protocol has been developed for the emission and removal estimates presented by activity sectors defined by the Intergovernmental Panel on Climate Change (IPCC) (annexes 9 and 11) to reflect their uncertainty levels. The accuracy of a value is reflected by presenting the emission and removal estimates rounded to an appropriate number of significant figures based on the uncertainty of the category in question. The number of significant figures to which each source and sink category has been rounded, using the rounding rules in this protocol, can be found in Table A8–1.

Many of the uncertainty ranges that are used for the various categories were developed using Monte Carlo analysis, as performed by ICF Consulting (ICF Consulting, 2004, 2005), using the 2001 inventory estimates submitted in the National Inventory Report (NIR) 2003. Default uncertainty values published by the IPCC (IPCC/OECD/IEA, 1997; IPCC, 2001; IPCC, 2006) and those resulting from expert elicitation were also utilized for some ranges. Since 2004–2005, there have been many methodological changes, refinements and updates, including updates to the uncertainty parameters. The uncertainty ranges have been calculated around the mean values established by these analyses.

For a more complete description of the analysis of uncertainty in Canada's emission estimates, please refer to Annex 2, which includes tables of current uncertainty values. Recent updates to uncertainty estimates are provided in the respective sectoral chapters.

The following uncertainty values have been used to establish the number of significant figures (up to a maximum of two decimal places) to which the estimates have been rounded:

- uncertainty greater than 50%: one significant figure
- uncertainty between 10% and 50%: two significant figures
- uncertainty less than 10%: three significant figures

Note that for Land Use, Land-Use Change and Forestry, the rounding rules mentioned above are generally followed, except in some cases where there is a requirement to explain specific details of estimates or trends that may be masked by rounding. In those cases, two significant figures are used despite some high uncertainty ranges that suggest using only one significant figure (refer to Chapter 6 for more details).

This rounding protocol does not apply to estimates presented by Canadian Economic Sectors (annexes 10 and 12) which have been rounded to the nearest 1 Mt and 0.1 Mt for National-level estimates (Annex 10) and provincial/territorial-level estimates (Annex 12), respectively.

All calculations, including the summing of emission totals, were made using unrounded data. The rounding protocol was applied only after the calculations had been completed. It should be noted that formatting this report limits the maximum number of decimal places and, therefore, even though a zero entry is recorded, some emissions may exist in that category (zero emissions are identified with a dash "-"). Because of these procedures, individual values in the emission tables may not add up to the subtotals and/or overall totals.

NIR content is being streamlined, including a transition away from heavy amounts of data in the PDF format of the report to greater data availability in various formats on the Government of Canada's Open Data webpage.[1] As such, this Rounding Protocol (Annex 8) may be removed from future editions of this report. If you have any questions or would like to share views on this, please contact us at ges-ghg@ec.gc.ca.

1 https://open.canada.ca/data/en/dataset/779c7bcf-4982-47eb-af1b-a33618a05e5b

Table A8–1 Number of Significant Figures Applied to IPCC Sector GHG Summary Tables

Greenhouse Gas Categories	Number of Significant Figures							
	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
TOTAL	**3**	**2**	**2**	**2**	**3**	**2**	**1**	**3**
ENERGY	**3**	**2**	**1**					**3**
a. Stationary Combustion Sources	**3**	**1**	**1**					**3**
Public Electricity and Heat Production	3	2	1					3
Petroleum Refining Industries	3	1	1					3
Oil and Gas Extraction	3	1	1					3
Mining	3	1	1					3
Manufacturing Industries	3	2	2					3
Iron and Steel	3	1	1					3
Non-Ferrous Metals	3	2	1					3
Chemical	3	2	1					3
Pulp and Paper	3	1	1					3
Cement	3	1	1					3
Other Manufacturing	3	1	1					3
Construction	3	2	2					3
Commercial and Institutional	3	2	1					3
Residential	3	1	1					3
Agriculture and Forestry	3	1	1					3
b. Transport	**3**	**2**	**2**					**3**
Aviation	3	1	1					3
Domestic Aviation (Civil)	3	1	1					3
Military	3	1	1					3
Road Transportation	3	1	2					3
Light-Duty Gasoline Vehicles	3	1	2					3
Light-Duty Gasoline Trucks	3	1	2					3
Heavy-Duty Gasoline Vehicles	3	1	2					3
Motorcycles	3	1	2					3
Light-Duty Diesel Vehicles	3	1	2					3
Light-Duty Diesel Trucks	3	1	2					3
Heavy-Duty Diesel Vehicles	3	1	2					3
Propane and Natural Gas Vehicles	3	1	2					3
Railways	3	1	1					3
Marine	3	2	1					3
Domestic Navigation	3	2	1					3
Fishing	3	1	1					3
Military Water-Borne Navigation	3	2	1					3
Other Transportation	3	2	1					3
Off-Road Agriculture and Forestry	3	3	1					3
Off-Road Commercial and Institutional	3	3	1					3
Off-Road Manufacturing, Mining and Construction	3	3	1					3
Off-Road Residential	3	3	1					3
Off-Road Other Transportation	3	3	1					3
Pipeline Transport	3	2	1					3
c. Fugitive Sources	**2**	**3**	**2**					**2**
Coal Mining		1						1
Oil and Natural Gas	2	3	1					3
Oil	2	3	1					3
Natural Gas	2	3	1					3
Venting	2	3	1					3
Flaring	3	3	1					3
d. CO_2 Transport and Storage	**1**							**1**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**2**	**2**	**2**	**3**	**2**	**1**	**3**
a. Mineral Products	**3**							**3**
Cement Production	3							3
Lime Production	3							3
Mineral Product Use	2							2
b. Chemical Industry	**3**	**2**	**3**					**3**
Ammonia Production	3							3
Nitric Acid Production			3					3
Adipic Acid Production			3					3
Petrochemical and Carbon Black Production	3	2	3					3
c. Metal Production	**3**	**1**			**3**	**3**		**3**
Iron and Steel Production	3	1						3
Aluminium Production	3				3	3		3
Magnesium Production and Casting						3		3
d. Production and Consumption of Halocarbons, SF_6 and NF_3				**2**	**2**	**2**	**1**	**2**
e. Non-Energy Products from Fuels and Solvent Use	**2**							**2**
f. Other Product Manufacture and Use			**2**		**1**	**2**		**2**
AGRICULTURE	**2**	**2**	**2**					**2**
a. Enteric Fermentation		**2**						**2**
b. Manure Management		**2**	**1**					**2**
c. Agricultural Soils			**2**					**2**
Direct Sources			2					2
Indirect Sources			1					1
d. Field Burning of Agricultural Residues		**1**	**2**					**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**2**							**2**
WASTE	**1**	**2**	**1**					**2**
a. Landfills		**1**						**1**
b. Biological Treatment of Solid Waste		**1**	**1**					**1**
c. Incineration and Open Burning of Waste	**2**	**1**	**1**					**2**
d. Wastewater Treatment and Discharge		**1**	**2**					**1**
LAND USE, LAND-USE CHANGE AND FORESTRY	**2**	**2**	**2**					**2**
a. Forest Land	**2**	**1**	**1**					**2**
b. Cropland	**2**	**2**	**2**					**2**
c. Grassland		**1**	**1**					**1**
d. Wetlands	**2**	**2**	**2**					**2**
e. Settlements	**2**	**2**	**2**					**2**
f. Harvested Wood Products	**2**							**2**

ANNEX 9

CANADA'S GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2023

In this National Inventory Report, emission estimates are primarily presented for each of the activity sectors defined by the Intergovernmental Panel on Climate Change (IPCC): Energy, Industrial Processes and Product Use (IPPU), Agriculture, Land Use, Land-Use Change and Forestry (LULUCF), and Waste. This is consistent with the categorization outlined in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*[1], as per the Modalities, procedures, and guidelines (MPGs).

This annex contains category descriptions and summary tables (Table A9–1 to Table A9–3) illustrating national greenhouse gas (GHG) emissions by year, by gas and by IPCC sector. National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

Canada's GHG emission tables are also available in electronic file format online at https://open.canada.ca.

The GHG inventory team is considering removing the Emissions Tables (Annex 9 to Annex 12) in future editions of the NIR. They would be available in their entirety on the Government of Canada's Open Data webpage only. For any questions or concerns, please contact GES-GHG@ec.gc.ca.

1 Available online at http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.

Table A9–1 GHG Source and Sink Category Descriptions

GHG Source and Sink Categories	
ENERGY	
a. Stationary Combustion Sources	
Public Electricity and Heat Production	Emissions from fuel consumed by utility electricity generation and steam production (for sale).
Petroleum Refining Industries	Emissions from fuel consumed by petroleum refining industries.
Oil and Gas Extraction	Emissions from fuel consumed by oil and gas extraction industries.
Mining	Emissions from fuel consumed by: – metal and non-metal mines, coal mines, stone quarries, and gravel pits – mineral exploration and contract drilling operations
Manufacturing Industries	Emissions from fuel consumed by the following industries: – iron and steel (steel foundries, casting and rolling mills) – non-ferrous metals (aluminium, magnesium and other production) – chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing) – pulp and paper (primarily pulp, paper, and paper product manufacturers) – cement and other non-metallic mineral production – other manufacturing industries not listed (such as automobile manufacturing, textiles, food and beverage industries)
Construction	Emissions from fuels consumed by the construction industry (buildings, highways etc.)
Commercial and Institutional	Emissions from fuel consumed by: – service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.) – federal, provincial and municipal establishments – national Defence and Canadian Coast Guard – train stations, airports and warehouses
Residential	Emissions from fuel consumed for personal residences (homes, apartment hotels, condominiums and farm houses).
Agriculture and Forestry	Emissions from fuel consumed by: – forestry and logging service industry – agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing and repair)
b. Transport	Emissions resulting from the:
Aviation	– consumption of fossil fuels by civilian aircraft flying domestically and all military aircraft operations with Canadian purchased fuel
Domestic Aviation (Civil)	– consumption of fossil fuels by civilian aircraft flying domestically with Canadian purchased fuel
Military	– consumption of fossil fuels by military aircraft operations with Canadian purchased fuel
Road Transportation	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by vehicles licensed to operate on roads
Light-Duty Gasoline Vehicles	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by passenger cars
Light-Duty Gasoline Trucks	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by trucks, vans and SUVs with a Gross Vehicle Weight Rating (GVWR) less than 3856 kg
Heavy-Duty Gasoline Vehicles	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by trucks, vans and SUVs with a GVWR greater than or equal to 3856 kg
Motorcycles	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by motorcycles that are licensed to operate on roads
Light-Duty Diesel Vehicles	– consumption of diesel fuel oil (excluding the biogenic CO_2 emissions from biodiesel) by passenger cars licensed to operate on roads
Light-Duty Diesel Trucks	– consumption of diesel fuel oil (excluding the biogenic CO_2 emissions from biodiesel) by trucks, vans and SUVs with a GVWR less than 3856 kg
Heavy-Duty Diesel Vehicles	– consumption of diesel fuel oil (excluding the biogenic CO_2 emissions from biodiesel) by trucks, vans and SUVs with a GVWR greater than or equal to 3856 kg
Propane and Natural Gas Vehicles	– consumption of propane and natural gas by vehicles that are licensed to operate on roads
Railways	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by Canadian railways
Marine	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by marine vessels navigating between Canadian ports (inclusive of all fishing and military operations)
Domestic Navigation	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by marine vessels navigating between Canadian ports
Fishing	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by fishing vessels operating in Canadian waters
Military Water-Borne Navigation	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by military vessels operating in Canadian waters
Others – Off-Road	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by mobile combustion devices not licensed to operate on roads
Others – Pipeline Transport	– transportation and distribution of crude oil, natural gas, refined petroleum and other products
c. Fugitive Sources	Intentional and unintentional releases of greenhouse gases from the following activities:
Coal Mining	– underground and surface mining, abandoned underground coal mines
Oil and Natural Gas	– conventional and unconventional oil and gas exploration, production, transportation and distribution
Oil	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of crude oil
Natural Gas	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of natural gas (includes post-meter fugitive emissions from residential and commercial natural gas appliances, natural gas vehicles and industrial facilities)
Venting	– intentional releases of greenhouse gases at oil and natural gas facilities
Flaring	– routine or emergency disposal of waste gas through combustion in an open flame or incinerator at oil and natural gas facilities
d. CO_2 Transport and Storage	Intentional and unintentional releases of greenhouse gases from the transport and storage of carbon dioxide

Table A9–1 **GHG Source and Sink Category Descriptions** (cont'd)

GHG Source and Sink Categories	
INDUSTRIAL PROCESSES AND PRODUCT USE	Emissions resulting from the following process activities:
a. Mineral Products	– cement production, lime production, and mineral product use (which includes glass production, other uses of soda ash, magnesite use, and other limestone and dolomite use)
b. Chemical Industry	– production of ammonia, nitric acid, adipic acid, carbide and petrochemicals (petrochemical production includes production of carbon black, ethylene, ethylene dichloride, ethylene oxide, methanol, styrene and other uses of urea)
c. Metal Production	– aluminum production, iron and steel production, and magnesium production and casting
d. Production and Consumption of Halocarbons, SF_6 and NF_3	– by-product production of HFC-23; use of HFCs and/or PFCs in air conditioning units, refrigeration units, fire extinguishers, aerosol cans, solvents, foam blowing, semiconductor manufacturing and electronics industry, and use of SF_6 and NF_3 in semiconductor manufacturing
e. Non-Energy Products from Fuels and Solvent Use	– non-energy use of fossil fuels (including solvents and lubricants) that are not accounted for elsewhere under the Industrial Processes and Product Use Sector and the use of urea in selective catalytic reduction (SCR) equipped vehicles
f. Other Product Manufacture and Use	– use of N_2O as an anaesthetic and propellant; use of SF_6 in electrical equipment; and PFCs in other contained product uses as a dielectric coolant or as an electric insulator
AGRICULTURE	Emissions resulting from:
a. Enteric Fermentation	– eructation of CH_4 during the digestion of plant material by (mainly) ruminants
b. Manure Management	– release of CH_4 and N_2O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens
	– indirect N_2O emissions from volatilization and leaching of nitrogen from animal manure during storage
c. Agricultural Soils	
Direct sources	– direct N_2O emissions from inorganic nitrogen fertilizers, manure and biosolids applied on cropland, pasture range and paddock, crop residue, loss of soil organic carbon, tillage, irrigation and cultivation of organic soils
Indirect Sources	– indirect N_2O emissions from volatilization and leaching of animal manure and biosolid nitrogen, inorganic nitrogen fertilizer and crop residue nitrogen
d. Field Burning of Agricultural Residues	– CH_4 and N_2O emissions from crop residue burning
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	– direct emissions of CO_2 from the application of lime, urea and other fertilizers containing carbon
WASTE	Emissions resulting from:
a. Landfills	– disposal of waste in landfills
Municipal Solid Waste Landfills	– disposal of municipal solid waste and sewage sludge in landfills
Industrial Wood Waste Landfills	– dedicated wood waste landfills
b. Biological Treatment of Solid Waste	– composting and anaerobic digestion of municipal and industrial facilities including municipal solid waste, biosolids, manures and/or yard wastes that are brought on-site
c. Incineration and Open Burning of Waste	– municipal solid, hazardous and clinical waste, and sewage sludge incineration
d. Wastewater Treatment and Discharge	– municipal and industrial wastewater treatment
Municipal wastewater treatment and discharge	– emissions from treatment of wastewater at municipal treatment plants and from discharge of effluents
Industrial wastewater treatment and discharge	– emissions from treatment of wastewater at industrial sites with on-site wastewater treatment and from discharge of effluents
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. Forest Land	– managed forests and lands converted to forests; reports emissions and removals from forest growth and anthropogenic disturbances related to forest management but tracks separately emissions and removals from fire and most insect disturbances
b. Cropland	– management practices on lands in annual and perennial crops (forage, specialty crops, orchards); soil organic carbon (SOC) impacted by crop productivity changes and manure application; immediate and residual emissions from lands converted to cropland
c. Grassland	– managed agricultural grassland
d. Wetlands	– peatlands disturbed for peat extraction, or land flooded from hydro reservoir development
e. Settlements	– forest and grassland converted to built-up land (settlements, transport infrastructure, oil & gas infrastructure, mining, etc); urban tree growth
f. Harvested Wood Products	– use and disposal of harvested wood products manufactured from wood coming from forest harvest, forest conversion and firewood collection activities in Canada

Table A9–2 Canada's 1990–2023 GHG Emissions by IPCC Sector

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	kt CO_2 eq																																	
TOTAL[a]	**606 000**	**602 000**	**619 000**	**624 000**	**646 000**	**665 000**	**686 000**	**701 000**	**708 000**	**718 000**	**746 000**	**739 000**	**746 000**	**764 000**	**764 000**	**759 000**	**755 000**	**774 000**	**758 000**	**714 000**	**728 000**	**738 000**	**741 000**	**750 000**	**747 000**	**742 000**	**725 000**	**738 000**	**747 000**	**747 000**	**682 000**	**694 000**	**700 000**	**694 000**
ENERGY	**487 000**	**481 000**	**499 000**	**502 000**	**520 000**	**536 000**	**554 000**	**570 000**	**577 000**	**589 000**	**616 000**	**610 000**	**615 000**	**629 000**	**625 000**	**623 000**	**619 000**	**641 000**	**626 000**	**593 000**	**605 000**	**611 000**	**608 000**	**618 000**	**619 000**	**613 000**	**593 000**	**608 000**	**615 000**	**616 000**	**552 000**	**562 000**	**568 000**	**562 000**
a. Stationary Combustion Sources	**277 000**	**272 000**	**282 000**	**276 000**	**282 000**	**290 000**	**300 000**	**307 000**	**310 000**	**321 000**	**344 000**	**340 000**	**342 000**	**354 000**	**342 000**	**335 000**	**328 000**	**350 000**	**337 000**	**315 000**	**317 000**	**321 000**	**315 000**	**319 000**	**320 000**	**318 000**	**311 000**	**318 000**	**319 000**	**322 000**	**299 000**	**301 000**	**304 000**	**298 000**
Public Electricity and Heat Production	94 100	95 500	102 000	92 900	95 100	98 600	98 300	110 000	123 000	120 000	132 000	133 000	128 000	132 000	125 000	123 000	119 000	124 000	116 000	99 900	102 000	93 400	90 500	87 600	85 000	83 000	81 700	79 400	70 900	69 600	62 300	61 600	58 100	58 200
Petroleum Refining Industries	17 400	16 300	16 600	17 200	16 100	16 300	18 700	18 600	18 200	17 300	17 300	18 000	19 100	20 100	20 400	18 500	19 300	19 700	18 600	18 000	18 300	17 600	16 100	15 300	14 300	14 700	14 500	13 200	13 300	15 300	13 500	14 100	14 600	14 200
Oil and Gas Extraction	30 700	29 200	31 000	34 200	34 800	36 200	36 800	35 100	37 700	48 900	53 100	55 900	59 000	63 200	60 800	63 200	66 400	74 900	74 300	75 800	77 100	83 500	86 500	91 100	94 600	97 600	92 200	99 500	105 000	106 000	101 000	105 000	106 000	107 000
Mining	4 640	4 310	3 720	4 010	4 570	4 970	5 060	5 220	4 690	4 490	4 930	4 910	4 550	4 930	4 800	4 350	5 140	5 280	5 570	5 220	5 280	5 270	5 700	4 920	4 610	4 150	3 850	4 500	5 980	5 990	5 210	5 820	5 810	5 460
Manufacturing Industries	56 300	53 900	52 900	50 100	53 600	55 800	57 300	57 300	54 400	55 400	55 500	51 300	50 800	48 700	49 700	46 800	44 900	46 100	43 600	38 900	40 500	43 400	43 000	44 200	44 500	43 400	42 000	42 300	41 500	42 100	39 100	39 700	40 300	40 400
Iron and Steel	4 940	4 860	5 110	4 650	5 300	5 510	5 660	5 630	5 760	5 870	5 810	4 770	5 420	5 190	5 240	5 020	5 070	5 590	5 280	3 910	4 390	4 700	4 800	4 880	5 420	5 120	5 070	5 400	5 210	5 010	4 290	4 820	4 520	4 570
Non-Ferrous Metals	3 530	2 840	3 120	2 980	3 600	3 410	4 230	4 100	4 110	3 900	3 790	3 990	3 700	3 710	3 680	3 800	3 640	4 010	4 010	2 990	3 220	3 570	3 210	3 320	3 010	3 360	3 440	3 410	2 950	3 430	3 240	3 010	3 170	3 080
Chemical	8 260	8 650	8 600	8 520	10 000	10 300	9 920	10 200	10 800	11 100	10 600	9 420	8 970	8 100	8 880	8 240	8 770	8 610	8 710	8 810	9 870	11 100	11 000	11 600	12 400	12 100	10 700	9 840	9 350	9 640	9 570	9 430	9 250	9 310
Pulp and Paper	14 500	14 000	13 000	12 900	12 900	12 800	13 400	13 200	12 100	12 500	12 500	11 500	10 800	10 300	10 100	8 580	7 400	7 660	6 210	6 320	5 900	6 160	5 950	6 200	6 070	5 980	5 920	6 370	7 070	7 100	6 410	6 730	6 810	6 980
Cement	3 940	3 410	3 380	3 450	4 040	4 130	4 110	4 010	4 160	4 430	4 610	4 540	4 900	4 920	5 110	5 050	5 290	4 670	4 550	4 140	4 030	4 250	3 950	3 770	3 970	3 910	4 020	4 310	4 210	4 170	3 680	3 540	3 630	3 540
Other Manufacturing	21 200	20 100	19 700	17 600	17 800	19 700	20 000	20 200	17 500	17 600	18 200	17 100	16 900	16 500	16 700	16 100	14 800	15 600	14 800	12 800	13 100	13 700	14 100	14 400	13 600	12 900	12 800	13 000	12 700	12 800	11 900	12 100	12 900	12 900
Construction	1 880	1 630	1 760	1 390	1 400	1 180	1 270	1 250	1 120	1 170	1 080	1 020	1 260	1 340	1 410	1 440	1 390	1 400	1 380	1 220	1 510	1 360	1 390	1 290	1 300	1 310	1 290	1 300	1 380	1 440	1 410	1 420	1 560	1 510
Commercial and Institutional	26 200	26 800	27 500	28 500	27 800	29 300	30 000	30 400	27 800	29 300	33 300	32 600	34 100	35 200	33 900	32 400	29 400	30 500	30 200	29 900	28 600	30 500	28 700	29 700	31 400	30 300	34 000	36 000	37 100	38 100	35 200	33 000	35 000	33 200
Residential	43 200	41 700	43 000	44 900	45 700	44 400	49 200	45 900	40 300	42 000	44 300	41 300	43 300	45 400	43 900	43 100	41 000	45 500	44 900	43 000	41 100	43 300	39 900	41 600	41 300	40 700	38 100	38 600	40 100	40 700	38 200	36 900	38 600	35 000
Agriculture and Forestry	2 410	2 740	3 250	3 040	2 540	2 760	2 920	2 910	2 600	2 680	2 570	2 240	2 160	2 300	2 210	2 180	2 100	2 490	2 470	2 450	2 660	3 160	3 260	3 150	2 990	2 960	3 180	3 080	3 180	3 340	3 030	3 170	3 310	3 260
b. Transport[b]	**145 000**	**140 000**	**144 000**	**148 000**	**155 000**	**160 000**	**164 000**	**169 000**	**172 000**	**177 000**	**178 000**	**176 000**	**177 000**	**181 000**	**186 000**	**190 000**	**190 000**	**192 000**	**192 000**	**187 000**	**192 000**	**193 000**	**193 000**	**197 000**	**196 000**	**197 000**	**196 000**	**202 000**	**209 000**	**209 000**	**178 000**	**187 000**	**195 000**	**195 000**
Aviation	7 510	6 490	6 380	6 010	6 370	6 690	7 080	7 240	7 490	7 880	7 790	7 150	7 010	7 140	7 620	7 710	7 740	7 810	7 450	6 640	6 680	6 580	7 590	7 870	7 580	7 580	7 510	7 930	8 660	8 580	4 750	5 600	7 660	8 360
Domestic Aviation (Civil)	7 270	6 270	6 150	5 810	6 160	6 460	6 830	6 990	7 260	7 670	7 530	6 940	6 750	6 830	7 320	7 450	7 500	7 510	7 160	6 370	6 420	6 360	7 350	7 660	7 380	7 340	7 260	7 700	8 410	8 340	4 560	5 400	7 460	8 170
Military	233	220	228	205	212	231	248	247	235	211	265	205	263	306	301	259	237	304	297	266	257	228	243	213	205	235	255	231	247	242	184	201	195	199
Road Transportation	92 100	89 000	91 200	94 500	99 300	99 900	102 000	105 000	107 000	109 000	110 000	110 000	111 000	116 000	120 000	122 000	124 000	129 000	130 000	131 000	133 000	132 000	131 000	133 000	131 000	129 000	128 000	130 000	132 000	132 000	112 000	117 000	121 000	122 000
Light-Duty Gasoline Vehicles	44 200	42 900	43 600	44 600	45 400	43 900	43 700	43 100	42 800	42 100	41 600	41 400	41 600	41 600	41 700	40 600	39 900	39 900	38 900	38 500	37 900	36 200	35 200	35 300	34 100	34 500	34 300	32 600	32 000	31 300	24 500	25 300	25 700	25 400
Light-Duty Gasoline Trucks	24 700	24 300	25 200	26 500	28 000	28 400	29 600	31 200	33 000	34 600	35 000	35 900	37 100	38 600	40 300	40 900	41 700	42 900	42 800	44 000	45 100	43 100	43 900	45 900	46 100	47 700	50 300	52 500	54 300	56 000	47 800	49 500	51 700	53 700
Heavy-Duty Gasoline Vehicles	4 790	4 470	4 470	4 370	4 390	4 170	4 150	4 100	4 140	4 350	4 270	4 350	4 310	4 450	4 630	4 620	4 640	4 660	4 610	4 650	4 580	4 350	4 520	4 470	4 300	4 300	4 360	4 500	4 540	4 600	4 240	4 220	3 930	4 080
Motorcycles	204	200	207	218	228	226	230	242	256	279	320	332	361	390	431	459	489	527	555	579	595	726	771	786	790	838	875	905	931	964	760	812	763	788
Light-Duty Diesel Vehicles	367	362	375	382	408	434	438	456	450	433	462	463	480	577	627	665	739	816	809	816	739	768	738	764	761	700	642	592	456	424	311	333	362	330
Light-Duty Diesel Trucks	988	950	1 090	1 090	1 140	1 230	1 330	1 360	1 300	1 270	1 160	937	821	872	810	748	697	685	687	657	527	528	524	544	625	615	596	686	764	789	640	770	980	936
Heavy-Duty Diesel Vehicles	16 200	15 200	15 700	17 100	19 500	21 300	22 100	24 100	24 500	26 000	26 700	26 200	26 600	29 900	31 900	34 300	35 300	39 500	42 000	42 200	43 900	45 700	44 800	45 000	44 600	40 500	37 200	37 700	39 200	38 200	33 200	35 900	37 700	36 300
Propane and Natural Gas Vehicles	761	620	533	304	290	218	167	116	93	63	42	37	28	26	25	23	21	24	26	27	33	34	34	37	53	69	79	96	108	140	150	157	173	161
Railways	6 100	6 170	5 990	5 980	6 340	6 190	6 050	6 140	5 910	5 770	5 880	5 970	5 890	5 940	6 110	6 510	6 540	6 620	6 460	5 530	5 990	6 040	6 170	6 080	6 360	6 170	5 780	6 220	6 460	6 510	6 020	5 860	5 810	5 940
Marine	3 190	3 230	3 280	3 330	3 370	3 420	3 470	3 520	3 580	3 630	3 680	3 760	3 840	3 920	4 000	4 080	4 030	3 980	3 930	3 880	3 810	3 690	3 590	3 480	3 380	3 270	3 330	3 510	3 650	3 660	3 260	3 210	3 590	3 740
Domestic Navigation	2 280	2 330	2 380	2 430	2 470	2 520	2 570	2 620	2 680	2 730	2 780	2 860	2 940	3 020	3 100	3 180	3 140	3 100	3 060	3 020	2 960	2 950	2 950	2 950	2 950	2 950	3 000	3 210	3 350	3 350	2 970	2 890	3 300	3 460
Fishing	874	874	873	873	873	872	872	872	872	872	871	871	871	871	871	871	862	853	845	836	824	691	558	425	292	159	174	178	190	185	180	199	176	164
Military Water-Borne Navigation	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	26	53	81	108	135	162	153	128	111	129	107	127	114	110
Other Transportation	36 200	35 100	37 200	38 200	39 900	43 300	45 300	47 900	48 900	50 500	50 900	49 200	49 300	48 000	47 700	49 700	48 000	45 000	43 400	39 200	42 600	45 100	44 900	47 200	46 900	50 700	50 900	55 000	57 600	58 000	52 400	55 100	56 300	55 600
Off-Road Agriculture and Forestry	8 690	7 800	7 250	7 430	7 690	7 760	8 130	8 830	8 610	8 690	9 160	8 650	8 380	8 930	9 380	9 870	9 470	9 450	9 200	7 970	9 150	9 840	9 940	10 400	10 900	11 700	11 800	13 500	14 200	14 100	13 200	13 300	13 100	13 200
Off-Road Commercial and Institutional	4 310	3 910	3 800	3 650	3 550	3 960	3 940	4 190	4 430	4 710	4 630	4 570	4 720	4 510	4 480	4 510	4 390	3 760	3 640	3 720	4 700	5 460	5 330	5 420	4 890	5 040	5 330	5 830	6 080	6 190	5 610	6 120	6 210	6 320
Off-Road Manufacturing, Mining and Construction	12 400	12 000	12 400	12 600	13 200	14 000	14 500	15 700	16 100	16 500	17 400	17 000	16 200	16 300	16 200	16 200	15 800	15 000	15 000	13 500	15 300	16 500	16 000	16 400	15 200	17 200	17 000	19 100	20 000	20 300	17 500	18 500	18 600	18 200
Off-Road Residential	368	406	467	541	638	690	753	807	865	950	1 000	1 060	1 090	1 150	1 210	1 230	1 230	1 250	1 230	1 220	1 190	1 110	1 100	1 100	1 060	1 070	1 070	1 040	1 030	1 030	974	924	847	841
Off-Road Other Transportation	3 470	3 340	3 350	3 560	4 030	4 910	5 330	5 830	6 320	6 970	7 310	7 610	7 990	7 940	7 900	7 740	7 440	7 070	6 850	6 420	6 530	6 550	6 730	7 110	6 950	7 330	7 950	8 000	7 960	7 910	7 330	7 480	7 430	7 360
Pipeline Transport	6 920	7 670	9 910	10 400	10 800	12 100	12 600	12 600	12 600	12 600	11 300	10 300	10 900	9 100	8 520	10 100	9 630	8 420	7 530	6 380	5 740	5 680	5 780	6 780	7 970	8 290	7 730	7 570	8 400	8 500	7 760	8 740	10 100	9 690
c. Fugitive Sources	**66 000**	**69 000**	**73 000**	**77 000**	**83 000**	**87 000**	**91 000**	**93 000**	**95 000**	**91 000**	**94 000**	**95 000**	**95 000**	**94 000**	**97 000**	**98 000**	**100 000**	**99 000**	**97 000**	**92 000**	**95 000**	**96 000**	**100 000**	**100 000**	**100 000**	**98 000**	**87 000**	**88 000**	**88 000**	**84 000**	**75 000**	**75 000**	**70 000**	**68 000**
Coal Mining	3 000	3 000	3 000	3 000	3 000	3 000	2 000	3 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	1 000	1 000	1 000	1 000	2 000	2 000	2 000	2 000	2 000	1 000	1 000	1 000	2 000	2 000	1 000	1 000	1 000	2 000
Oil and Natural Gas	62 400	65 500	70 500	74 400	79 800	84 200	88 300	90 700	93 000	89 200	92 500	92 800	93 500	92 600	95 200	96 000	99 700	97 200	95 900	90 300	93 200	94 900	98 800	99 600	102 000	96 300	85 100	86 700	86 000	82 700	73 300	73 500	68 800	66 800
Oil	4 730	4 780	4 950	5 200	5 290	5 650	5 790	6 020	5 960	6 030	6 110	6 700	6 780	6 970	7 140	7 180	7 720	7 790	7 720	7 580	8 060	8 000	8 760	8 870	8 580	8 180	7 860	7 980	8 070	8 150	7 750	7 830	7 980	8 030
Natural Gas	10 600	10 500	10 700	10 800	10 900	11 000	12 300	11 000	12 200	11 000	12 000	11 600	11 700	11 700	12 100	13 100	13 700	12 600	12 200	11 600	12 400	12 200	11 700	11 600	10 700	10 100	9 540	9 120	9 060	8 820	8 510	8 400	8 100	8 040
Venting	41 700	44 300	48 900	52 700	57 400	61 300	63 600	67 100	66 200	65 600	67 800	68 700	68 700	68 700	70 700	70 400	72 600	71 300	71 000	66 900	67 900	69 800	72 500	72 300	75 100	71 500	62 300	63 800	62 900	59 900	50 700	50 300	45 700	43 200
Flaring	5 360	5 830	5 950	5 740	6 190	6 190	6 560	6 650	8 670	6 510	6 570	5 800	6 290	5 240	5 300	5 270	5 620	5 470	4 950	4 270	4 750	4 940	5 840	6 830	7 110	6 570	5 440	5 790	6 000	5 800	6 380	6 990	7 040	7 530
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.10**	**0.20**	**0.30**	**0.30**	**0.30**	**60**	**100**	**30**	**40**	**40**

Table A9–2 Canada's 1990–2023 GHG Emissions by IPCC Sector (cont'd)

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	kt CO_2 eq																																	
INDUSTRIAL PROCESSES AND PRODUCT USE	**55 100**	**56 600**	**54 500**	**55 000**	**56 800**	**57 000**	**59 300**	**59 100**	**56 300**	**54 300**	**54 300**	**52 200**	**54 300**	**56 200**	**59 800**	**56 000**	**56 600**	**55 000**	**54 200**	**47 100**	**50 600**	**54 300**	**58 800**	**56 300**	**54 100**	**53 700**	**54 400**	**53 000**	**54 700**	**53 700**	**51 400**	**53 200**	**52 500**	**53 500**
a. Mineral Products	**8 490**	**7 580**	**7 340**	**7 420**	**8 510**	**9 190**	**8 900**	**9 540**	**9 640**	**9 870**	**10 100**	**9 430**	**9 690**	**9 730**	**10 200**	**10 300**	**10 300**	**10 200**	**9 360**	**7 250**	**7 880**	**8 010**	**8 530**	**7 820**	**7 870**	**8 070**	**7 940**	**8 610**	**8 680**	**8 850**	**8 210**	**9 010**	**8 410**	**8 850**
Cement Production	5 820	4 770	4 800	4 890	5 770	6 530	6 190	6 660	6 830	7 120	7 230	6 980	7 150	7 250	7 520	7 610	7 730	7 730	6 990	5 360	6 010	6 020	6 530	5 970	5 910	6 180	6 110	6 860	6 990	7 200	6 710	7 380	6 750	7 300
Lime Production	1 860	1 890	1 900	1 900	1 960	1 970	1 910	1 970	1 960	2 040	2 010	1 770	1 800	1 780	1 910	1 830	1 750	1 700	1 620	1 270	1 470	1 540	1 560	1 470	1 580	1 470	1 440	1 420	1 360	1 340	1 190	1 310	1 340	1 240
Mineral Product Use	800	910	640	620	780	690	810	910	850	710	830	680	750	700	790	830	800	790	750	610	410	450	440	380	380	410	390	330	330	320	310	310	310	300
b. Chemical Industry	**16 300**	**15 700**	**15 500**	**15 700**	**17 700**	**17 200**	**18 100**	**16 400**	**12 800**	**9 630**	**8 510**	**8 440**	**8 660**	**8 970**	**11 000**	**9 970**	**8 680**	**7 920**	**8 680**	**5 760**	**5 720**	**6 340**	**6 570**	**6 560**	**6 330**	**6 710**	**6 810**	**6 300**	**6 350**	**6 200**	**5 930**	**5 710**	**5 740**	**5 600**
Ammonia Production	2 740	2 720	2 490	2 910	3 030	2 920	2 790	2 780	3 090	2 990	2 950	2 600	2 630	2 620	2 920	2 700	2 770	2 570	2 800	2 380	2 470	2 860	2 990	2 990	2 580	2 920	2 850	2 620	2 420	2 500	2 290	2 540	2 590	2 410
Nitric Acid Production	865	904	903	901	818	858	946	904	885	998	1 050	1 100	1 070	1 080	1 050	1 070	1 050	967	694	405	426	423	318	275	190	200	232	218	242	225	168	192	128	133
Adipic Acid Production	9 160	8 550	8 510	7 760	9 380	9 170	9 810	8 450	4 330	1 500	769	688	1 070	928	2 650	2 260	1 030	1 270	2 060	566	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 520	3 580	3 600	4 170	4 530	4 300	4 550	4 230	4 450	4 150	3 740	4 050	3 890	4 340	4 360	3 930	3 820	3 110	3 130	2 400	2 830	3 060	3 270	3 290	3 560	3 590	3 730	3 460	3 690	3 470	3 470	2 990	3 020	3 050
c. Metal Production	**23 200**	**26 300**	**25 200**	**25 500**	**24 100**	**23 300**	**23 300**	**23 100**	**24 000**	**23 300**	**23 500**	**21 400**	**21 600**	**21 200**	**20 900**	**20 500**	**21 000**	**19 400**	**19 200**	**16 000**	**16 400**	**17 300**	**17 200**	**15 500**	**15 600**	**15 100**	**16 000**	**15 700**	**16 100**	**15 100**	**14 100**	**15 400**	**14 800**	**15 800**
Iron and Steel Production	10 500	12 200	12 600	12 600	11 700	11 700	11 800	11 700	11 800	12 100	12 200	11 100	11 000	10 800	11 200	10 800	11 700	11 500	11 300	8 490	9 530	10 400	10 700	8 930	9 710	9 290	9 950	9 640	10 500	9 590	8 140	9 490	9 000	9 510
Aluminium Production	9 560	10 400	10 100	10 700	10 000	9 370	9 740	9 690	9 840	8 800	8 390	7 850	7 590	7 780	7 410	8 300	7 780	7 380	7 500	7 290	6 680	6 580	6 290	6 370	5 720	5 620	5 920	5 940	5 450	5 250	5 840	5 770	5 660	6 090
Magnesium Production and Casting	3 180	3 680	2 440	2 250	2 340	2 200	1 760	1 800	2 350	2 400	2 880	2 460	3 020	2 600	2 310	1 420	1 540	535	464	190	210	234	256	222	217	212	128	123	141	291	105	144	167	247
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**820**	**890**	**700**	**5**	**5**	**460**	**780**	**1 100**	**1 500**	**2 100**	**2 600**	**3 000**	**3 400**	**3 800**	**4 300**	**4 800**	**5 100**	**5 700**	**5 800**	**6 500**	**7 300**	**8 100**	**8 600**	**9 400**	**10 000**	**10 000**	**11 000**	**10 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**10 000**
e. Non-Energy Products from Fuels and Solvent Use	**5 900**	**5 700**	**5 400**	**6 000**	**6 100**	**6 400**	**7 900**	**8 600**	**7 900**	**8 900**	**9 000**	**9 300**	**10 000**	**12 000**	**13 000**	**9 900**	**11 000**	**11 000**	**11 000**	**11 000**	**13 000**	**14 000**	**17 000**	**16 000**	**14 000**	**13 000**	**12 000**	**11 000**	**12 000**	**12 000**	**11 000**	**12 000**	**12 000**	**12 000**
f. Other Product Manufacture and Use	**360**	**360**	**340**	**340**	**350**	**370**	**330**	**370**	**470**	**550**	**570**	**640**	**480**	**570**	**590**	**510**	**480**	**520**	**500**	**440**	**410**	**360**	**460**	**510**	**420**	**510**	**560**	**580**	**650**	**620**	**660**	**660**	**610**	**650**
AGRICULTURE	**43 000**	**43 000**	**45 000**	**46 000**	**48 000**	**50 000**	**51 000**	**51 000**	**52 000**	**52 000**	**53 000**	**53 000**	**54 000**	**55 000**	**56 000**	**56 000**	**55 000**	**55 000**	**54 000**	**52 000**	**51 000**	**50 000**	**52 000**	**54 000**	**52 000**	**53 000**	**54 000**	**53 000**	**54 000**	**54 000**	**56 000**	**55 000**	**56 000**	**55 000**
a. Enteric Fermentation	**25 000**	**26 000**	**27 000**	**27 000**	**29 000**	**30 000**	**30 000**	**30 000**	**30 000**	**31 000**	**31 000**	**32 000**	**32 000**	**32 000**	**34 000**	**35 000**	**33 000**	**32 000**	**31 000**	**30 000**	**28 000**	**28 000**	**28 000**	**28 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**26 000**
b. Manure Management	**6 000**	**6 100**	**6 400**	**6 400**	**6 700**	**7 000**	**7 200**	**7 200**	**7 400**	**7 600**	**7 800**	**8 100**	**8 300**	**8 300**	**8 500**	**8 700**	**8 500**	**8 200**	**8 100**	**7 800**	**7 600**	**7 600**	**7 600**	**7 700**	**7 600**	**7 700**	**7 800**	**7 900**	**7 900**	**7 900**	**7 800**	**7 900**	**7 800**	**7 700**
c. Agricultural Soils	**10 000**	**9 700**	**10 000**	**11 000**	**11 000**	**11 000**	**12 000**	**12 000**	**12 000**	**12 000**	**12 000**	**11 000**	**11 000**	**12 000**	**12 000**	**12 000**	**12 000**	**12 000**	**13 000**	**13 000**	**13 000**	**13 000**	**15 000**	**16 000**	**15 000**	**16 000**	**16 000**	**15 000**	**16 000**	**16 000**	**18 000**	**17 000**	**18 000**	**18 000**
Direct Sources	7 800	7 500	7 800	8 400	8 400	8 500	9 000	9 100	9 300	9 200	9 100	8 800	8 900	9 600	9 200	8 900	9 100	9 500	10 000	9 900	10 000	10 000	11 000	12 000	12 000	13 000	13 000	12 000	13 000	13 000	14 000	13 000	15 000	14 000
Indirect Sources	2 000	2 000	2 000	2 000	2 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	4 000	4 000	4 000	4 000	4 000
d. Field Burning of Agricultural Residues	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**100**	**100**	**100**	**100**	**40**	**50**	**50**	**40**	**50**	**60**	**40**	**30**	**40**	**60**	**50**	**60**	**50**	**50**	**50**	**50**	**60**	**40**	**50**	**50**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1 200**	**1 100**	**1 200**	**1 200**	**1 400**	**1 500**	**1 500**	**1 600**	**1 700**	**1 500**	**1 600**	**1 400**	**1 500**	**1 600**	**1 500**	**1 400**	**1 500**	**1 700**	**1 700**	**1 800**	**1 800**	**2 000**	**2 300**	**2 700**	**2 500**	**2 600**	**2 500**	**2 400**	**2 600**	**2 700**	**3 000**	**3 100**	**2 900**	**3 100**
WASTE	**21 000**	**21 000**	**21 000**	**22 000**	**22 000**	**22 000**	**22 000**	**22 000**	**23 000**	**23 000**	**23 000**	**23 000**	**23 000**	**24 000**	**23 000**	**24 000**	**24 000**	**23 000**	**23 000**	**22 000**	**22 000**	**22 000**	**22 000**	**22 000**	**23 000**	**23 000**	**24 000**	**23 000**	**23 000**	**23 000**	**23 000**	**23 000**	**23 000**	**23 000**
a. Landfills	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	1 000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
b. Biological Treatment of Solid Waste	**80**	**100**	**100**	**100**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**400**	**400**	**400**	**500**	**500**	**500**
c. Incineration and Open Burning of Waste	**300**	**300**	**300**	**300**	**300**	**400**	**300**	**300**	**300**	**300**	**400**	**400**	**400**	**300**	**400**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**100**	**200**	**200**
d. Wastewater Treatment and Discharge	**1 900**	**1 900**	**1 900**	**2 000**	**2 000**	**2 000**	**2 000**	**2 100**	**2 100**	**2 100**	**2 200**	**2 200**	**2 200**	**2 200**	**2 200**	**2 200**	**2 200**	**2 300**	**2 300**	**2 300**	**2 400**	**2 400**	**2 500**	**2 500**	**2 500**	**2 600**	**2 700**	**2 600**	**2 700**	**2 700**	**2 600**	**2 600**	**2 600**	**2 600**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 000	1 000	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**50 000**	**45 000**	**56 000**	**68 000**	**55 000**	**64 000**	**55 000**	**52 000**	**44 000**	**49 000**	**55 000**	**37 000**	**68 000**	**66 000**	**63 000**	**66 000**	**48 000**	**45 000**	**41 000**	**11 000**	**40 000**	**44 000**	**29 000**	**32 000**	**8 000**	**46 000**	**29 000**	**21 000**	**24 000**	**15 000**	**25 000**	**15 000**	**51 000**	**4 200**
a. Forest Land	**73 000**	**71 000**	**80 000**	**86 000**	**92 000**	**100 000**	**92 000**	**97 000**	**86 000**	**110 000**	**120 000**	**94 000**	**110 000**	**100 000**	**140 000**	**140 000**	**110 000**	**93 000**	**68 000**	**37 000**	**66 000**	**65 000**	**63 000**	**65 000**	**61 000**	**71 000**	**63 000**	**59 000**	**60 000**	**40 000**	**40 000**	**34 000**	**22 000**	**24 000**
b. Cropland	**5 500**	**-1 600**	**520**	**7 700**	**-5 400**	**-6 300**	**-4 900**	**-8 700**	**-4 700**	**-13 000**	**-15 000**	**-10 000**	**7 600**	**11 000**	**-20 000**	**-20 000**	**-23 000**	**-17 000**	**-18 000**	**-34 000**	**-20 000**	**-12 000**	**-21 000**	**-22 000**	**-42 000**	**-8 300**	**-15 000**	**-21 000**	**-20 000**	**-15 000**	**-13 000**	**-16 000**	**25 000**	**-22 000**
c. Grassland	**0.70**	**0.90**	**1**	**0.40**	**1**	**0.30**	**0.60**	**0.60**	**0.70**	**0.80**	**1**	**1**	**1**	**1**	**1**	**0.90**	**1**	**0.50**	**0.50**	**0.40**	**0.30**	**0.70**	**2**	**2**	**0.90**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
d. Wetlands	**5 100**	**5 000**	**4 800**	**5 200**	**2 900**	**2 900**	**2 800**	**2 800**	**3 000**	**3 300**	**2 700**	**2 600**	**2 600**	**2 700**	**2 800**	**2 700**	**2 900**	**2 900**	**3 000**	**2 900**	**2 800**	**2 800**	**2 800**	**3 000**	**3 000**	**2 800**	**2 800**	**2 700**	**2 500**	**2 700**	**2 900**	**2 800**	**2 600**	**2 600**
e. Settlements	**4 800**	**4 900**	**4 500**	**4 100**	**4 200**	**3 700**	**4 100**	**4 100**	**4 200**	**4 500**	**4 500**	**4 300**	**4 700**	**4 900**	**5 300**	**4 700**	**5 200**	**5 300**	**5 300**	**4 600**	**4 400**	**5 100**	**5 100**	**6 000**	**6 000**	**5 900**	**5 500**	**5 300**	**5 400**	**5 300**	**5 300**	**5 500**	**5 200**	**5 000**
f. Harvested Wood Products	**-38 000**	**-34 000**	**-34 000**	**-35 000**	**-39 000**	**-39 000**	**-39 000**	**-43 000**	**-45 000**	**-57 000**	**-53 000**	**-55 000**	**-58 000**	**-58 000**	**-61 000**	**-57 000**	**-51 000**	**-39 000**	**-17 000**	**780**	**-12 000**	**-16 000**	**-21 000**	**-21 000**	**-21 000**	**-26 000**	**-28 000**	**-26 000**	**-24 000**	**-18 000**	**-10 000**	**-12 000**	**-4 000**	**-5 100**

Notes:
Totals may not add up due to rounding.
Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.
National GHG emissions by Canadian economic sector are provided in Annex 10 of this report.

a. National totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.

Table A9–3 2023 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[b]	**545 000**	**3 900**	**110 000**	**110**	**28 000**	**10 000**	**736**	**380**	**0.60**	**694 000**
ENERGY	**501 000**	**2 000**	**57 000**	**20**	**4 000**	**-**	**-**	**-**	**-**	**562 000**
a. Stationary Combustion Sources	**292 000**	**200**	**4 000**	**7**	**2 000**	**-**	**-**	**-**	**-**	**298 000**
Public Electricity and Heat Production	57 600	10	280	1	400	-	-	-	-	58 200
Petroleum Refining Industries	14 100	0.30	9	0.10	30	-	-	-	-	14 200
Oil and Gas Extraction	104 000	100	3 000	2	500	-	-	-	-	107 000
Mining	5 430	0.10	3	0.10	30	-	-	-	-	5 460
Manufacturing Industries	39 900	2	67	2	390	-	-	-	-	40 400
Iron and Steel	4 540	0.10	3	0.09	30	-	-	-	-	4 570
Non-Ferrous Metals	3 060	0.06	2	0.05	10	-	-	-	-	3 080
Chemical	9 270	0.18	5	0.20	40	-	-	-	-	9 310
Pulp and Paper	6 810	1	30	0.50	100	-	-	-	-	6 980
Cement	3 520	0.30	8	0.07	20	-	-	-	-	3 540
Other Manufacturing	12 700	0.70	20	0.60	200	-	-	-	-	12 900
Construction	1 500	0.03	0.76	0.04	12	-	-	-	-	1 510
Commercial and Institutional	32 900	0.83	23	0.70	200	-	-	-	-	33 200
Residential	33 800	30	900	1	300	-	-	-	-	35 000
Agriculture and Forestry	3 240	0.06	2	0.09	20	-	-	-	-	3 260
b. Transport[c]	**192 000**	**48**	**1 300**	**9**	**2 400**	**-**	**-**	**-**	**-**	**195 000**
Aviation	8 300	0.20	5	0.20	60	-	-	-	-	8 360
Domestic Aviation (Civil)	8 100	0.20	5	0.20	60	-	-	-	-	8 170
Military	198	0.00	0.08	0.01	1	-	-	-	-	199
Road Transportation	120 000	7	200	4	1 100	-	-	-	-	122 000
Light-Duty Gasoline Vehicles	25 200	2	50	0.52	140	-	-	-	-	25 400
Light-Duty Gasoline Trucks	53 400	3	90	1	270	-	-	-	-	53 700
Heavy-Duty Gasoline Vehicles	3 980	0.10	4	0.36	95	-	-	-	-	4 080
Motorcycles	777	0.30	8	0.02	4	-	-	-	-	788
Light-Duty Diesel Vehicles	322	0.01	0.20	0.03	7	-	-	-	-	330
Light-Duty Diesel Trucks	915	0.02	0.70	0.08	21	-	-	-	-	936
Heavy-Duty Diesel Vehicles	35 700	2	40	2	550	-	-	-	-	36 300
Propane and Natural Gas Vehicles	149	0.40	10	0.00	1	-	-	-	-	161
Railways	5 370	0.30	9	2	600	-	-	-	-	5 940
Marine	3 700	0.35	10	0.10	30	-	-	-	-	3 740
Domestic Navigation	3 430	0.32	9	0.09	20	-	-	-	-	3 460
Fishing	163	0.02	0.40	0.00	1	-	-	-	-	164
Military Water-Borne Navigation	108	0.01	0.29	0.00	0.80	-	-	-	-	110
Other Transportation	53 900	40	1 100	2	600	-	-	-	-	55 600
Off-Road Agriculture and Forestry	13 000	0.90	25	0.70	200	-	-	-	-	13 200
Off-Road Commercial and Institutional	6 030	8	231	0.20	60	-	-	-	-	6 320
Off-Road Manufacturing, Mining and Construction	17 900	3	90	1	300	-	-	-	-	18 200
Off-Road Residential	774	2	62	0.02	5	-	-	-	-	841
Off-Road Other Transportation	6 850	16	454	0.20	50	-	-	-	-	7 360
Pipeline Transport	9 370	9	250	0.20	60	-	-	-	-	9 690
c. Fugitive Sources	**17 000**	**1 830**	**51 300**	**0.37**	**98**	**-**	**-**	**-**	**-**	**68 000**
Coal Mining	-	60	2 000	-	-	-	-	-	-	2 000
Oil and Natural Gas	17 000	1 770	49 600	0.40	100	-	-	-	-	66 800
Oil	600	262	7 340	0.30	90	-	-	-	-	8 030
Natural Gas	8	287	8 030	-	-	-	-	-	-	8 040
Venting	9 800	1 190	33 400	-	-	-	-	-	-	43 200
Flaring	6 720	29	798	0.03	7	-	-	-	-	7 530
d. CO_2 Transport and Storage	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
INDUSTRIAL PROCESSES AND PRODUCT USE	**41 400**	**5**	**130**	**3**	**660**	**10 000**	**736**	**380**	**0.60**	**53 500**
a. Mineral Products	**8 850**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8 850**
Cement Production	7 300	-	-	-	-	-	-	-	-	7 300
Lime Production	1 240	-	-	-	-	-	-	-	-	1 240
Mineral Product Use	300	-	-	-	-	-	-	-	-	300
b. Chemical Industry	**5 320**	**5**	**130**	**0.54**	**143**	**-**	**-**	**-**	**-**	**5 600**
Ammonia Production	2 410	-	-	-	-	-	-	-	-	2 410
Nitric Acid Production	-	-	-	0.50	133	-	-	-	-	133
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	2 910	5	130	0.04	10	-	-	-	-	3 050
c. Metal Production	**14 900**	**0.10**	**3**	**-**	**-**	**-**	**698**	**247**	**-**	**15 800**
Iron and Steel Production	9 510	0.10	3	-	-	-	-	-	-	9 510
Aluminium Production	5 390	-	-	-	-	-	698	0.08	-	6 090
Magnesium Production and Casting	-	-	-	-	-	-	-	247	-	247
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**10 000**	**18**	**29**	**0.60**	**10 000**
e. Non-Energy Products from Fuels and Solvent Use	**12 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12 000**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**2**	**520**	**-**	**20**	**100**	**-**	**650**
AGRICULTURE	**3 100**	**1 100**	**31 000**	**80**	**21 000**	**-**	**-**	**-**	**-**	**55 000**
a. Enteric Fermentation	**-**	**950**	**26 000**	**-**	**-**	**-**	**-**	**-**	**-**	**26 000**
b. Manure Management	**-**	**150**	**4 300**	**10**	**3 000**	**-**	**-**	**-**	**-**	**7 700**
c. Agricultural Soils	**-**	**-**	**-**	**67**	**18 000**	**-**	**-**	**-**	**-**	**18 000**
Direct Sources	-	-	-	53	14 000	-	-	-	-	14 000
Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d. Field Burning of Agricultural Residues	**-**	**1**	**40**	**0.04**	**9**	**-**	**-**	**-**	**-**	**50**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**3 100**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 100**
WASTE	**100**	**750**	**21 000**	**7**	**2 000**	**-**	**-**	**-**	**-**	**23 000**
a. Landfills	**-**	**700**	**20 000**	**-**	**-**	**-**	**-**	**-**	**-**	**20 000**
Municipal Solid Waste Landfills	**-**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Industrial Wood Waste Landfills	**-**	**-**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
b. Biological Treatment of Solid Waste	**-**	**10**	**300**	**0.90**	**200**	**-**	**-**	**-**	**-**	**500**
c. Incineration and Open Burning of Waste	**100**	**0.00**	**0.08**	**0.27**	**73**	**-**	**-**	**-**	**-**	**200**
d. Wastewater Treatment and Discharge	**37**	**40**	**1 000**	**6**	**2 000**	**-**	**-**	**-**	**-**	**2 600**
Municipal Wastewater Treatment and Discharge	**-**	**-**	**1 000**	**10**	**-**	**-**	**-**	**-**	**-**	**-**
Industrial Wastewater Treatment and Discharge	**-**	**10**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LAND USE, LAND-USE CHANGE AND FORESTRY	**3 300**	**22**	**620**	**1**	**270**	**-**	**-**	**-**	**-**	**4 200**
a. Forest Land	**23 000**	**10**	**300**	**0.60**	**200**	**-**	**-**	**-**	**-**	**24 000**
b. Cropland	**-22 000**	**5**	**150**	**0.24**	**65**	**-**	**-**	**-**	**-**	**-22 000**
c. Grassland	**-**	**0.04**	**1**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**1**
d. Wetlands	**2 600**	**1**	**38**	**0.01**	**4**	**-**	**-**	**-**	**-**	**2 600**
e. Settlements	**4 900**	**5**	**140**	**0.19**	**50**	**-**	**-**	**-**	**-**	**5 000**
f. Harvested Wood Products	**-5 100**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-5 100**

Notes: Totals may not add up due to rounding.
Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.
National GHG emissions by Canadian economic sector are provided in Annex 10 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.
b. National totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.
c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.

CANADA'S GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2023

This annex contains summary tables illustrating national Greenhouse Gas (GHG) emissions for the period 1990–2023 by Canadian economic sector (Table A10–2), as well as the relationship (crosswalk) between the economic sectors and the Intergovernmental Panel on Climate Change (IPCC) sectors presented in Annex 9 of this report (Table A10–3). In addition, Table A10–1 provides a brief description of each economic sector.

Although not a mandatory reporting requirement, reallocating emissions from IPCC sectors to Canadian economic sectors is useful for the purpose of analyzing trends and policies, as most people associate GHG emissions with a particular economic activity (e.g. producing electricity, farming or driving a car). This re-allocation simply re-categorizes emissions under different headings, but does not change the overall magnitude of Canadian emission estimates. Estimates for each economic sector include emissions from energy-related and non-energy-related processes.

Reallocation of Emissions from IPCC Sector to Canadian Economic Sector

In general, the reallocation of emissions from IPCC sector to economic sector involves aggregating emissions from stationary combustion, fugitive sources, transportation, industrial processes, agriculture and waste into the appropriate economic sector. In many cases, the stationary combustion emissions for a specific IPCC sector are the same as that for the corresponding economic sector with some notable exceptions.

First, unlike allocation for the IPCC sectors, all utility-owned cogeneration facilities that produce steam or electricity for on-site use are reallocated from Electricity to the relevant economic sector. The relevant economic sectors include Natural Gas Production and Processing, Oil Sands, Mining, Pulp and Paper, Chemicals and Fertilizers, Service Industry, and Light Manufacturing. This is generally accomplished by analyzing and reallocating data by sector from the *Electric Power Thermal Generating Station Fuel Consumption Survey* (StatCan, n.d. [a]).

Second, Lime and Gypsum is split out from the IPCC category Other Manufacturing and reported as an economic sector on its own, while all other industries included in the IPCC category are allocated to the economic sector Light Manufacturing. Constituent sectors include all other manufacturing industries not already accounted for in identified IPCC manufacturing categories (e.g. Iron and Steel, Chemicals, etc.). Examples include automobile manufacturing, textiles, food and beverage industries, etc.

Third, emissions resulting from the combustion of fuel used to transport oil and natural gas in pipelines accounted for in the IPCC category Pipeline Transport, are divided into the Oil and Natural Gas Transmission and Natural Gas Distribution economic sectors. This division is based on sector-specific fuel combustion data from an upstream oil and gas (UOG) study (ECCC, 2014).

Fourth, combustion emissions from the Mining and Upstream Oil and Gas Production IPCC category are reallocated to many economic sectors including: Coal Production, Mining, Natural Gas Production and Processing, Conventional Light Oil Production, Conventional Heavy Oil Production, Frontier Oil Production and Oil Sands (Mining, In-situ, Upgrading). A variety of external data sources are used to estimate emissions for the appropriate sectors which are then re-proportioned to align with Canada's energy balance. These external data sources include:

- **Mining**: Metal and non-metal mining fuel consumption data from the Canadian Industrial Energy End-Use Data and Analysis Centre (CEEDC) database on Energy, Production and Intensity Indicators for Canadian Industry (CEEDC, n.d.).

- **Coal Production**: Fuel consumption estimates for the coal mining industry are based on the Compilation of a National Inventory of Greenhouse Gas and Fugitive VOC Emissions by the Canadian Coal Mining Industry (Cheminfo/Clearstone, 2014) and annual coal production data provided by Statistics Canada (see Annex 3.2 for further discussion on this activity data).
- **UOG sectors**: Fuel consumption data for the various UOG sectors, except Oil Sands, is estimated from the UOG study (ECCC, 2014).
- **Oil Sands**: Fuel consumption data for the Oil Sands industry (including mining and extraction, in-situ and upgrading) is modelled by ECCC and adjusted so that the resultant emissions align with the facility level emissions data that is reported to ECCC through the Greenhouse Gas Emissions Reporting Program (GHGRP) (see Chapter 1 for more information on the GHGRP) (ECCC, 2021).

Fifth, emissions from road, rail, marine and air transport are separated into passenger and freight components. Emissions for Other Transportation (Off-Road) are reallocated to their relevant economic sectors and to the Transportation category Other: Recreational, Commercial, and Residential.

Sixth, CO_2 captured from waste streams at large industrial facilities (e.g. electric utilities, oil sands upgraders) is presented separately in the economic sectors. It is displayed as a negative number to represent the removal of CO_2 from the specific sector while the source of the CO_2 emissions (e.g. stationary combustion) for the sector is displayed as a gross amount.

In terms of process and product use-related emissions, emissions from mineral products, chemical industry and metal production are reallocated to Heavy Industry and Light Manufacturing. Emissions from consumption of halocarbons, SF_6 and NF_3, which mainly consist of HFC emissions from refrigeration and air conditioning, are mostly allocated to Transport and Buildings, where the majority of HFCs are used and emitted. Emissions from non-energy products from fuels and solvent use are reallocated to multiple relevant economic categories. Finally, emissions from other product manufacture and use are mainly distributed to Electricity and Service Industry.

Once all these sector specific fuel consumption estimates are compiled, the data are reconciled by province and by fuel with the fuel consumption data from the *Report on Energy Supply and Demand* (StatCan, n.d. [b]). This ensures that the economic sector estimates match the IPCC sector estimates.

Canada's GHG emission tables are also available in electronic file format online at http://open.canada.ca.

The GHG inventory team is considering removing the Emissions Tables (Annex 9 to Annex 12) in future editions of the NIR. They would be available in their entirety on the Government of Canada's Open Data webpage only. For any questions or concerns, please contact GES-GHG@ec.gc.ca.

Table A10–1 **Canadian Economic Sector Descriptions**

Economic Sector	Description
OIL AND GAS	
Upstream Oil and Gas	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Natural Gas Production and Processing	– natural gas production and processing
Conventional Oil Production	Emissions resulting from:
Conventional Light Oil Production	– conventional light crude oil production
Conventional Heavy Oil Production	– conventional heavy crude oil production
Frontier Oil Production	– offshore and arctic production of crude oil
Oil Sands (Mining, In-Situ, Upgrading)	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Mining and Extraction	– crude bitumen mining and extraction
In-Situ	– in-situ extraction of crude bitumen in designated oil sands areas including primary extraction, cyclic steam stimulation (CSS), steam-assisted gravity drainage (SAGD) and other experimental techniques
Upgrading	– crude bitumen and heavy oil upgrading to synthetic crude oil
Oil, Natural Gas and CO_2 Transmission	Combustion and fugitive emissions from the transport and storage of crude oil and natural gas.
Downstream Oil and Gas	Emissions resulting from:
Petroleum Refining	– stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from petroleum refining industries
Natural Gas Distribution	– combustion and fugitive emissions from local distribution of natural gas up to and including the natural gas meter
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites. Includes post-meter, unintentional leaks from natural gas consumption.
TRANSPORT	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels. Includes post-meter, unintentional leaks from natural gas powered vehicles.
Passenger Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move people around.
Cars, Light Trucks and Motorcycles	– light duty cars and trucks and motorcycles with a Gross Vehicle Weight Rating (GVWR) less than 3856 kg
Bus, Rail and Aviation	– all buses and the passenger component of rail and aviation
Freight Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move cargo or freight around.
Heavy Duty Trucks, Rail	– vehicles with a Gross Vehicle Weight Rating (GVWR) greater than or equal to 3856 kg. Also includes the freight component of rail
Aviation and Marine	– cargo component of aviation and all domestic navigation (inclusive of all fishing and military operations)
Other: Recreational, Commercial and Residential	Combustion emissions from the non-industrial use of off-road engines (e.g., ATVs, snowmobiles, personal watercraft), including portable engines (e.g., generators, lawn mowers, chain saws). Includes post-meter, unintentional leaks from natural gas powered engines.
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricity and steam production, and process emissions. Includes post-meter, unintentional leaks from natural gas consumption.
Mining	– metal and non-metal mines, stone quarries, and gravel pits
Smelting and Refining (Non-Ferrous Metals)	– non-ferrous metals (aluminium, magnesium and other production)
Pulp and Paper	– pulp and paper (primarily pulp, paper, and paper product manufacturers)
Iron and Steel	– Iron and steel (steel foundries, casting, rolling mills and iron making)
Cement	– cement and other non-metallic mineral production
Lime and Gypsum	– lime and gypsum product manufacturing
Chemicals and Fertilizers	– chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
BUILDINGS	Stationary combustion and process (i.e. air conditioning) emissions, including post-meter, unintentional leaks from natural gas appliances from:
Service Industry	– service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.; offices, health, arts, accommodation, food, information & cultural; Federal, provincial and municipal establishments; National Defence and Canadian Coast Guard; Train stations, airports and warehouses
Residential	– personal residences (homes, apartment hotels, condominiums and farm houses)
AGRICULTURE	Emissions resulting from:
On Farm Fuel Use	– stationary combustion, onsite transportation and process emissions from the agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing, and repair); includes post-meter, unintentional leaks from natural gas consumption
Crop Production	– Application of biosolids and inorganic nitrogen fertilizers, decomposition of crop residues, loss of soil organic carbon, cultivation of organic soils, indirect emissions from leaching and volatilization, field burning of agricultural residues, liming, and urea application
Animal Production	– Animal housing, manure storage, manure deposited by grazing animals, and application of manure to managed soils
WASTE	Non-CO_2 Emissions from biomass resulting from:
Solid Waste	– municipal landfills, dedicated wood waste landfills, and other treatment of municipal solid waste
Wastewater	– municipal and industrial wastewater treatment
Waste Incineration	– municipal solid, hazardous and clinical waste, and sewage sludge incineration
COAL PRODUCTION	Stationary combustion, onsite transportation and fugitive emissions from underground and surface coal mines. Includes post-meter, unintentional leaks from natural gas consumption.
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	Stationary combustion, onsite transportation, electricity and steam production, and process emissions, including post-meter, unintentional leaks from natural gas consumption from (excluding LULUCF):
Light Manufacturing	– all other manufacturing industries not included in the Heavy Industry category above
Construction	– construction of buildings, highways etc.
Forest Resources	– forestry and logging service industry

Table A10–2 Canada's GHG Emissions by Canadian Economic Sector, 1990–2023

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq																																	
NATIONAL GHG TOTAL	**606**	**602**	**619**	**624**	**646**	**665**	**686**	**701**	**708**	**718**	**746**	**739**	**746**	**764**	**764**	**759**	**755**	**774**	**758**	**714**	**728**	**738**	**741**	**750**	**747**	**742**	**725**	**738**	**747**	**747**	**682**	**694**	**700**	**694**
OIL AND GAS	**117**	**119**	**128**	**137**	**142**	**150**	**157**	**159**	**163**	**170**	**178**	**181**	**186**	**190**	**191**	**194**	**202**	**207**	**203**	**198**	**203**	**210**	**216**	**223**	**228**	**226**	**208**	**216**	**223**	**222**	**204**	**211**	**209**	**208**
Upstream Oil and Gas	**97**	**100**	**109**	**117**	**124**	**131**	**136**	**137**	**142**	**150**	**158**	**160**	**164**	**166**	**167**	**172**	**179**	**183**	**181**	**176**	**181**	**189**	**196**	**202**	**209**	**207**	**189**	**199**	**206**	**203**	**187**	**193**	**191**	**190**
Natural Gas Production and Processing	38	37	39	42	45	48	50	48	51	59	65	67	69	72	71	75	77	78	76	73	72	75	72	72	71	68	61	62	62	60	58	59	54	52
Conventional Oil Production	32	34	37	40	43	46	47	50	49	48	51	50	50	49	49	48	49	49	48	44	45	48	52	54	56	54	47	50	51	49	39	39	38	38
Conventional Light Oil Production	19	19	19	20	21	22	22	22	21	21	21	21	21	21	21	22	22	23	23	22	23	26	29	30	33	32	28	30	31	29	23	22	21	21
Conventional Heavy Oil Production	13	15	18	20	21	24	25	27	25	26	29	28	27	26	26	25	25	24	23	21	20	21	21	22	22	21	18	19	19	17	14	16	16	16
Frontier Oil Production	0	0	0	0	0	0	0	0	3	2	1	1	3	2	2	2	2	2	2	2	2	1	1	1	2	1	1	2	2	2	2	1	1	1
Oil Sands (Mining, In-Situ, Upgrading)	15	16	18	19	20	20	21	23	25	25	26	29	30	34	37	37	42	46	47	51	56	58	64	67	72	74	71	78	83	84	81	86	87	89
Mining and Extraction	3	3	3	3	3	4	4	4	4	4	4	5	6	7	7	7	8	8	8	9	10	10	11	11	12	12	12	14	16	17	16	17	17	17
In-Situ	5	4	4	4	5	5	5	8	9	9	9	10	10	11	12	13	16	17	20	21	24	26	31	32	37	39	39	42	44	43	41	45	46	47
Upgrading	8	8	10	12	12	12	12	12	12	13	13	14	15	16	18	17	19	21	19	21	22	22	23	24	23	23	20	22	23	24	24	24	24	24
Oil, Natural Gas and CO_2 Transmission	12	13	15	16	16	17	17	17	17	17	15	14	14	12	11	12	12	10	9	8	7	8	8	9	10	10	9	9	10	10	9	10	11	11
Downstream Oil and Gas	**20**	**19**	**19**	**19**	**18**	**19**	**21**	**21**	**21**	**20**	**20**	**21**	**22**	**23**	**24**	**22**	**23**	**23**	**22**	**22**	**22**	**21**	**20**	**21**	**19**	**19**	**19**	**18**	**18**	**20**	**17**	**18**	**18**	**18**
Petroleum Refining	18	17	17	18	17	17	20	20	19	18	18	19	20	22	22	20	21	22	20	20	21	20	19	20	18	18	18	17	17	19	16	17	17	17
Natural Gas Distribution	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ELECTRICITY	**94**	**96**	**102**	**93**	**95**	**98**	**98**	**109**	**122**	**119**	**128**	**129**	**123**	**127**	**118**	**116**	**111**	**118**	**108**	**93**	**95**	**86**	**82**	**80**	**75**	**74**	**75**	**73**	**63**	**62**	**54**	**52**	**49**	**49**
TRANSPORT	**118**	**113**	**115**	**118**	**124**	**126**	**129**	**133**	**136**	**141**	**142**	**142**	**144**	**149**	**154**	**156**	**157**	**162**	**163**	**161**	**165**	**164**	**164**	**167**	**164**	**162**	**162**	**165**	**169**	**169**	**142**	**149**	**155**	**157**
Passenger Transport	**80**	**77**	**79**	**81**	**84**	**83**	**85**	**86**	**88**	**89**	**89**	**89**	**91**	**93**	**95**	**95**	**95**	**97**	**96**	**96**	**96**	**93**	**94**	**96**	**95**	**97**	**99**	**100**	**102**	**103**	**83**	**86**	**92**	**94**
Cars, Light Trucks and Motorcycles	71	69	71	73	76	75	76	77	79	79	80	80	82	83	85	85	85	86	85	86	86	83	83	85	84	85	88	89	90	91	75	78	81	82
Bus, Rail and Aviation	9	8	8	8	8	8	9	9	9	10	10	9	9	10	10	10	10	11	11	10	10	10	11	11	11	11	11	12	12	12	8	8	11	12
Freight Transport	**30**	**29**	**29**	**30**	**32**	**34**	**34**	**36**	**37**	**38**	**39**	**39**	**39**	**42**	**45**	**48**	**49**	**53**	**55**	**54**	**56**	**58**	**57**	**57**	**57**	**52**	**48**	**50**	**52**	**51**	**45**	**48**	**49**	**48**
Heavy Duty Trucks, Rail	25	24	24	25	28	29	30	31	32	33	34	34	34	37	39	42	43	48	50	49	51	53	53	52	52	48	44	45	47	46	41	43	44	43
Aviation and Marine	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	5	5
Other: Recreational, Commercial and Residential	**8**	**8**	**8**	**8**	**8**	**10**	**10**	**11**	**12**	**13**	**13**	**13**	**14**	**14**	**14**	**14**	**13**	**12**	**12**	**11**	**12**	**13**	**13**	**14**	**13**	**14**	**14**	**15**	**15**	**15**	**14**	**15**	**15**	**15**
HEAVY INDUSTRY	**97**	**97**	**94**	**94**	**99**	**100**	**103**	**103**	**99**	**97**	**97**	**92**	**92**	**91**	**93**	**88**	**88**	**86**	**84**	**71**	**75**	**81**	**81**	**80**	**82**	**80**	**77**	**78**	**80**	**79**	**75**	**78**	**78**	**78**
Mining	**7**	**7**	**6**	**7**	**8**	**8**	**9**	**9**	**9**	**9**	**9**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**9**	**8**	**8**	**9**	**9**	**9**	**9**	**9**	**8**	**9**	**11**	**11**	**10**	**11**	**11**	**9**
Smelting and Refining (Non-Ferrous Metals)	**17**	**18**	**17**	**17**	**17**	**16**	**17**	**17**	**17**	**16**	**17**	**16**	**16**	**15**	**14**	**14**	**14**	**13**	**13**	**12**	**11**	**12**	**11**	**11**	**10**	**11**	**11**	**11**	**10**	**10**	**10**	**10**	**10**	**10**
Pulp and Paper	**15**	**15**	**14**	**14**	**14**	**13**	**14**	**14**	**13**	**13**	**13**	**12**	**11**	**11**	**11**	**9**	**8**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**6**	**7**	**7**	**8**	**8**	**7**	**7**	**8**	**8**
Iron and Steel	**17**	**18**	**19**	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**19**	**17**	**17**	**17**	**17**	**16**	**17**	**18**	**17**	**13**	**14**	**17**	**16**	**15**	**16**	**15**	**15**	**15**	**16**	**15**	**13**	**15**	**14**	**14**
Cement	**10**	**9**	**9**	**9**	**10**	**11**	**11**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**13**	**13**	**13**	**12**	**12**	**10**	**10**	**10**	**11**	**10**	**10**	**10**	**10**	**11**	**11**	**11**	**10**	**11**	**10**	**11**
Lime and Gypsum	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**
Chemicals and Fertilizers	**28**	**28**	**27**	**27**	**30**	**30**	**32**	**31**	**27**	**25**	**23**	**23**	**24**	**23**	**26**	**24**	**24**	**23**	**24**	**20**	**22**	**24**	**25**	**25**	**28**	**26**	**23**	**21**	**21**	**22**	**23**	**22**	**23**	**23**
BUILDINGS	**72**	**71**	**73**	**76**	**77**	**78**	**84**	**81**	**73**	**77**	**84**	**80**	**85**	**90**	**88**	**85**	**79**	**85**	**85**	**84**	**81**	**86**	**84**	**85**	**86**	**85**	**86**	**88**	**92**	**94**	**88**	**85**	**88**	**83**
Service Industry	**28**	**28**	**29**	**31**	**30**	**32**	**34**	**34**	**32**	**34**	**38**	**38**	**40**	**43**	**43**	**40**	**37**	**38**	**39**	**39**	**38**	**40**	**42**	**42**	**42**	**42**	**45**	**47**	**49**	**50**	**47**	**45**	**46**	**44**
Residential	**44**	**43**	**44**	**46**	**47**	**46**	**50**	**47**	**42**	**43**	**46**	**43**	**45**	**47**	**45**	**45**	**43**	**47**	**47**	**45**	**43**	**45**	**42**	**44**	**44**	**43**	**41**	**41**	**43**	**44**	**41**	**40**	**42**	**38**
AGRICULTURE	**51**	**51**	**53**	**54**	**56**	**59**	**60**	**61**	**61**	**61**	**62**	**62**	**62**	**64**	**65**	**66**	**64**	**64**	**64**	**61**	**61**	**61**	**63**	**65**	**64**	**66**	**67**	**67**	**69**	**69**	**70**	**69**	**70**	**69**
On Farm Fuel Use	**8**	**8**	**8**	**8**	**8**	**9**	**9**	**10**	**9**	**9**	**10**	**9**	**8**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**10**	**11**	**11**	**12**	**12**	**13**	**13**	**14**	**15**	**15**	**14**	**14**	**14**	**14**
Crop Production	**9**	**9**	**9**	**10**	**10**	**10**	**11**	**11**	**11**	**11**	**11**	**10**	**11**	**12**	**11**	**11**	**11**	**12**	**12**	**12**	**13**	**13**	**15**	**16**	**15**	**16**	**16**	**16**	**16**	**17**	**18**	**17**	**19**	**19**
Animal Production	**33**	**34**	**35**	**36**	**37**	**39**	**40**	**40**	**40**	**41**	**42**	**43**	**43**	**43**	**45**	**46**	**45**	**43**	**42**	**40**	**38**	**37**	**38**	**38**	**37**	**37**	**37**	**37**	**38**	**38**	**38**	**38**	**37**	**37**
WASTE	**21**	**21**	**21**	**22**	**22**	**22**	**22**	**22**	**23**	**23**	**23**	**23**	**23**	**24**	**23**	**24**	**24**	**23**	**23**	**22**	**22**	**22**	**22**	**22**	**23**	**23**	**24**	**23**	**23**	**23**	**23**	**23**	**23**	**23**
Solid Waste[a]	**19**	**19**	**19**	**19**	**20**	**20**	**19**	**19**	**20**	**20**	**21**	**20**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**20**	**19**	**19**	**19**	**20**	**20**	**20**	**21**	**21**	**20**	**21**	**20**	**20**	**20**	**20**
Wastewater	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Waste Incineration	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
COAL PRODUCTION	**5**	**5**	**4**	**5**	**5**	**4**	**5**	**5**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**4**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**31**	**29**	**28**	**26**	**26**	**28**	**28**	**29**	**27**	**27**	**28**	**27**	**27**	**27**	**28**	**27**	**26**	**26**	**25**	**21**	**23**	**24**	**24**	**24**	**23**	**23**	**24**	**25**	**25**	**25**	**22**	**23**	**24**	**24**
Light Manufacturing	**21**	**21**	**20**	**18**	**18**	**20**	**20**	**21**	**18**	**18**	**19**	**17**	**17**	**17**	**18**	**17**	**16**	**17**	**16**	**14**	**14**	**15**	**16**	**16**	**15**	**15**	**14**	**14**	**14**	**14**	**13**	**14**	**15**	**15**
Construction	**7**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**7**	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**7**	**7**	**5**	**6**	**7**	**6**	**6**	**6**	**7**	**7**	**8**	**8**	**8**	**7**	**7**	**7**	**7**
Forest Resources	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**2**	**3**	**3**	**2**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0 Indicates emissions of less than 0.5 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A10–3 Relationship between Canadian Economic Sectors and IPCC Sectors, 2023

ECONOMIC CATEGORY	Economic Category Total	National Inventory Category[a]																										
		Energy									Industrial Processes and Product Use							Agriculture				Waste					CO_2 Captured[j,k]	LULUCF[b]
		Energy: Fuel Combustion				Energy: Fugitive			Total	Mineral Products[d]	Chemical Industry[e]	Metal Production[f]	Consumption of Halocarbons, SF_6 and NF_3	Non-Energy Products from Fuels and Solvent Use	Other Product Manufacture and Use	Total	Manure Management	Enteric Fermentation	Agriculture Soils	Total	Landfills	Biological Treatment of Solid Waste	Incineration and Open Burning of Waste	Wastewater Treatment and Discharge	Total		
		Stationary Combustion			Transport	Fugitive (Unintentional)	Flaring	Venting																			
		Stationary	Industrial Cogeneration: Electricity[c]	Industrial Cogeneration: Steam for Sale																							
		Mt CO_2 equivalent																									
	NATIONAL INVENTORY TOTAL[a,b]	**694**	**272**	**26.2**	**0.9**	**195**	**17.8**	**7.5**	**45.5**	**565**	**8.8**	**5.6**	**15.8**	**10.3**	**12.3**	**0.6**	**53.5**	**7.7**	**26.5**	**21.0**	**55.1**	**19.7**	**0.5**	**0.2**	**2.6**	**23.0**	**-3.1**	
	OIL AND GAS	**208**	**108.7**	**17.6**	**0.0**	**15.3**	**14.0**	**7.5**	**45.5**	**208.7**					**1.5**		**1.5**										**-2.3**	
	Upstream Oil and Gas	**190**	**95.2**	**16.7**		**15.2**	**13.1**	**7.3**	**43.0**	**190.4**					**0.4**		**0.4**										**-1.0**	
	Natural Gas Production and Processing	52	26.8	1.2		0.6	4.8	2.3	16.4	52.1					0.1		0.1											
	Conventional Oil Production	38	11.1	0.2		0.6	5.3	3.0	17.8	38.0					0.0		0.0											
	Conventional Light Oil Production	21	3.0			0.3	4.4	2.3	11.2	21.1					0.0		0.0											
	Conventional Heavy Oil Production	16	7.4			0.3	0.9	0.3	6.5	15.5																		
	Frontier Oil Production	1	0.7	0.2		0.0	0.0	0.3	0.0	1.3					0.0		0.0											
	Oil Sands (Mining, In-Situ, Upgrading)[c]	89	57.3	15.2		4.5	2.6	2.0	8.0	89.5					0.3		0.3										-1.0	
	Mining and Extraction	17	6.7	3.4		4.4	2.2	0.2	0.0	17.0					0.3		0.3											
	In-Situ	47	36.2	8.2		0.1	0.3	0.6	1.8	47.1																		
	Upgrading	24	14.4	3.6		0.0	0.1	1.2	6.2	25.5																	-1.0	
	Oil, Natural Gas and CO_2 Transmission	11				9.6	0.4	0.1	0.8	10.8																		
	Downstream Oil and Gas	**18**	**13.5**	**0.9**	**0.0**	**0.1**	**0.9**	**0.3**	**2.5**	**18.3**					**1.1**		**1.1**										**-1.3**	
	Petroleum Refining	17	13.5	0.9	0.0		0.1	0.3	2.5	17.3					1.1		1.1										-1.3	
	Natural Gas Distribution	1				0.1	0.8	0.0	0.0	0.9																		
	ELECTRICITY	**49**	**48.9**		**0.5**		**0.1**			**49.5**						**0.1**	**0.1**										**-0.8**	
	TRANSPORT[g]	**157**				**154.5**	**0.0**			**154.5**				**1.9**	**0.2**		**2.1**											
	Passenger Transport	**94**				**92.8**	**0.0**			**92.8**				**1.1**	**0.1**		**1.2**											
	Cars, Light Trucks and Motorcycles	82				81.2	0.0			81.2				1.0	0.1		1.1											
	Bus, Rail and Aviation	12				11.6	0.0			11.6				0.1	0.0		0.1											
	Freight Transport	**48**				**47.1**	**0.0**			**47.1**				**0.8**	**0.1**		**0.9**											
	Heavy Duty Trucks, Rail	43				42.2	0.0			42.2				0.7	0.1		0.8											
	Aviation and Marine	5				4.9				4.9				0.2	0.0		0.2											
	Other: Recreational, Commercial and Residential	**15**				**14.6**				**14.6**																		
	HEAVY INDUSTRY	**78**	**29.8**	**7.8**	**0.3**	**4.5**	**0.2**			**42.6**	**8.7**	**5.6**	**15.8**	**0.0**	**5.5**		**35.7**											
	Mining	**9**	**4.3**	**0.5**		**4.0**	**0.0**			**8.9**				**0.0**	**0.4**		**0.4**											
	Smelting and Refining (Non-Ferrous Metals)	**10**	**3.1**		**0.0**	**0.1**	**0.0**			**3.2**	**0.0**		**6.3**		**0.9**		**7.2**											
	Pulp and Paper	**8**	**5.6**	**2.0**	**0.1**	**0.1**	**0.0**			**7.7**	**0.0**				**0.0**		**0.1**											
	Iron and Steel	**14**	**4.3**	**0.3**		**0.2**	**0.0**			**4.8**			**9.5**		**0.2**		**9.7**											
	Cement	**11**	**3.5**			**0.0**	**0.0**			**3.6**	**7.3**				**0.0**		**7.3**											
	Lime and Gypsum	**2**	**0.9**			**0.0**	**0.0**			**0.9**	**1.2**				**0.0**		**1.3**											
	Chemicals and Fertilizers	**23**	**8.0**	**5.0**	**0.2**	**0.1**	**0.1**			**13.5**	**0.1**	**5.6**		**0.0**	**4.0**		**9.7**											
	BUILDINGS	**83**	**67.7**	**0.5**	**0.0**		**1.7**			**69.9**				**7.9**	**4.4**	**0.5**	**12.8**											
	Service Industry	**44**	**32.7**	**0.5**	**0.0**		**0.2**			**33.3**				**6.1**	**4.4**	**0.5**	**11.0**											
	Residential	**38**	**35.0**				**1.6**			**36.6**				**1.7**			**1.7**											
	AGRICULTURE	**69**	**3.2**	**0.0**		**10.9**	**0.0**			**14.2**					**0.1**		**0.1**	**7.7**	**26.5**	**21.0**	**55.1**							
	On Farm Fuel Use[h]	**14**	**3.2**	**0.0**		**10.9**	**0.0**			**14.2**					**0.1**		**0.1**											
	Crop Production	**19**																		**18.6**	**18.6**							
	Animal Production	**37**																**7.7**	**26.5**	**2.3**	**36.5**							
	WASTE	**23**												**0.0**			**0.0**					**19.7**	**0.5**	**0.2**	**2.6**	**23.0**		
	Solid Waste[i]	**20**												**0.0**			**0.0**					**19.7**	**0.5**			**20.2**		
	Wastewater	**3**																							**2.6**	**2.6**		
	Waste Incineration	**0**																						**0.2**		**0.2**		
	COAL PRODUCTION	**4**	**0.6**			**1.4**	**1.6**			**3.6**																		
	LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**24**	**13.2**	**0.4**	**0.0**	**8.8**	**0.1**			**22.3**	**0.2**			**0.4**	**0.6**	**0.0**	**1.2**											
	Light Manufacturing	**15**	**11.6**	**0.4**	**0.0**	**1.6**	**0.1**			**13.6**	**0.2**			**0.4**	**0.4**	**0.0**	**1.0**											
	Construction	**7**	**1.5**	**0.0**		**4.9**	**0.0**			**6.5**					**0.0**		**0.0**											
	Forest Resources	**2**	**0.0**			**2.3**				**2.3**					**0.2**		**0.2**											
																												4.2

Notes:

Totals may not add up due to rounding to nearest megatonne (Mt). The estimates for the economic categories may not add up to the national inventory totals by IPCC Sectors due to rounding and statistical differences in the RESD for the IP category of Other & Undifferentiated Production.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.

a. Categorization of emissions is consistent with the IPCC's sectors following the reporting requirement of the UNFCCC.

b. National totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Industrial cogeneration includes emissions associated with the simultaneous production of heat and power. At some facilities, a portion of this power is generated by onsite utility-owned generators. As such, the cogeneration emissions for these specific facilities are included under the Public Electricity and Heat Generation category in the National Inventory (UNFCCC) format.

d. Mineral products includes cement production, lime production and mineral product use.

e. Chemical industry includes the production of ammonia, nitric acid, adipic acid, carbide and petrochemicals.

f. Metal production includes iron and steel production, aluminum production, and SF_6 used in magnesium smelters and casters.

g. Emissions from the consumption of propane and natural gas in Transportation are allocated to Cars, Light Trucks and Buses

h. On Farm Fuel Use includes emissions associated with the use of lube oils and greases.

i. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

j. Some facilities capture CO_2 emissions. This is displayed as a negative quantity, as it is computed as an emission reduction at the source. Though the CO_2 has been captured, this does not imply permanent storage; some portion may be subsequently re-emitted (for instance, as fugitive releases) in another activity – in such cases, the re-emissions are reported in the economic sectors where they occur.

k. Some ammonia production facilities engage in the capture of CO_2 emissions. These emissions have been subtracted directly in the Ammonia Production category, as per the 2006 IPCC Guidelines. Therefore, the CO_2 Captured column does not include recovered and/or captured CO_2 emissions in the Ammonia Production category.

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

PROVINCIAL AND TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2023

This annex contains summary tables (Table A11–2 to Table A11–28) illustrating greenhouse gas (GHG) emissions by province and territory and year for each IPCC sector.

To account for the creation of Nunavut in 1999, separate time-series are provided from 1999 onwards for both the Northwest Territories and Nunavut (Table A11–24 and Table A11–26); emissions for the years 1990–1998 are presented as a combined region in Table A11–28.

Provincial and territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

Although the Modalities, procedures, and guidelines (MPGs) only require reporting national-level information, provincial and territorial information is important, owing to differences in regional emission levels and trends. Note that provincial and territorial emission estimates may not necessarily sum to the national totals due to rounding.

Several Canadian provinces develop independent inventories of provincial GHG emissions, in some cases making use of alternate methodologies, data inputs and/or inclusions/omissions of GHG source categories. While Canada is developing a national emission inventory consistent with IPCC guidelines and international obligations, provincial governments may elect to develop an inventory structure in accordance with specific provincial needs. Environment and Climate Change Canada encourages collaboration with provinces and territories for quality assurance and continuous improvement of this annual National Inventory Report.

Provincial and territorial GHG emission tables are also available in electronic file format online at https://open.canada.ca.

The GHG inventory team is considering removing the Emissions Tables (Annex 9 to Annex 12) in future editions of the NIR. They would be available in their entirety on the Government of Canada's Open Data webpage only. For any questions or concerns, please contact GES-GHG@ec.gc.ca.

Table A11–1 **GHG Source and Sink Category Description**

GHG Source and Sink Categories	
ENERGY	
a. Stationary Combustion Sources	
Public Electricity and Heat Production	Emissions from fuel consumed by utility electricity generation and steam production (for sale).
Petroleum Refining Industries	Emissions from fuel consumed by petroleum refining industries.
Oil and Gas Extraction	Emissions from fuel consumed by oil and gas extraction industries.
Mining	Emissions from fuel consumed by: – metal and non-metal mines, coal mines, stone quarries, and gravel pits – mineral exploration and contract drilling operations
Manufacturing Industries	Emissions from fuel consumed by the following industries: – iron and steel (steel foundries, casting and rolling mills) – non-ferrous metals (aluminium, magnesium and other production) – chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing) – pulp and paper (primarily pulp, paper, and paper product manufacturers) – cement and other non-metallic mineral production – other manufacturing industries not listed (such as automobile manufacturing, textiles, food and beverage industries)
Construction	Emissions from fuels consumed by the construction industry (buildings, highways etc.)
Commercial and Institutional	Emissions from fuel consumed by: – service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.) – federal, provincial and municipal establishments – national Defence and Canadian Coast Guard – train stations, airports and warehouses
Residential	Emissions from fuel consumed for personal residences (homes, apartment hotels, condominiums and farm houses).
Agriculture and Forestry	Emissions from fuel consumed by: – forestry and logging service industry – agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing and repair)
b. Transport	Emissions resulting from the:
Aviation	– consumption of fossil fuels by civilian aircraft flying domestically and all military aircraft operations with Canadian purchased fuel
Domestic Aviation (Civil)	– consumption of fossil fuels by civilian aircraft flying domestically with Canadian purchased fuel
Military	– consumption of fossil fuels by military aircraft operations with Canadian purchased fuel
Road Transportation	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by vehicles licensed to operate on roads
Light-Duty Gasoline Vehicles	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by passenger cars
Light-Duty Gasoline Trucks	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by trucks, vans and SUVs with a Gross Vehicle Weight Rating (GVWR) less than 3856 kg
Heavy-Duty Gasoline Vehicles	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by trucks, vans and SUVs with a GVWR greater than or equal to 3856 kg
Motorcycles	– consumption of motor gasoline (excluding the biogenic CO_2 emissions from ethanol) by motorcycles that are licensed to operate on roads
Light-Duty Diesel Vehicles	– consumption of diesel fuel oil (excluding the biogenic CO_2 emissions from biodiesel) by passenger cars licensed to operate on roads
Light-Duty Diesel Trucks	– consumption of diesel fuel oil (excluding the biogenic CO_2 emissions from biodiesel) by trucks, vans and SUVs with a GVWR less than 3856 kg
Heavy-Duty Diesel Vehicles	– consumption of diesel fuel oil (excluding the biogenic CO_2 emissions from biodiesel) by trucks, vans and SUVs with a GVWR greater than or equal to 3856 kg
Propane and Natural Gas Vehicles	– consumption of propane and natural gas by vehicles that are licensed to operate on roads

Table A11–1 **GHG Source and Sink Category Description** (cont'd)

GHG Source and Sink Categories	
ENERGY (cont'd)	
Railways	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by Canadian railways
Marine	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by marine vessels navigating between Canadian ports (inclusive of all fishing and military operations)
Domestic Navigation	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by marine vessels navigating between Canadian ports
Fishing	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by fishing vessels operating in Canadian waters
Military Water-Borne Navigation	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by military vessels operating in Canadian waters
Others – Off-Road	– consumption of fuels (excluding the biogenic CO_2 emissions from ethanol and biodiesel) by mobile combustion devices not licensed to operate on roads
Others – Pipeline Transport	– transportation and distribution of crude oil, natural gas, refined petroleum and other products
c. Fugitive Sources	Intentional and unintentional releases of greenhouse gases from the following activities:
Coal Mining	– underground and surface mining, abandoned underground coal mines
Oil and Natural Gas	– conventional and unconventional oil and gas exploration, production, transportation and distribution
Oil	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of crude oil
Natural Gas	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of natural gas (includes post-meter fugitive emissions from residential and commercial natural gas appliances, natural gas vehicles and industrial facilities)
Venting	– intentional releases of greenhouse gases at oil and natural gas facilities
Flaring	– routine or emergency disposal of waste gas through combustion in an open flame or incinerator at oil and natural gas facilities
d. CO_2 Transport and Storage	Intentional and unintentional releases of greenhouse gases from the transport and storage of carbon dioxide
INDUSTRIAL PROCESSES AND PRODUCT USE	Emissions resulting from the following process activities:
a. Mineral Products	– cement production, lime production, and mineral product use (which includes glass production, other uses of soda ash, magnesite use, and other limestone and dolomite use)
b. Chemical Industry	– production of ammonia, nitric acid, adipic acid, carbide and petrochemicals (petrochemical production includes production of carbon black, ethylene, ethylene dichloride, ethylene oxide, methanol, styrene and other uses of urea)
c. Metal Production	– aluminum production, iron and steel production, and magnesium production and casting
d. Production and Consumption of Halocarbons, SF_6 and NF_3	– by-product production of HFC-23; use of HFCs and/or PFCs in air conditioning units, refrigeration units, fire extinguishers, aerosol cans, solvents, foam blowing, semiconductor manufacturing and electronics industry, and use of SF_6 and NF_3 in semiconductor manufacturing
e. Non-Energy Products from Fuels and Solvent Use	– non-energy use of fossil fuels (including solvents and lubricants) that are not accounted for elsewhere under the Industrial Processes and Product Use Sector and the use of urea in selective catalytic reduction (SCR) equipped vehicles
f. Other Product Manufacture and Use	– use of N_2O as an anaesthetic and propellant; use of SF_6 in electrical equipment; and PFCs in other contained product uses as a dielectric coolant or as an electric insulator
AGRICULTURE	Emissions resulting from:
a. Enteric Fermentation	– eructation of CH_4 during the digestion of plant material by (mainly) ruminants
b. Manure Management	– release of CH_4 and N_2O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens
	– indirect N_2O emissions from volatilization and leaching of nitrogen from animal manure during storage
c. Agricultural Soils	
Direct sources	– direct N_2O emissions from inorganic nitrogen fertilizers, manure and biosolids applied on cropland, pasture range and paddock, crop residue, loss of soil organic carbon, tillage, irrigation and cultivation of organic soils
Indirect Sources	– indirect N_2O emissions from volatilization and leaching of animal manure and biosolid nitrogen, inorganic nitrogen fertilizer and crop residue nitrogen
d. Field Burning of Agricultural Residues	– CH_4 and N_2O emissions from crop residue burning
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	– direct emissions of CO_2 from the application of lime, urea and other fertilizers containing carbon
WASTE	Emissions resulting from:
a. Landfills	– disposal of waste in landfills
Municipal Solid Waste Landfills	– disposal of municipal solid waste and sewage sludge in landfills
Industrial Wood Waste Landfills	– dedicated wood waste landfills
b. Biological Treatment of Solid Waste	– composting and anaerobic digestion of municipal and industrial facilities including municipal solid waste, biosolids, manures and/or yard wastes that are brought on-site
c. Incineration and Open Burning of Waste	– municipal solid, hazardous and clinical waste, and sewage sludge incineration
d. Wastewater Treatment and Discharge	– municipal and industrial wastewater treatment
Municipal wastewater treatment and discharge	– emissions from treatment of wastewater at municipal treatment plants and from discharge of effluents
Industrial wastewater treatment and discharge	– emissions from treatment of wastewater at industrial sites with on-site wastewater treatment and from discharge of effluents
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. Forest Land	– managed forests and lands converted to forests; reports emissions and removals from forest growth and anthropogenic disturbances related to forest management but tracks separately emissions and removals from fire and most insect disturbances
b. Cropland	– management practices on lands in annual and perennial crops (forage, specialty crops, orchards); soil organic carbon (SOC) impacted by crop productivity changes and manure application; immediate and residual emissions from lands converted to cropland
c. Grassland	– managed agricultural grassland
d. Wetlands	– peatlands disturbed for peat extraction, or land flooded from hydro reservoir development
e. Settlements	– forest and grassland converted to built-up land (settlements, transport infrastructure, oil & gas infrastructure, mining, etc); urban tree growth
f. Harvested Wood Products	– use and disposal of harvested wood products manufactured from wood coming from forest harvest, forest conversion and firewood collection activities in Canada

Table A11–2 GHG Emission Summary for Newfoundland and Labrador, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**9 480**	**10 300**	**10 700**	**10 800**	**8 600**	**7 980**	**8 060**	**7 920**
ENERGY	**8 730**	**9 420**	**9 750**	**9 950**	**7 690**	**7 110**	**7 200**	**7 070**
a. Stationary Combustion Sources	**5 440**	**4 590**	**4 580**	**4 880**	**3 670**	**3 170**	**3 200**	**2 950**
Public Electricity and Heat Production	1 640	822	1 130	1 140	951	646	685	680
Petroleum Refining Industries	1 030	900	847	931	162	37	27	17
Oil and Gas Extraction	-	713	1 060	1 120	1 060	984	998	880
Mining	1 160	1 130	698	849	722	864	822	725
Manufacturing Industries	506	276	82	50	81	73	89	75
Construction	33	24	7	6	6	5	9	12
Commercial and Institutional	320	358	316	352	312	282	314	317
Residential	726	361	440	420	369	277	249	228
Agriculture and Forestry	25	8	7	9	9	6	11	16
b. Transport[b]	**3 250**	**3 950**	**4 380**	**4 370**	**3 540**	**3 590**	**3 740**	**3 760**
Aviation	238	339	289	281	153	175	246	267
Road Transportation	1 500	1 760	2 400	2 330	2 060	2 050	2 080	2 000
Light-Duty Gasoline Vehicles	620	577	542	493	436	453	448	404
Light-Duty Gasoline Trucks	546	638	1 170	1 130	1 080	1 120	1 160	1 110
Heavy-Duty Gasoline Vehicles	167	69	91	86	84	75	76	73
Motorcycles	3	6	23	21	18	16	17	16
Light-Duty Diesel Vehicles	1	3	3	3	2	2	2	2
Light-Duty Diesel Trucks	3	7	10	12	9	10	11	11
Heavy-Duty Diesel Vehicles	155	459	554	587	429	378	370	377
Propane and Natural Gas Vehicles	0.83	-	0.01	0.01	0.00	0.00	0.00	0.00
Railways	87	59	68	94	65	72	83	105
Marine	744	911	591	622	569	537	573	616
Other Transportation	681	882	1 040	1 050	700	757	756	770
Off-Road Agriculture and Forestry	96	68	81	83	52	58	59	59
Off-Road Commercial and Institutional	50	45	68	70	47	57	55	58
Off-Road Manufacturing, Mining and Construction	452	593	713	721	451	501	502	519
Off-Road Residential	6	25	25	24	23	18	19	17
Off-Road Other Transportation	77	150	153	147	127	123	121	117
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**41**	**880**	**780**	**700**	**470**	**340**	**260**	**370**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	880	785	702	474	340	259	368
Oil	5	13	12	12	8	6	6	5
Natural Gas	0.00	0.04	0.15	0.16	0.05	0.05	0.04	0.05
Venting	25	95	88	100	53	36	32	28
Flaring	11	772	685	590	413	298	221	335
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**98**	**154**	**241**	**213**	**228**	**218**	**198**	**196**
a. Mineral Products	**65**	**1**	**0.26**	**0.26**	**0.21**	**0.22**	**0.24**	**0.22**
Cement Production	61	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	1	0.26	0.25	0.21	0.22	0.24	0.22
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**80**	**180**	**180**	**180**	**160**	**160**	**160**
e. Non-Energy Products from Fuels and Solvent Use[c]	**29**	**67**	**56**	**28**	**42**	**44**	**28**	**27**
f. Other Product Manufacture and Use	**4**	**6**	**9**	**8**	**10**	**10**	**10**	**13**
AGRICULTURE	**51**	**64**	**81**	**82**	**81**	**80**	**79**	**82**
a. Enteric Fermentation	**26**	**35**	**35**	**36**	**36**	**35**	**34**	**36**
b. Manure Management	**17**	**20**	**26**	**26**	**26**	**25**	**25**	**26**
c. Agricultural Soils	**6**	**9**	**9**	**9**	**8**	**8**	**8**	**8**
Direct Sources	4	6	6	6	5	5	5	5
Indirect Sources	2	3	3	3	3	3	3	3
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**3**	**-**	**11**	**11**	**11**	**11**	**11**	**11**
WASTE	**600**	**630**	**610**	**600**	**600**	**580**	**580**	**570**
a. Landfills	**500**	**600**	**600**	**600**	**600**	**500**	**500**	**500**
Municipal Solid Waste Landfills	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.10**	**0.10**	**0.10**	**0.30**	**0.30**	**0.30**
c. Incineration and Open Burning of Waste	**30**	**10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
d. Wastewater Treatment and Discharge	**32**	**28**	**31**	**30**	**29**	**29**	**29**	**30**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**4 300**	**180**	**440**	**320**	**260**	**47**	**-67**	**450**
a. Forest Land	**5 300**	**580**	**80**	**-140**	**-170**	**-340**	**-480**	**61**
b. Cropland	**25**	**36**	**34**	**33**	**33**	**34**	**33**	**33**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**31**	**19**	**29**	**96**	**82**	**73**	**66**	**61**
e. Settlements	**150**	**120**	**360**	**350**	**340**	**320**	**320**	**310**
f. Harvested Wood Products[e]	**-1 200**	**-570**	**-59**	**-12**	**-31**	**-45**	**-6**	**-14**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

Table A11–3 2023 GHG Emission Summary for Newfoundland and Labrador

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**6 940**	**26**	**720**	**0.36**	**94**	**160**	**0.09**	**6**	**-**	**7 920**
ENERGY	**6 910**	**4**	**110**	**0.20**	**60**	**-**	**-**	**-**	**-**	**7 070**
a. Stationary Combustion Sources	**2 900**	**1**	**30**	**0.06**	**20**	**-**	**-**	**-**	**-**	**2 950**
Public Electricity and Heat Production	676	0.01	0.29	0.01	3	-	-	-	-	680
Petroleum Refining Industries	16	0.00	0.01	0.00	0.30	-	-	-	-	17
Oil and Gas Extraction	869	0.20	5	0.02	6	-	-	-	-	880
Mining	722	0.02	0.50	0.01	2	-	-	-	-	725
Manufacturing Industries	75	0.00	0.01	0.00	0.30	-	-	-	-	75
Construction	12	0.00	0.00	0.00	0.04	-	-	-	-	12
Commercial and Institutional	315	0.00	0.09	0.01	1	-	-	-	-	317
Residential	200	0.90	30	0.01	3	-	-	-	-	228
Agriculture and Forestry	15	0.00	0.00	0.00	0.05	-	-	-	-	16
b. Transport[b]	**3 700**	**0.50**	**14**	**0.15**	**40**	**-**	**-**	**-**	**-**	**3 760**
Aviation	265	0.00	0.08	0.01	2	-	-	-	-	267
Road Transportation	1 980	0.10	3	0.05	12	-	-	-	-	2 000
Light-Duty Gasoline Vehicles	402	0.02	0.70	0.01	1	-	-	-	-	404
Light-Duty Gasoline Trucks	1 110	0.06	2	0.01	4	-	-	-	-	1 110
Heavy-Duty Gasoline Vehicles	71	0.00	0.06	0.01	2	-	-	-	-	73
Motorcycles	16	0.01	0.20	0.00	0.08	-	-	-	-	16
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.04	-	-	-	-	2
Light-Duty Diesel Trucks	11	0.00	0.01	0.00	0.24	-	-	-	-	11
Heavy-Duty Diesel Vehicles	371	0.02	0.40	0.02	6	-	-	-	-	377
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	96	0.01	0.10	0.04	10	-	-	-	-	105
Marine	610	0.06	2	0.02	4	-	-	-	-	616
Other Transportation	749	0.33	9	0.04	10	-	-	-	-	770
Off-Road Agriculture and Forestry	58	0.00	0.05	0.01	1	-	-	-	-	59
Off-Road Commercial and Institutional	57	0.03	0.84	0.00	0.60	-	-	-	-	58
Off-Road Manufacturing, Mining and Construction	509	0.03	0.79	0.03	9	-	-	-	-	519
Off-Road Residential	16	0.04	1	0.00	0.10	-	-	-	-	17
Off-Road Other Transportation	109	0.23	6	0.00	0.80	-	-	-	-	117
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**300**	**2**	**64**	**0.00**	**0.15**	**-**	**-**	**-**	**-**	**370**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	300	2	64	0.00	0.10	-	-	-	-	368
Oil	0.03	0.18	5	-	-	-	-	-	-	5
Natural Gas	0.00	0.00	0.05	-	-	-	-	-	-	0.05
Venting	0.09	1.00	28	-	-	-	-	-	-	28
Flaring	304	1	31	0.00	0.10	-	-	-	-	335
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**27**	**-**	**-**	**0.03**	**7**	**160**	**0.09**	**6**	**-**	**196**
a. Mineral Products	**0.22**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.22**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.22	-	-	-	-	-	-	-	-	0.22
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**160**	**0.07**	**-**	**-**	**160**
e. Non-Energy Products from Fuels and Solvent Use[c]	**27**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**27**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.03**	**7**	**-**	**0.01**	**6**	**-**	**13**
AGRICULTURE	**11**	**2**	**50**	**0.08**	**21**	**-**	**-**	**-**	**-**	**82**
a. Enteric Fermentation	**-**	**1**	**36**	**-**	**-**	**-**	**-**	**-**	**-**	**36**
b. Manure Management	**-**	**0.48**	**13**	**0.05**	**10**	**-**	**-**	**-**	**-**	**26**
c. Agricultural Soils	**-**	**-**	**-**	**0.03**	**8**	**-**	**-**	**-**	**-**	**8**
Direct Sources	-	-	-	0.02	5	-	-	-	-	5
Indirect Sources	-	-	-	0.01	3	-	-	-	-	3
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**11**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11**
WASTE	**-**	**20**	**560**	**0.04**	**10**	**-**	**-**	**-**	**-**	**570**
a. Landfills	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**
Municipal Solid Waste Landfills	-	-	1 000	-	-	-	-	-	-	1 000
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.10**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.30**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
d. Wastewater Treatment and Discharge	**-**	**0.70**	**20**	**0.04**	**9**	**-**	**-**	**-**	**-**	**30**
Municipal Wastewater Treatment and Discharge	-	1	-	-	10	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	1	-	1	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**440**	**0.21**	**6**	**0.00**	**1**	**-**	**-**	**-**	**-**	**450**
a. Forest Land	**61**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**61**
b. Cropland	**32**	**0.01**	**0.22**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**33**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**61**	**0.00**	**0.12**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**61**
e. Settlements	**300**	**0.19**	**5**	**0.00**	**1**	**-**	**-**	**-**	**-**	**310**
f. Harvested Wood Products[e]	**-14**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-14**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year. Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

Table A11–4 GHG Emission Summary for Prince Edward Island, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**1 790**	**1 900**	**1 590**	**1 630**	**1 590**	**1 630**	**1 610**	**1 590**
ENERGY	**1 410**	**1 450**	**1 180**	**1 200**	**1 150**	**1 160**	**1 170**	**1 180**
a. Stationary Combustion Sources	**760**	**646**	**349**	**375**	**429**	**409**	**401**	**382**
Public Electricity and Heat Production	104	6	3	1	0.28	2	1	4
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	0.89	x	x	x	x	x	x	x
Manufacturing Industries	55	145	60	82	144	138	123	130
Construction	11	x	x	x	x	x	x	x
Commercial and Institutional	202	152	61	55	65	66	69	66
Residential	369	309	212	222	204	184	191	169
Agriculture and Forestry	19	24	12	13	12	16	13	11
b. Transport[b]	**651**	**802**	**829**	**824**	**720**	**751**	**766**	**796**
Aviation	17	13	24	25	9	11	26	30
Road Transportation	416	571	587	581	527	562	546	562
Light-Duty Gasoline Vehicles	217	235	178	175	153	166	160	160
Light-Duty Gasoline Trucks	132	236	273	280	262	286	286	304
Heavy-Duty Gasoline Vehicles	43	27	22	22	21	19	19	20
Motorcycles	0.78	2	6	6	5	4	5	5
Light-Duty Diesel Vehicles	0.29	0.91	0.78	0.69	0.51	0.57	0.45	0.38
Light-Duty Diesel Trucks	0.43	1	1	1	1	2	1	1
Heavy-Duty Diesel Vehicles	22	69	107	96	84	84	75	71
Propane and Natural Gas Vehicles	0.71	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	38	53	67	64	25	25	48	71
Other Transportation	180	164	150	154	159	153	147	133
Off-Road Agriculture and Forestry	52	45	55	56	60	59	55	49
Off-Road Commercial and Institutional	35	15	14	15	16	17	16	15
Off-Road Manufacturing, Mining and Construction	64	53	46	47	49	48	44	39
Off-Road Residential	2	9	6	6	6	5	5	5
Off-Road Other Transportation	27	42	28	30	29	25	26	25
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**0.00**	**0.00**	**0.22**	**0.32**	**0.61**	**0.65**	**0.54**	**0.58**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.00	0.22	0.32	0.61	0.65	0.54	0.58
Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	-	0.22	0.32	0.61	0.65	0.54	0.58
Venting	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6**	**26**	**53**	**53**	**53**	**51**	**51**	**51**
a. Mineral Products	**0.18**	**0.94**	**0.37**	**0.41**	**0.47**	**0.47**	**0.56**	**0.64**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.18	0.94	0.37	0.41	0.47	0.47	0.56	0.64
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**23**	**51**	**50**	**49**	**48**	**47**	**47**
e. Non-Energy Products from Fuels and Solvent Use[c]	**5**	**2**	**0.23**	**0.20**	**0.84**	**1**	**1**	**1**
f. Other Product Manufacture and Use	**0.74**	**1**	**2**	**2**	**2**	**2**	**2**	**3**
AGRICULTURE	**300**	**330**	**280**	**290**	**290**	**310**	**310**	**290**
a. Enteric Fermentation	**160**	**150**	**120**	**130**	**120**	**120**	**120**	**110**
b. Manure Management	**47**	**51**	**38**	**39**	**38**	**38**	**37**	**36**
c. Agricultural Soils	**85**	**120**	**120**	**120**	**130**	**140**	**150**	**130**
Direct Sources	55	83	84	82	89	98	110	92
Indirect Sources	30	40	40	40	40	40	50	40
d. Field Burning of Agricultural Residues	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.10**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**5**	**5**	**2**	**4**	**7**	**7**	**7**	**9**
WASTE	**73**	**91**	**75**	**93**	**89**	**110**	**73**	**74**
a. Landfills	**60**	**80**	**50**	**50**	**50**	**50**	**50**	**50**
Municipal Solid Waste Landfills	100	100	100	100	100	100	100	100
Industrial Wood Waste Landfills	0.10	0.10	0.10	0.10	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**3**	**6**	**6**	**6**	**6**	**6**	**6**
c. Incineration and Open Burning of Waste	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
d. Wastewater Treatment and Discharge	**11**	**13**	**15**	**35**	**32**	**50**	**13**	**13**
Municipal Wastewater Treatment and Discharge	10	10	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-66**	**-110**	**-520**	**-520**	**-540**	**-550**	**-550**	**-590**
a. Forest Land	**-22**	**-74**	**-630**	**-610**	**-640**	**-650**	**-670**	**-680**
b. Cropland	**85**	**84**	**79**	**63**	**73**	**84**	**77**	**46**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**4**	**19**	**25**	**25**	**25**	**25**	**25**	**25**
e. Settlements	**11**	**1**	**-7**	**-7**	**-6**	**-7**	**-7**	**-7**
f. Harvested Wood Products[e]	**-150**	**-140**	**12**	**8**	**11**	**-3**	**24**	**21**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–5 2023 GHG Emission Summary for Prince Edward Island

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**1 160**	**8**	**210**	**0.64**	**170**	**47**	**0.06**	**0.20**	**-**	**1 590**
ENERGY	**1 150**	**0.62**	**17**	**0.03**	**9**	**-**	**-**	**-**	**-**	**1 180**
a. Stationary Combustion Sources	**366**	**0.50**	**10**	**0.01**	**3**	**-**	**-**	**-**	**-**	**382**
Public Electricity and Heat Production	4	0.00	0.01	0.00	0.01	-	-	-	-	4
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	130	0.00	0.07	0.00	0.60	-	-	-	-	130
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	65	0.01	0.30	0.00	0.70	-	-	-	-	66
Residential	154	0.50	10	0.01	1	-	-	-	-	169
Agriculture and Forestry	11	0.00	0.00	0.00	0.04	-	-	-	-	11
b. Transport[b]	**787**	**0.13**	**4**	**0.02**	**6**	**-**	**-**	**-**	**-**	**796**
Aviation	30	0.00	0.01	0.00	0.20	-	-	-	-	30
Road Transportation	558	0.03	0.90	0.01	4	-	-	-	-	562
Light-Duty Gasoline Vehicles	159	0.01	0.30	0.00	0.78	-	-	-	-	160
Light-Duty Gasoline Trucks	302	0.02	0.50	0.01	2	-	-	-	-	304
Heavy-Duty Gasoline Vehicles	20	0.00	0.02	0.00	0.43	-	-	-	-	20
Motorcycles	5	0.00	0.05	0.00	0.03	-	-	-	-	5
Light-Duty Diesel Vehicles	0.38	0.00	0.00	0.00	0.01	-	-	-	-	0.38
Light-Duty Diesel Trucks	1	0.00	0.00	0.00	0.03	-	-	-	-	1
Heavy-Duty Diesel Vehicles	70	0.00	0.08	0.00	1	-	-	-	-	71
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	70	0.01	0.18	0.00	0.50	-	-	-	-	71
Other Transportation	129	0.09	3	0.01	2	-	-	-	-	133
Off-Road Agriculture and Forestry	49	0.00	0.04	0.00	0.70	-	-	-	-	49
Off-Road Commercial and Institutional	14	0.01	0.31	0.00	0.10	-	-	-	-	15
Off-Road Manufacturing, Mining and Construction	38	0.00	0.11	0.00	0.60	-	-	-	-	39
Off-Road Residential	4	0.01	0.34	0.00	0.03	-	-	-	-	5
Off-Road Other Transportation	24	0.06	2	0.00	0.10	-	-	-	-	25
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**0.02**	**0.58**	**-**	**-**	**-**	**-**	**-**	**-**	**0.58**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.02	0.58	-	-	-	-	-	-	0.58
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	-	0.02	0.58	-	-	-	-	-	-	0.58
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.01**	**2**	**47**	**0.06**	**0.20**	**-**	**51**
a. Mineral Products	**0.64**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.64**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.64	-	-	-	-	-	-	-	-	0.64
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**47**	**0.03**	**-**	**-**	**47**
e. Non-Energy Products from Fuels and Solvent Use[c]	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.01**	**2**	**-**	**0.03**	**0.20**	**-**	**3**
AGRICULTURE	**9**	**5**	**130**	**0.57**	**150**	**-**	**-**	**-**	**-**	**290**
a. Enteric Fermentation	**-**	**4**	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
b. Manure Management	**-**	**0.67**	**19**	**0.06**	**20**	**-**	**-**	**-**	**-**	**36**
c. Agricultural Soils	**-**	**-**	**-**	**0.50**	**130**	**-**	**-**	**-**	**-**	**130**
Direct Sources	-	-	-	0.35	92	-	-	-	-	92
Indirect Sources	-	-	-	0.20	40	-	-	-	-	40
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.10**	**0.00**	**0.02**	**-**	**-**	**-**	**-**	**0.10**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9**
WASTE	**-**	**2**	**65**	**0.03**	**8**	**-**	**-**	**-**	**-**	**74**
a. Landfills	**-**	**2**	**50**	**-**	**-**	**-**	**-**	**-**	**-**	**50**
Municipal Solid Waste Landfills	-	-	100	-	-	-	-	-	-	100
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.20**	**5**	**0.00**	**0.90**	**-**	**-**	**-**	**-**	**6**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
d. Wastewater Treatment and Discharge	**-**	**0.20**	**6**	**0.03**	**7**	**-**	**-**	**-**	**-**	**13**
Municipal Wastewater Treatment and Discharge	-	-	10	-	10	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	0.01	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-590**	**0.03**	**0.83**	**0.00**	**0.37**	**-**	**-**	**-**	**-**	**-590**
a. Forest Land	**-680**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-680**
b. Cropland	**45**	**0.02**	**0.48**	**0.00**	**0.28**	**-**	**-**	**-**	**-**	**46**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**25**	**0.01**	**0.32**	**0.00**	**0.07**	**-**	**-**	**-**	**-**	**25**
e. Settlements	**-7**	**0.00**	**0.04**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**-7**
f. Harvested Wood Products[e]	**21**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**21**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year. Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

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Table A11–6 GHG Emission Summary for Nova Scotia, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**19 600**	**22 000**	**16 500**	**15 800**	**14 400**	**14 200**	**14 300**	**13 500**
ENERGY	**18 000**	**20 500**	**15 200**	**14 500**	**13 000**	**12 900**	**12 900**	**12 100**
a. Stationary Combustion Sources	**11 400**	**14 600**	**9 400**	**8 870**	**8 290**	**7 990**	**7 810**	**6 660**
Public Electricity and Heat Production	6 870	10 000	6 970	6 670	6 280	6 040	5 780	4 810
Petroleum Refining Industries	617	880	x	x	x	x	x	x
Oil and Gas Extraction	46	303	185	-	-	-	-	-
Mining	39	38	4	4	4	4	4	4
Manufacturing Industries	774	553	345	303	226	262	251	259
Construction	50	x	x	x	x	x	x	x
Commercial and Institutional	808	x	566	571	553	565	609	607
Residential	2 110	1 330	1 290	1 290	1 200	1 090	1 130	945
Agriculture and Forestry	104	96	33	27	25	23	26	24
b. Transport[b]	**4 750**	**5 660**	**5 580**	**5 390**	**4 570**	**4 820**	**5 030**	**5 260**
Aviation	299	277	302	295	127	137	252	275
Road Transportation	3 010	3 600	3 990	3 900	3 430	3 650	3 710	3 830
Light-Duty Gasoline Vehicles	1 390	1 330	1 190	1 140	936	1 000	995	1 020
Light-Duty Gasoline Trucks	856	1 230	1 650	1 660	1 520	1 620	1 690	1 840
Heavy-Duty Gasoline Vehicles	311	132	130	130	119	106	110	120
Motorcycles	8	12	30	30	21	20	21	22
Light-Duty Diesel Vehicles	11	36	22	21	18	21	18	15
Light-Duty Diesel Trucks	23	18	18	18	15	22	22	20
Heavy-Duty Diesel Vehicles	407	844	945	899	803	863	848	791
Propane and Natural Gas Vehicles	3	-	3	4	5	5	5	4
Railways	58	63	43	35	26	29	32	37
Marine	482	568	387	353	279	279	330	404
Other Transportation	903	1 150	862	803	710	727	706	717
Off-Road Agriculture and Forestry	185	154	106	96	85	91	87	87
Off-Road Commercial and Institutional	123	105	121	115	101	112	111	114
Off-Road Manufacturing, Mining and Construction	468	592	388	351	307	331	311	314
Off-Road Residential	14	43	x	40	37	29	30	31
Off-Road Other Transportation	113	222	206	200	179	162	167	170
Pipeline Transport	-	34	x	1	1	1	0.99	0.99
c. Fugitive Sources	**1 800**	**250**	**210**	**200**	**140**	**53**	**63**	**220**
Coal Mining	2 000	100	200	200	100	40	50	200
Oil and Natural Gas	50	137	27	12	14	13	13	14
Oil	7	4	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	16	11	12	13	13	13	14
Venting	30	85	8	0.02	0.04	0.02	0.02	0.02
Flaring	13	33	7	-	-	-	-	0.02
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**336**	**491**	**474**	**438**	**468**	**454**	**458**	**471**
a. Mineral Products	**191**	**251**	**118**	**99**	**104**	**112**	**106**	**120**
Cement Production	183	246	x	x	x	x	x	x
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8	5	x	x	x	x	x	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**130**	**300**	**290**	**290**	**280**	**270**	**270**
e. Non-Energy Products from Fuels and Solvent Use[c]	**120**	**69**	**20**	**26**	**58**	**46**	**60**	**60**
f. Other Product Manufacture and Use	**29**	**40**	**38**	**18**	**17**	**19**	**19**	**21**
AGRICULTURE	**430**	**410**	**350**	**340**	**340**	**340**	**340**	**330**
a. Enteric Fermentation	**260**	**240**	**190**	**180**	**180**	**180**	**180**	**180**
b. Manure Management	**82**	**100**	**90**	**84**	**86**	**82**	**81**	**80**
c. Agricultural Soils	**53**	**54**	**57**	**56**	**60**	**61**	**61**	**57**
Direct Sources	30	30	37	37	40	41	41	38
Indirect Sources	20	20	20	20	20	20	20	20
d. Field Burning of Agricultural Residues	**0.06**	**0.20**	**0.06**	**0.06**	**0.10**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**38**	**13**	**12**	**14**	**16**	**16**	**17**	**18**
WASTE	**800**	**630**	**530**	**550**	**570**	**580**	**590**	**600**
a. Landfills	**700**	**500**	**400**	**500**	**500**	**500**	**500**	**500**
Municipal Solid Waste Landfills	1 000	1 000	-	-	-	-	-	-
Industrial Wood Waste Landfills	10	-	10	10	10	10	10	10
b. Biological Treatment of Solid Waste	**0.70**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**56**	**58**	**67**	**69**	**69**	**69**	**71**	**73**
Municipal Wastewater Treatment and Discharge	100	100	100	100	100	100	100	100
Industrial Wastewater Treatment and Discharge	-	-	10	10	10	10	10	10
LAND USE, LAND-USE CHANGE AND FORESTRY	**-2 900**	**570**	**-520**	**-630**	**-470**	**-650**	**-1 200**	**-1 100**
a. Forest Land	**-870**	**2 500**	**-330**	**-480**	**-870**	**-900**	**-1 600**	**-1 500**
b. Cropland	**170**	**130**	**150**	**160**	**170**	**160**	**170**	**180**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**10**	**15**	**15**	**15**	**15**	**14**	**14**	**14**
e. Settlements	**84**	**28**	**29**	**32**	**28**	**28**	**25**	**31**
f. Harvested Wood Products[e]	**-2 300**	**-2 100**	**-370**	**-360**	**190**	**41**	**200**	**150**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–7 2023 GHG Emission Summary for Nova Scotia

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**11 900**	**39**	**1 100**	**0.84**	**220**	**270**	**0.32**	**8**	**-**	**13 500**
ENERGY	**11 800**	**11**	**310**	**0.30**	**80**	**-**	**-**	**-**	**-**	**12 100**
a. Stationary Combustion Sources	**6 560**	**2**	**60**	**0.10**	**30**	**-**	**-**	**-**	**-**	**6 660**
Public Electricity and Heat Production	4 780	0.32	9	0.07	20	-	-	-	-	4 810
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	4	0.00	0.00	0.00	0.03	-	-	-	-	4
Manufacturing Industries	254	0.03	0.71	0.02	4	-	-	-	-	259
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	603	0.01	0.28	0.01	4	-	-	-	-	607
Residential	884	2	50	0.02	6	-	-	-	-	945
Agriculture and Forestry	23	0.00	0.01	0.00	0.10	-	-	-	-	24
b. Transport[b]	**5 190**	**0.90**	**25**	**0.16**	**43**	**-**	**-**	**-**	**-**	**5 260**
Aviation	273	0.00	0.06	0.01	2	-	-	-	-	275
Road Transportation	3 800	0.20	6	0.10	26	-	-	-	-	3 830
Light-Duty Gasoline Vehicles	1 010	0.06	2	0.02	4	-	-	-	-	1 020
Light-Duty Gasoline Trucks	1 830	0.10	3	0.03	7	-	-	-	-	1 840
Heavy-Duty Gasoline Vehicles	117	0.00	0.10	0.01	3	-	-	-	-	120
Motorcycles	22	0.01	0.20	0.00	0.10	-	-	-	-	22
Light-Duty Diesel Vehicles	15	0.00	0.01	0.00	0.32	-	-	-	-	15
Light-Duty Diesel Trucks	20	0.00	0.01	0.00	0.43	-	-	-	-	20
Heavy-Duty Diesel Vehicles	778	0.03	0.90	0.04	12	-	-	-	-	791
Propane and Natural Gas Vehicles	4	0.02	0.50	0.00	0.03	-	-	-	-	4
Railways	33	0.00	0.05	0.01	3	-	-	-	-	37
Marine	400	0.04	1	0.01	3	-	-	-	-	404
Other Transportation	690	0.63	18	0.03	9	-	-	-	-	717
Off-Road Agriculture and Forestry	85	0.00	0.08	0.01	2	-	-	-	-	87
Off-Road Commercial and Institutional	109	0.13	4	0.00	1	-	-	-	-	114
Off-Road Manufacturing, Mining and Construction	308	0.03	0.83	0.02	5	-	-	-	-	314
Off-Road Residential	28	0.08	2	0.00	0.20	-	-	-	-	31
Off-Road Other Transportation	158	0.40	11	0.00	1	-	-	-	-	170
Pipeline Transport	0.96	0.00	0.03	0.00	0.01	-	-	-	-	0.99
c. Fugitive Sources	**0.02**	**8**	**220**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**220**
Coal Mining	-	7	200	-	-	-	-	-	-	200
Oil and Natural Gas	0.02	0.51	14	0.00	0.00	-	-	-	-	14
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	0.00	0.50	14	-	-	-	-	-	-	14
Venting	0.00	0.00	0.02	-	-	-	-	-	-	0.02
Flaring	0.01	0.00	0.00	0.00	0.00	-	-	-	-	0.02
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**180**	**-**	**-**	**0.05**	**14**	**270**	**0.32**	**8**	**-**	**471**
a. Mineral Products	**120**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**120**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**270**	**0.13**	**-**	**-**	**270**
e. Non-Energy Products from Fuels and Solvent Use[c]	**60**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**60**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.05**	**14**	**-**	**0.20**	**8**	**-**	**21**
AGRICULTURE	**18**	**8**	**220**	**0.35**	**92**	**-**	**-**	**-**	**-**	**330**
a. Enteric Fermentation	**-**	**6**	**180**	**-**	**-**	**-**	**-**	**-**	**-**	**180**
b. Manure Management	**-**	**2**	**45**	**0.10**	**40**	**-**	**-**	**-**	**-**	**80**
c. Agricultural Soils	**-**	**-**	**-**	**0.21**	**57**	**-**	**-**	**-**	**-**	**57**
Direct Sources	-	-	-	0.14	38	-	-	-	-	38
Indirect Sources	-	-	-	0.07	20	-	-	-	-	20
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**18**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**18**
WASTE	**-**	**20**	**560**	**0.20**	**40**	**-**	**-**	**-**	**-**	**600**
a. Landfills	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	10	-	-	-	-	-	-	10
b. Biological Treatment of Solid Waste	**-**	**0.60**	**20**	**0.06**	**20**	**-**	**-**	**-**	**-**	**30**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**-**	**2**	**50**	**0.09**	**20**	**-**	**-**	**-**	**-**	**73**
Municipal Wastewater Treatment and Discharge	-	-	-	0.10	-	-	-	-	-	100
Industrial Wastewater Treatment and Discharge	-	-	10	-	-	-	-	-	-	10
LAND USE, LAND-USE CHANGE AND FORESTRY	**-1 100**	**0.10**	**3**	**0.00**	**1**	**-**	**-**	**-**	**-**	**-1 100**
a. Forest Land	**-1 500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1 500**
b. Cropland	**180**	**0.03**	**0.80**	**0.00**	**0.43**	**-**	**-**	**-**	**-**	**180**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**14**	**0.01**	**0.24**	**0.00**	**0.06**	**-**	**-**	**-**	**-**	**14**
e. Settlements	**28**	**0.07**	**2**	**0.00**	**0.73**	**-**	**-**	**-**	**-**	**31**
f. Harvested Wood Products[e]	**150**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**150**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–8 GHG Emission Summary for New Brunswick, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**16 100**	**19 800**	**13 400**	**13 100**	**11 100**	**11 800**	**12 400**	**11 500**
ENERGY	**14 700**	**18 300**	**12 000**	**11 800**	**9 780**	**10 400**	**11 000**	**10 100**
a. Stationary Combustion Sources	**10 700**	**13 200**	**7 930**	**7 870**	**6 230**	**6 860**	**7 510**	**6 510**
Public Electricity and Heat Production	6 010	8 410	4 360	3 930	2 600	3 270	3 850	3 010
Petroleum Refining Industries	1 160	2 030	x	x	x	x	x	x
Oil and Gas Extraction	-	-	-	-	-	10	16	6
Mining	126	161	x	x	x	x	x	x
Manufacturing Industries	1 630	1 170	679	689	582	656	831	616
Construction	69	6	10	7	9	9	8	8
Commercial and Institutional	579	603	306	332	326	311	341	352
Residential	1 040	746	604	516	436	363	395	371
Agriculture and Forestry	53	33	34	32	28	36	40	38
b. Transport[b]	**3 990**	**4 920**	**3 860**	**3 730**	**3 370**	**3 370**	**3 300**	**3 360**
Aviation	137	127	116	118	61	64	94	100
Road Transportation	2 820	3 410	2 860	2 770	2 520	2 460	2 400	2 430
Light-Duty Gasoline Vehicles	1 220	1 030	772	726	609	608	591	575
Light-Duty Gasoline Trucks	807	1 040	1 280	1 280	1 160	1 160	1 180	1 230
Heavy-Duty Gasoline Vehicles	134	114	99	99	95	81	87	90
Motorcycles	5	15	27	27	20	18	19	20
Light-Duty Diesel Vehicles	9	31	6	5	5	5	4	3
Light-Duty Diesel Trucks	37	25	7	7	7	9	8	7
Heavy-Duty Diesel Vehicles	608	1 160	672	626	626	580	510	503
Propane and Natural Gas Vehicles	-	-	0.01	0.08	0.06	0.06	0.07	0.06
Railways	121	124	109	108	90	119	75	78
Marine	187	227	136	142	119	131	221	242
Other Transportation	726	1 030	635	596	575	595	508	513
Off-Road Agriculture and Forestry	272	241	134	122	113	128	106	108
Off-Road Commercial and Institutional	104	97	72	69	71	87	71	72
Off-Road Manufacturing, Mining and Construction	243	333	190	173	161	184	150	156
Off-Road Residential	10	x	x	26	24	18	19	19
Off-Road Other Transportation	97	325	201	192	185	163	155	151
Pipeline Transport	-	x	x	15	20	15	8	7
c. Fugitive Sources	**60**	**220**	**160**	**200**	**170**	**190**	**200**	**210**
Coal Mining	1	0.30	-	-	-	-	-	-
Oil and Natural Gas	59	224	162	198	175	187	199	212
Oil	8	16	12	13	14	14	13	13
Natural Gas	0.22	29	13	12	13	11	12	15
Venting	36	147	114	143	123	134	143	152
Flaring	15	31	24	30	25	28	30	32
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**185**	**253**	**511**	**341**	**349**	**339**	**347**	**328**
a. Mineral Products	**89**	**99**	**50**	**47**	**44**	**50**	**51**	**40**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	83	93	x	x	x	x	x	x
Mineral Products Use	6	6	x	x	x	x	x	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**110**	**240**	**240**	**240**	**220**	**220**	**210**
e. Non-Energy Products from Fuels and Solvent Use[c]	**91**	**33**	**210**	**44**	**58**	**54**	**64**	**62**
f. Other Product Manufacture and Use	**5**	**8**	**11**	**10**	**11**	**11**	**13**	**12**
AGRICULTURE	**440**	**470**	**410**	**400**	**400**	**410**	**410**	**390**
a. Enteric Fermentation	**220**	**210**	**170**	**160**	**160**	**150**	**140**	**140**
b. Manure Management	**60**	**77**	**61**	**59**	**58**	**55**	**54**	**54**
c. Agricultural Soils	**90**	**130**	**130**	**130**	**130**	**160**	**160**	**150**
Direct Sources	63	98	97	100	100	130	130	110
Indirect Sources	30	40	30	30	30	30	40	30
d. Field Burning of Agricultural Residues	**0.02**	**0.03**	**0.02**	**0.02**	**0.01**	**0.05**	**0.04**	**0.03**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**68**	**55**	**49**	**51**	**54**	**54**	**54**	**56**
WASTE	**780**	**810**	**530**	**560**	**590**	**640**	**650**	**660**
a. Landfills	**700**	**700**	**400**	**400**	**500**	**500**	**500**	**500**
Municipal Solid Waste Landfills	1 000	1 000	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**3**	**40**	**20**	**20**	**20**	**40**	**40**	**40**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**69**	**70**	**83**	**100**	**100**	**120**	**110**	**110**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	100	100	100	100	100
LAND USE, LAND-USE CHANGE AND FORESTRY	**9 400**	**7 300**	**1 400**	**570**	**1 300**	**940**	**760**	**380**
a. Forest Land	**14 000**	**9 800**	**2 900**	**2 200**	**2 400**	**2 000**	**1 700**	**1 300**
b. Cropland	**77**	**130**	**140**	**190**	**190**	**240**	**160**	**180**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**180**	**390**	**500**	**510**	**520**	**520**	**540**	**540**
e. Settlements	**47**	**130**	**26**	**23**	**16**	**16**	**6**	**9**
f. Harvested Wood Products[e]	**-5 100**	**-3 200**	**-2 100**	**-2 300**	**-1 800**	**-1 900**	**-1 600**	**-1 600**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–9 2023 GHG Emission Summary for New Brunswick

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**10 000**	**32**	**890**	**1**	**310**	**210**	**0.23**	**1**	**-**	**11 500**
ENERGY	**9 890**	**4**	**100**	**0.30**	**90**	**-**	**-**	**-**	**-**	**10 100**
a. Stationary Combustion Sources	**6 390**	**2**	**60**	**0.20**	**50**	**-**	**-**	**-**	**-**	**6 510**
Public Electricity and Heat Production	2 990	0.27	7	0.05	10	-	-	-	-	3 010
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	6	0.00	0.00	0.00	0.10	-	-	-	-	6
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	582	0.18	5	0.11	29	-	-	-	-	616
Construction	8	0.00	0.00	0.00	0.03	-	-	-	-	8
Commercial and Institutional	349	0.01	0.16	0.01	2	-	-	-	-	352
Residential	321	2	40	0.02	5	-	-	-	-	371
Agriculture and Forestry	38	0.00	0.01	0.00	0.10	-	-	-	-	38
b. Transport[b]	**3 310**	**0.68**	**19**	**0.13**	**33**	**-**	**-**	**-**	**-**	**3 360**
Aviation	99	0.00	0.10	0.00	0.80	-	-	-	-	100
Road Transportation	2 410	0.10	4	0.07	17	-	-	-	-	2 430
Light-Duty Gasoline Vehicles	572	0.04	1	0.01	2	-	-	-	-	575
Light-Duty Gasoline Trucks	1 220	0.07	2	0.02	5	-	-	-	-	1 230
Heavy-Duty Gasoline Vehicles	88	0.00	0.08	0.01	2	-	-	-	-	90
Motorcycles	20	0.01	0.20	0.00	0.10	-	-	-	-	20
Light-Duty Diesel Vehicles	3	0.00	0.00	0.00	0.07	-	-	-	-	3
Light-Duty Diesel Trucks	7	0.00	0.01	0.00	0.16	-	-	-	-	7
Heavy-Duty Diesel Vehicles	495	0.02	0.60	0.03	7	-	-	-	-	503
Propane and Natural Gas Vehicles	0.06	0.00	0.00	0.00	0.00	-	-	-	-	0.06
Railways	70	0.00	0.10	0.03	7	-	-	-	-	78
Marine	239	0.02	0.63	0.01	2	-	-	-	-	242
Other Transportation	492	0.51	14	0.02	6	-	-	-	-	513
Off-Road Agriculture and Forestry	106	0.00	0.13	0.01	2	-	-	-	-	108
Off-Road Commercial and Institutional	70	0.07	2	0.00	0.70	-	-	-	-	72
Off-Road Manufacturing, Mining and Construction	153	0.02	0.60	0.01	3	-	-	-	-	156
Off-Road Residential	17	0.05	1	0.00	0.10	-	-	-	-	19
Off-Road Other Transportation	140	0.36	10	0.00	0.90	-	-	-	-	151
Pipeline Transport	6	0.01	0.18	0.00	0.04	-	-	-	-	7
c. Fugitive Sources	**180**	**0.87**	**24**	**0.01**	**3**	**-**	**-**	**-**	**-**	**210**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	180	0.87	24	0.01	3	-	-	-	-	212
Oil	0.08	0.33	9	0.01	3	-	-	-	-	13
Natural Gas	0.00	0.53	15	-	-	-	-	-	-	15
Venting	150	0.01	0.14	-	-	-	-	-	-	152
Flaring	32	0.00	0.03	0.00	0.01	-	-	-	-	32
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**102**	**-**	**-**	**0.04**	**11**	**210**	**0.23**	**1**	**-**	**328**
a. Mineral Products	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**210**	**0.11**	**-**	**-**	**210**
e. Non-Energy Products from Fuels and Solvent Use[c]	**62**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**62**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.04**	**11**	**-**	**0.10**	**1**	**-**	**12**
AGRICULTURE	**56**	**6**	**170**	**0.64**	**170**	**-**	**-**	**-**	**-**	**390**
a. Enteric Fermentation	**-**	**5**	**140**	**-**	**-**	**-**	**-**	**-**	**-**	**140**
b. Manure Management	**-**	**1**	**29**	**0.09**	**20**	**-**	**-**	**-**	**-**	**54**
c. Agricultural Soils	**-**	**-**	**-**	**0.55**	**150**	**-**	**-**	**-**	**-**	**150**
Direct Sources	-	-	-	0.43	110	-	-	-	-	110
Indirect Sources	-	-	-	0.10	30	-	-	-	-	30
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.02**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.03**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**56**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**56**
WASTE	**-**	**22**	**620**	**0.20**	**40**	**-**	**-**	**-**	**-**	**660**
a. Landfills	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.70**	**20**	**0.07**	**20**	**-**	**-**	**-**	**-**	**40**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**-**	**3**	**80**	**0.08**	**20**	**-**	**-**	**-**	**-**	**110**
Municipal Wastewater Treatment and Discharge	-	-	-	0.10	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	100	-	-	-	-	-	-	100
LAND USE, LAND-USE CHANGE AND FORESTRY	**370**	**0.40**	**11**	**0.01**	**3**	**-**	**-**	**-**	**-**	**380**
a. Forest Land	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
b. Cropland	**180**	**0.05**	**1**	**0.00**	**0.98**	**-**	**-**	**-**	**-**	**180**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**540**	**0.25**	**7**	**0.00**	**1**	**-**	**-**	**-**	**-**	**540**
e. Settlements	**5**	**0.10**	**3**	**0.00**	**1**	**-**	**-**	**-**	**-**	**9**
f. Harvested Wood Products[e]	**-1 600**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1 600**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–10 GHG Emission Summary for Quebec, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**84 300**	**84 500**	**79 900**	**81 900**	**74 500**	**77 500**	**79 300**	**78 900**
ENERGY	**58 200**	**60 000**	**57 300**	**59 200**	**51 400**	**54 300**	**56 100**	**55 400**
a. Stationary Combustion Sources	**30 300**	**26 200**	**21 500**	**22 800**	**20 500**	**20 900**	**21 200**	**20 000**
Public Electricity and Heat Production	1 490	616	242	238	292	251	233	268
Petroleum Refining Industries	3 460	3 450	2 040	2 310	2 170	2 170	2 280	2 190
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	824	318	1 480	1 560	1 300	1 190	1 050	966
Manufacturing Industries	12 500	10 000	8 850	9 610	8 870	9 230	9 330	9 220
Construction	458	311	401	412	379	371	397	380
Commercial and Institutional	4 400	5 410	4 850	4 950	4 300	4 580	4 700	4 160
Residential	6 850	5 660	3 190	3 240	2 810	2 780	2 870	2 540
Agriculture and Forestry	290	367	462	475	384	339	345	325
b. Transport[b]	**27 300**	**33 300**	**35 400**	**36 000**	**30 500**	**33 000**	**34 400**	**34 900**
Aviation	951	763	903	900	551	664	828	907
Road Transportation	20 800	24 800	26 400	26 500	22 300	24 300	25 700	26 000
Light-Duty Gasoline Vehicles	12 000	10 700	8 690	8 540	6 760	7 520	7 500	7 560
Light-Duty Gasoline Trucks	4 020	7 040	9 550	10 100	8 800	9 600	10 100	10 900
Heavy-Duty Gasoline Vehicles	569	765	756	778	773	716	745	801
Motorcycles	77	164	268	276	232	226	259	281
Light-Duty Diesel Vehicles	193	219	104	91	57	70	68	64
Light-Duty Diesel Trucks	334	190	114	115	81	115	134	124
Heavy-Duty Diesel Vehicles	3 650	5 770	6 950	6 630	5 590	6 000	6 800	6 320
Propane and Natural Gas Vehicles	6	0.26	11	17	17	21	21	17
Railways	644	667	531	545	484	472	508	561
Marine	671	919	855	836	662	669	779	796
Other Transportation	4 260	6 140	6 690	7 180	6 490	6 950	6 670	6 590
Off-Road Agriculture and Forestry	807	767	1 030	1 130	997	1 110	1 050	1 020
Off-Road Commercial and Institutional	828	1 010	1 330	1 450	1 310	1 450	1 390	1 400
Off-Road Manufacturing, Mining and Construction	1 990	2 490	2 890	3 150	2 760	3 040	2 860	2 790
Off-Road Residential	83	240	196	197	202	174	181	180
Off-Road Other Transportation	524	1 300	1 140	1 160	1 120	1 080	1 090	1 090
Pipeline Transport	26	335	98	103	100	105	89	99
c. Fugitive Sources	**660**	**480**	**370**	**440**	**370**	**390**	**440**	**460**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	660	475	375	436	372	391	439	460
Oil	21	24	17	19	17	17	19	18
Natural Gas	499	166	136	151	147	146	152	158
Venting	100	238	186	222	178	194	225	238
Flaring	40	48	36	43	31	34	43	46
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**14 300**	**12 400**	**10 000**	**10 300**	**10 700**	**11 000**	**10 900**	**11 200**
a. Mineral Products	**1 890**	**1 990**	**2 080**	**2 530**	**2 290**	**2 480**	**2 280**	**2 580**
Cement Production	1 450	1 330	1 620	2 080	1 870	2 040	1 840	2 180
Lime Production	295	507	x	x	x	x	x	x
Mineral Products Use	150	150	x	x	x	x	x	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**10 400**	**7 380**	**4 700**	**4 510**	**5 130**	**5 280**	**5 310**	**5 380**
Iron and Steel Production	-	-	9	8	8	8	7	6
Aluminium Production	8 020	7 150	4 680	4 490	5 110	5 260	5 290	5 350
Magnesium Production and Casting	2 430	233	11	11	9	14	19	22
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**2**	**970**	**2 300**	**2 300**	**2 300**	**2 200**	**2 200**	**2 100**
e. Non-Energy Products from Fuels and Solvent Use[c]	**1 900**	**1 900**	**760**	**850**	**880**	**880**	**1 000**	**1 000**
f. Other Product Manufacture and Use	**76**	**110**	**170**	**150**	**180**	**190**	**150**	**170**
AGRICULTURE	**6 700**	**7 500**	**7 900**	**7 700**	**7 900**	**7 700**	**7 900**	**7 900**
a. Enteric Fermentation	**3 500**	**3 500**	**2 900**	**2 900**	**2 900**	**2 900**	**2 800**	**2 800**
b. Manure Management	**1 200**	**1 700**	**1 800**	**1 800**	**1 700**	**1 800**	**1 700**	**1 700**
c. Agricultural Soils	**1 800**	**2 100**	**3 000**	**2 800**	**3 000**	**2 900**	**3 100**	**3 100**
Direct Sources	1 400	1 700	2 500	2 300	2 500	2 400	2 600	2 600
Indirect Sources	400	400	500	500	500	500	500	500
d. Field Burning of Agricultural Residues	**0.30**	**0.30**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.10**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**220**	**160**	**240**	**220**	**230**	**210**	**230**	**270**
WASTE	**5 000**	**4 700**	**4 700**	**4 600**	**4 500**	**4 500**	**4 400**	**4 400**
a. Landfills	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**40**	**30**	**70**	**70**	**70**	**100**	**100**	**100**
c. Incineration and Open Burning of Waste	**200**	**200**	**30**	**30**	**30**	**40**	**30**	**30**
d. Wastewater Treatment and Discharge	**320**	**340**	**410**	**410**	**420**	**420**	**430**	**440**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**17 000**	**16 000**	**10 000**	**9 400**	**14 000**	**13 000**	**14 000**	**14 000**
a. Forest Land	**28 000**	**25 000**	**14 000**	**13 000**	**15 000**	**16 000**	**15 000**	**16 000**
b. Cropland	**1 000**	**1 500**	**1 300**	**1 500**	**1 700**	**1 700**	**1 800**	**1 300**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**4 500**	**1 900**	**1 400**	**1 500**	**1 600**	**1 500**	**1 400**	**1 300**
e. Settlements	**760**	**500**	**220**	**200**	**190**	**180**	**160**	**180**
f. Harvested Wood Products[e]	**-17 000**	**-12 000**	**-6 300**	**-6 700**	**-4 300**	**-6 200**	**-4 300**	**-4 400**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–11 2023 GHG Emission Summary for Quebec

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**62 600**	**330**	**9 100**	**17**	**4 500**	**2 100**	**613**	**73**	**0.60**	**78 900**
ENERGY	**53 900**	**33**	**920**	**2**	**500**	**-**	**-**	**-**	**-**	**55 400**
a. Stationary Combustion Sources	**19 300**	**20**	**600**	**0.80**	**200**	**-**	**-**	**-**	**-**	**20 000**
Public Electricity and Heat Production	266	0.01	0.40	0.01	1	-	-	-	-	268
Petroleum Refining Industries	2 180	0.05	1	0.02	6	-	-	-	-	2 190
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	963	0.02	0.60	0.01	3	-	-	-	-	966
Manufacturing Industries	9 100	0.61	17	0.36	96	-	-	-	-	9 220
Construction	378	0.01	0.20	0.01	2	-	-	-	-	380
Commercial and Institutional	4 130	0.17	5	0.10	30	-	-	-	-	4 160
Residential	1 940	20	500	0.20	60	-	-	-	-	2 540
Agriculture and Forestry	320	0.01	0.10	0.02	5	-	-	-	-	325
b. Transport[b]	**34 400**	**6**	**170**	**1**	**340**	**-**	**-**	**-**	**-**	**34 900**
Aviation	900	0.02	0.70	0.03	7	-	-	-	-	907
Road Transportation	25 800	2	40	0.71	190	-	-	-	-	26 000
Light-Duty Gasoline Vehicles	7 520	0.50	10	0.12	31	-	-	-	-	7 560
Light-Duty Gasoline Trucks	10 800	0.60	20	0.15	40	-	-	-	-	10 900
Heavy-Duty Gasoline Vehicles	782	0.03	0.70	0.07	18	-	-	-	-	801
Motorcycles	277	0.10	3	0.01	1	-	-	-	-	281
Light-Duty Diesel Vehicles	62	0.00	0.03	0.01	1	-	-	-	-	64
Light-Duty Diesel Trucks	121	0.00	0.09	0.01	3	-	-	-	-	124
Heavy-Duty Diesel Vehicles	6 210	0.30	7	0.35	94	-	-	-	-	6 320
Propane and Natural Gas Vehicles	15	0.05	1	0.00	0.11	-	-	-	-	17
Railways	508	0.03	0.80	0.20	50	-	-	-	-	561
Marine	789	0.07	2	0.02	6	-	-	-	-	796
Other Transportation	6 380	5	130	0.30	90	-	-	-	-	6 590
Off-Road Agriculture and Forestry	1 010	0.04	1.00	0.06	20	-	-	-	-	1 020
Off-Road Commercial and Institutional	1 350	1	36	0.05	10	-	-	-	-	1 400
Off-Road Manufacturing, Mining and Construction	2 740	0.33	9	0.20	50	-	-	-	-	2 790
Off-Road Residential	166	0.46	13	0.00	1	-	-	-	-	180
Off-Road Other Transportation	1 020	2	64	0.03	7	-	-	-	-	1 090
Pipeline Transport	96	0.10	3	0.00	0.70	-	-	-	-	99
c. Fugitive Sources	**260**	**7**	**191**	**0.02**	**5**	**-**	**-**	**-**	**-**	**460**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	260	7	191	0.02	5	-	-	-	-	460
Oil	0.11	0.47	13	0.02	5	-	-	-	-	18
Natural Gas	0.04	6	158	-	-	-	-	-	-	158
Venting	220	0.70	20	-	-	-	-	-	-	238
Flaring	46	0.00	0.03	0.00	0.01	-	-	-	-	46
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**8 340**	**0.00**	**0.00**	**0.44**	**120**	**2 100**	**613**	**73**	**0.60**	**11 200**
a. Mineral Products	**2 580**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 580**
Cement Production	2 180	-	-	-	-	-	-	-	-	2 180
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**4 750**	**0.00**	**0.00**	**-**	**-**	**-**	**602**	**22**	**-**	**5 380**
Iron and Steel Production	6	0.00	0.00	-	-	-	-	-	-	6
Aluminium Production	4 750	-	-	-	-	-	602	0.08	-	5 350
Magnesium Production and Casting	-	-	-	-	-	-	-	22	-	22
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**2 100**	**4**	**7**	**0.60**	**2 100**
e. Non-Energy Products from Fuels and Solvent Use[c]	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.44**	**120**	**-**	**7**	**44**	**-**	**170**
AGRICULTURE	**270**	**150**	**4 100**	**13**	**3 500**	**-**	**-**	**-**	**-**	**7 900**
a. Enteric Fermentation	**-**	**99**	**2 800**	**-**	**-**	**-**	**-**	**-**	**-**	**2 800**
b. Manure Management	**-**	**48**	**1 300**	**2**	**400**	**-**	**-**	**-**	**-**	**1 700**
c. Agricultural Soils	**-**	**-**	**-**	**12**	**3 100**	**-**	**-**	**-**	**-**	**3 100**
Direct Sources	-	-	-	10	2 600	-	-	-	-	2 600
Indirect Sources	-	-	-	2	500	-	-	-	-	500
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.10**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**0.10**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**270**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**270**
WASTE	**10**	**150**	**4 100**	**1**	**300**	**-**	**-**	**-**	**-**	**4 400**
a. Landfills	**-**	**100**	**4 000**	**-**	**-**	**-**	**-**	**-**	**-**	**4 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	10	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**2**	**70**	**0.10**	**40**	**-**	**-**	**-**	**-**	**100**
c. Incineration and Open Burning of Waste	**10**	**0.00**	**0.03**	**0.10**	**26**	**-**	**-**	**-**	**-**	**30**
d. Wastewater Treatment and Discharge	**4**	**8**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**440**
Municipal Wastewater Treatment and Discharge	-	10	-	1	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	10	-	10	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**14 000**	**2**	**59**	**0.22**	**58**	**-**	**-**	**-**	**-**	**14 000**
a. Forest Land	**16 000**	**1**	**30**	**0.20**	**50**	**-**	**-**	**-**	**-**	**16 000**
b. Cropland	**1 300**	**0.21**	**6**	**0.02**	**4**	**-**	**-**	**-**	**-**	**1 300**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**1 300**	**0.27**	**8**	**0.00**	**1**	**-**	**-**	**-**	**-**	**1 300**
e. Settlements	**160**	**0.54**	**15**	**0.01**	**4**	**-**	**-**	**-**	**-**	**180**
f. Harvested Wood Products[e]	**-4 400**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-4 400**

Notes:

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Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

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c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

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f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–12 GHG Emission Summary for Ontario, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**178 000**	**202 000**	**164 000**	**165 000**	**149 000**	**152 000**	**158 000**	**159 000**
ENERGY	**132 000**	**160 000**	**123 000**	**125 000**	**110 000**	**112 000**	**118 000**	**118 000**
a. Stationary Combustion Sources	**82 000**	**93 300**	**60 000**	**61 400**	**58 000**	**57 200**	**60 300**	**59 900**
Public Electricity and Heat Production	25 600	33 900	4 160	3 970	4 950	5 740	6 810	8 280
Petroleum Refining Industries	6 230	6 630	3 720	4 180	4 100	4 410	4 520	4 480
Oil and Gas Extraction	100	167	58	84	34	83	99	175
Mining	493	417	491	510	529	539	579	477
Manufacturing Industries	21 900	17 800	15 200	15 200	14 000	14 500	15 000	14 800
Construction	571	632	291	305	306	366	399	366
Commercial and Institutional	9 170	12 700	16 600	17 000	15 400	13 200	13 800	13 500
Residential	17 100	20 000	18 000	18 500	17 200	16 700	17 300	16 000
Agriculture and Forestry	774	1 030	1 410	1 610	1 440	1 670	1 760	1 780
b. Transport[b]	**47 600**	**63 900**	**60 900**	**61 200**	**50 000**	**52 200**	**55 300**	**55 900**
Aviation	2 370	2 220	2 590	2 590	1 350	1 570	2 280	2 460
Road Transportation	34 100	47 100	45 400	46 000	37 500	39 000	40 900	41 200
Light-Duty Gasoline Vehicles	18 000	16 400	12 100	12 000	8 980	8 830	9 160	9 110
Light-Duty Gasoline Trucks	8 920	16 200	19 700	20 600	16 700	16 900	18 100	19 000
Heavy-Duty Gasoline Vehicles	1 330	1 650	1 480	1 520	1 350	1 440	1 310	1 380
Motorcycles	68	140	286	292	224	268	224	228
Light-Duty Diesel Vehicles	76	227	169	158	116	111	124	109
Light-Duty Diesel Trucks	158	162	193	203	163	181	240	226
Heavy-Duty Diesel Vehicles	5 430	12 300	11 400	11 200	9 920	11 200	11 800	11 200
Propane and Natural Gas Vehicles	101	7	19	21	27	27	28	26
Railways	1 880	2 110	1 540	1 500	1 340	1 300	1 270	1 280
Marine	165	219	303	310	342	302	297	323
Other Transportation	9 070	12 300	11 100	10 800	9 510	10 000	10 500	10 600
Off-Road Agriculture and Forestry	758	786	1 250	1 220	1 050	1 080	1 160	1 120
Off-Road Commercial and Institutional	1 330	1 500	1 730	1 740	1 580	1 700	1 780	1 790
Off-Road Manufacturing, Mining and Construction	3 620	3 900	4 630	4 480	3 880	4 000	4 200	4 060
Off-Road Residential	152	500	405	407	365	387	349	358
Off-Road Other Transportation	928	2 530	2 020	2 020	1 850	1 980	1 920	1 950
Pipeline Transport	2 280	3 040	1 020	948	783	848	1 110	1 320
c. Fugitive Sources	**2 300**	**2 600**	**2 100**	**2 200**	**2 200**	**2 200**	**2 200**	**2 200**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	2 340	2 630	2 090	2 190	2 180	2 220	2 200	2 240
Oil	63	40	26	28	27	29	30	30
Natural Gas	1 760	2 000	1 560	1 620	1 660	1 680	1 610	1 620
Venting	363	490	443	468	431	445	497	507
Flaring	157	102	62	69	56	61	69	78
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**29 400**	**25 300**	**24 800**	**24 000**	**21 700**	**23 100**	**22 900**	**23 400**
a. Mineral Products	**3 970**	**4 870**	**3 730**	**3 600**	**3 510**	**3 710**	**3 470**	**3 450**
Cement Production	2 440	3 700	2 950	2 830	2 870	2 970	2 720	2 740
Lime Production	1 130	843	x	x	x	x	x	x
Mineral Products Use	400	330	x	x	x	x	x	x
b. Chemical Industry[c]	**9 160**	**2 260**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	9 160	2 260	-	-	-	-	-	-
c. Metal Production	**11 200**	**12 000**	**10 600**	**9 870**	**8 230**	**9 610**	**9 140**	**9 730**
Iron and Steel Production	10 500	10 800	10 500	9 590	8 130	9 480	8 990	9 500
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	735	1 190	130	280	96	130	148	224
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**820**	**1 900**	**4 400**	**4 400**	**4 300**	**4 100**	**4 100**	**3 900**
e. Non-Energy Products from Fuels and Solvent Use[c]	**4 100**	**4 100**	**5 800**	**5 900**	**5 400**	**5 400**	**6 000**	**6 100**
f. Other Product Manufacture and Use	**140**	**180**	**250**	**240**	**270**	**250**	**240**	**250**
AGRICULTURE	**9 500**	**9 400**	**8 800**	**9 000**	**9 700**	**9 500**	**9 600**	**10 000**
a. Enteric Fermentation	**4 800**	**4 600**	**3 700**	**3 700**	**3 700**	**3 700**	**3 700**	**3 700**
b. Manure Management	**1 800**	**2 100**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**
c. Agricultural Soils	**2 600**	**2 500**	**3 000**	**3 100**	**3 700**	**3 600**	**3 600**	**4 100**
Direct Sources	2 000	1 900	2 400	2 500	3 000	2 900	3 000	3 300
Indirect Sources	600	600	600	600	700	700	700	800
d. Field Burning of Agricultural Residues	**3**	**0.60**	**0.30**	**0.30**	**0.30**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**250**	**160**	**200**	**210**	**260**	**240**	**250**	**340**
WASTE	**7 400**	**8 000**	**7 100**	**7 200**	**7 200**	**7 400**	**7 300**	**7 300**
a. Landfills	**7 000**	**7 000**	**6 000**	**6 000**	**6 000**	**6 000**	**6 000**	**6 000**
Municipal Solid Waste Landfills	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
Industrial Wood Waste Landfills	-	-	-	-	-	-	100	100
b. Biological Treatment of Solid Waste	**30**	**70**	**100**	**100**	**100**	**100**	**100**	**100**
c. Incineration and Open Burning of Waste	**70**	**100**	**100**	**100**	**80**	**80**	**100**	**100**
d. Wastewater Treatment and Discharge	**630**	**810**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 100**
Municipal Wastewater Treatment and Discharge	1 000	1 000	1 000	1 000	1 000	1 000	1 000	-
Industrial Wastewater Treatment and Discharge	100	100	100	100	100	100	100	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-12 000**	**-7 800**	**-24 000**	**-24 000**	**-23 000**	**-24 000**	**-23 000**	**-24 000**
a. Forest Land	**670**	**-510**	**-22 000**	**-22 000**	**-23 000**	**-23 000**	**-23 000**	**-24 000**
b. Cropland	**820**	**580**	**640**	**1 200**	**2 000**	**1 400**	**2 600**	**1 200**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**17**	**14**	**33**	**36**	**39**	**43**	**44**	**46**
e. Settlements	**-510**	**-600**	**-590**	**-580**	**-580**	**-580**	**-580**	**-580**
f. Harvested Wood Products[e]	**-13 000**	**-7 300**	**-1 600**	**-2 600**	**-1 400**	**-1 600**	**-1 300**	**-1 400**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–13 2023 GHG Emission Summary for Ontario

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**134 000**	**490**	**14 000**	**26**	**7 000**	**3 900**	**19**	**270**	**-**	**159 000**
ENERGY	**115 000**	**88**	**2 500**	**4**	**1 000**	**-**	**-**	**-**	**-**	**118 000**
a. Stationary Combustion Sources	**59 300**	**9**	**300**	**1**	**400**	**-**	**-**	**-**	**-**	**59 900**
Public Electricity and Heat Production	8 160	2	58	0.20	60	-	-	-	-	8 280
Petroleum Refining Industries	4 470	0.10	3	0.03	7	-	-	-	-	4 480
Oil and Gas Extraction	174	0.00	0.09	0.01	1	-	-	-	-	175
Mining	471	0.01	0.20	0.02	6	-	-	-	-	477
Manufacturing Industries	14 700	0.50	14	0.34	89	-	-	-	-	14 800
Construction	362	0.01	0.18	0.01	3	-	-	-	-	366
Commercial and Institutional	13 500	0.36	10	0.30	80	-	-	-	-	13 500
Residential	15 700	6	200	0.40	100	-	-	-	-	16 000
Agriculture and Forestry	1 760	0.03	0.90	0.04	10	-	-	-	-	1 780
b. Transport[b]	**54 900**	**12**	**330**	**2**	**600**	**-**	**-**	**-**	**-**	**55 900**
Aviation	2 440	0.04	1	0.07	20	-	-	-	-	2 460
Road Transportation	40 800	2	70	1	330	-	-	-	-	41 200
Light-Duty Gasoline Vehicles	9 050	0.60	20	0.16	43	-	-	-	-	9 110
Light-Duty Gasoline Trucks	18 900	1	30	0.26	70	-	-	-	-	19 000
Heavy-Duty Gasoline Vehicles	1 340	0.04	1	0.13	33	-	-	-	-	1 380
Motorcycles	224	0.08	2	0.00	1	-	-	-	-	228
Light-Duty Diesel Vehicles	106	0.00	0.06	0.01	3	-	-	-	-	109
Light-Duty Diesel Trucks	221	0.01	0.20	0.02	5	-	-	-	-	226
Heavy-Duty Diesel Vehicles	11 000	0.50	10	0.65	170	-	-	-	-	11 200
Propane and Natural Gas Vehicles	24	0.05	1	0.00	0.15	-	-	-	-	26
Railways	1 160	0.07	2	0.50	100	-	-	-	-	1 280
Marine	320	0.03	0.84	0.01	2	-	-	-	-	323
Other Transportation	10 200	9	260	0.50	100	-	-	-	-	10 600
Off-Road Agriculture and Forestry	1 100	0.04	1	0.06	20	-	-	-	-	1 120
Off-Road Commercial and Institutional	1 720	2	51	0.07	20	-	-	-	-	1 790
Off-Road Manufacturing, Mining and Construction	3 970	0.67	19	0.30	70	-	-	-	-	4 060
Off-Road Residential	329	0.96	27	0.01	2	-	-	-	-	358
Off-Road Other Transportation	1 810	5	127	0.05	10	-	-	-	-	1 950
Pipeline Transport	1 280	1	35	0.03	9	-	-	-	-	1 320
c. Fugitive Sources	**360**	**67**	**1 870**	**0.02**	**6**	**-**	**-**	**-**	**-**	**2 200**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	360	67	1 870	0.02	6	-	-	-	-	2 240
Oil	0.15	0.82	23	0.02	6	-	-	-	-	30
Natural Gas	0.88	58	1 620	-	-	-	-	-	-	1 620
Venting	290	8	222	-	-	-	-	-	-	507
Flaring	75	0.08	2	0.00	0.04	-	-	-	-	78
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**19 000**	**1**	**33**	**0.86**	**230**	**3 900**	**19**	**270**	**-**	**23 400**
a. Mineral Products	**3 450**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 450**
Cement Production	2 740	-	-	-	-	-	-	-	-	2 740
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**9 500**	**0.10**	**3**	**-**	**-**	**-**	**-**	**224**	**-**	**9 730**
Iron and Steel Production	9 500	0.10	3	-	-	-	-	-	-	9 500
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	224	-	224
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**3 900**	**9**	**16**	**-**	**3 900**
e. Non-Energy Products from Fuels and Solvent Use[c]	**6 000**	**-**	**-**	**0.10**	**-**	**-**	**-**	**-**	**-**	**6 100**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.77**	**200**	**-**	**10**	**32**	**-**	**250**
AGRICULTURE	**340**	**170**	**4 800**	**19**	**4 900**	**-**	**-**	**-**	**-**	**10 000**
a. Enteric Fermentation	**-**	**130**	**3 700**	**-**	**-**	**-**	**-**	**-**	**-**	**3 700**
b. Manure Management	**-**	**40**	**1 100**	**3**	**800**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**16**	**4 100**	**-**	**-**	**-**	**-**	**4 100**
Direct Sources	-	-	-	13	3 300	-	-	-	-	3 300
Indirect Sources	-	-	-	3	800	-	-	-	-	800
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.10**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**340**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**340**
WASTE	**70**	**230**	**6 300**	**3**	**900**	**-**	**-**	**-**	**-**	**7 300**
a. Landfills	**-**	**200**	**6 000**	**-**	**-**	**-**	**-**	**-**	**-**	**6 000**
Municipal Solid Waste Landfills	-	-	10 000	-	-	-	-	-	-	10 000
Industrial Wood Waste Landfills	-	-	100	-	-	-	-	-	-	100
b. Biological Treatment of Solid Waste	**-**	**2**	**70**	**0.30**	**70**	**-**	**-**	**-**	**-**	**100**
c. Incineration and Open Burning of Waste	**100**	**0.00**	**0.04**	**0.16**	**42**	**-**	**-**	**-**	**-**	**100**
d. Wastewater Treatment and Discharge	**7**	**10**	**300**	**3**	**700**	**-**	**-**	**-**	**-**	**1 100**
Municipal Wastewater Treatment and Discharge	-	10	-	-	1 000	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	10	-	-	-	10	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-24 000**	**0.61**	**17**	**0.03**	**7**	**-**	**-**	**-**	**-**	**-24 000**
a. Forest Land	**-24 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-24 000**
b. Cropland	**1 200**	**0.26**	**7**	**0.02**	**5**	**-**	**-**	**-**	**-**	**1 200**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**45**	**0.03**	**0.85**	**0.00**	**0.17**	**-**	**-**	**-**	**-**	**46**
e. Settlements	**-590**	**0.32**	**9**	**0.01**	**2**	**-**	**-**	**-**	**-**	**-580**
f. Harvested Wood Products[e]	**-1 400**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-1 400**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–14 GHG Emission Summary for Manitoba, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**18 300**	**20 700**	**22 400**	**22 200**	**21 200**	**20 700**	**21 700**	**21 300**
ENERGY	**12 700**	**12 700**	**14 100**	**13 900**	**12 700**	**12 600**	**13 500**	**13 300**
a. Stationary Combustion Sources	**4 910**	**4 500**	**4 270**	**4 250**	**4 100**	**3 880**	**4 390**	**4 070**
Public Electricity and Heat Production	519	361	41	40	41	56	48	74
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	1	0.46	0.00	-	0.00	-	-	0.00
Mining	78	96	120	119	119	118	109	100
Manufacturing Industries	1 180	1 450	1 190	1 200	1 200	1 120	1 280	1 330
Construction	63	85	126	123	114	112	120	110
Commercial and Institutional	1 400	1 400	1 530	1 510	1 430	1 370	1 580	1 400
Residential	1 620	1 060	1 210	1 210	1 140	1 050	1 200	1 020
Agriculture and Forestry	43	43	49	50	51	50	46	42
b. Transport[b]	**7 060**	**7 740**	**9 060**	**8 810**	**7 880**	**8 030**	**8 300**	**8 360**
Aviation	471	533	515	511	311	358	444	494
Road Transportation	3 490	3 880	4 630	4 600	4 080	4 250	4 390	4 490
Light-Duty Gasoline Vehicles	1 560	1 150	925	889	734	779	779	783
Light-Duty Gasoline Trucks	1 030	1 410	2 160	2 190	2 000	2 090	2 160	2 280
Heavy-Duty Gasoline Vehicles	195	162	169	173	172	164	166	176
Motorcycles	3	9	29	31	27	25	26	28
Light-Duty Diesel Vehicles	9	10	6	5	4	4	4	4
Light-Duty Diesel Trucks	23	15	15	15	11	14	16	15
Heavy-Duty Diesel Vehicles	656	1 120	1 330	1 290	1 120	1 160	1 240	1 200
Propane and Natural Gas Vehicles	15	0.12	0.82	1	2	2	2	2
Railways	493	503	542	521	468	461	452	461
Marine	3	3	4	2	0.92	0.30	1	0.40
Other Transportation	2 600	2 820	3 370	3 180	3 030	2 960	3 010	2 910
Off-Road Agriculture and Forestry	806	1 020	1 440	1 380	1 400	1 280	1 290	1 300
Off-Road Commercial and Institutional	288	304	506	483	438	445	484	511
Off-Road Manufacturing, Mining and Construction	470	510	536	509	494	456	456	456
Off-Road Residential	11	46	41	41	42	35	34	34
Off-Road Other Transportation	179	348	535	501	460	447	493	505
Pipeline Transport	850	595	309	266	192	294	245	112
c. Fugitive Sources	**740**	**410**	**750**	**810**	**740**	**730**	**800**	**840**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	737	413	751	809	740	734	804	836
Oil	145	166	343	345	315	320	331	346
Natural Gas	496	110	98	109	119	120	114	115
Venting	67	105	201	240	208	198	260	270
Flaring	29	32	110	115	99	95	99	104
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**489**	**694**	**958**	**927**	**934**	**875**	**939**	**886**
a. Mineral Products	**225**	**78**	**81**	**74**	**73**	**71**	**72**	**67**
Cement Production	155	-	-	-	-	-	-	-
Lime Production	63	63	x	x	x	x	x	x
Mineral Products Use	7	15	x	x	x	x	x	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**190**	**410**	**410**	**410**	**390**	**380**	**370**
e. Non-Energy Products from Fuels and Solvent Use[c]	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
AGRICULTURE	**4 200**	**6 100**	**6 000**	**6 000**	**6 300**	**6 000**	**5 900**	**5 800**
a. Enteric Fermentation	**2 100**	**3 600**	**2 700**	**2 600**	**2 600**	**2 600**	**2 500**	**2 400**
b. Manure Management	**390**	**760**	**730**	**720**	**710**	**700**	**690**	**680**
c. Agricultural Soils	**1 400**	**1 500**	**2 300**	**2 300**	**2 500**	**2 300**	**2 400**	**2 300**
Direct Sources	1 100	1 100	1 800	1 800	2 000	1 800	1 900	1 800
Indirect Sources	300	300	500	500	500	500	500	500
d. Field Burning of Agricultural Residues	**200**	**10**	**20**	**20**	**20**	**20**	**20**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**130**	**190**	**310**	**330**	**460**	**390**	**350**	**350**
WASTE	**880**	**1 300**	**1 400**	**1 400**	**1 200**	**1 200**	**1 400**	**1 400**
a. Landfills	**800**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
Municipal Solid Waste Landfills	1 000	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**0.30**	**5**	**10**	**10**	**10**	**20**	**20**	**20**
c. Incineration and Open Burning of Waste	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**
d. Wastewater Treatment and Discharge	**68**	**73**	**100**	**99**	**94**	**100**	**97**	**99**
Municipal Wastewater Treatment and Discharge	100	100	100	100	100	100	100	100
Industrial Wastewater Treatment and Discharge	-	-	-	10	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-1 400**	**-1 300**	**-4 900**	**-3 700**	**-2 700**	**-4 000**	**330**	**-4 300**
a. Forest Land	**180**	**1 900**	**-520**	**-530**	**-680**	**-960**	**-910**	**-990**
b. Cropland	**-640**	**-2 300**	**-4 500**	**-3 200**	**-2 300**	**-3 300**	**970**	**-3 600**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**60**	**110**	**190**	**190**	**270**	**260**	**260**	**260**
e. Settlements	**36**	**20**	**170**	**170**	**160**	**160**	**170**	**170**
f. Harvested Wood Products[e]	**-1 100**	**-1 000**	**-260**	**-330**	**-170**	**-120**	**-170**	**-170**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–15 2023 GHG Emission Summary for Manitoba

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**13 100**	**180**	**5 000**	**10**	**2 800**	**370**	**1.00**	**2**	**-**	**21 300**
ENERGY	**12 300**	**30**	**840**	**0.60**	**100**	**-**	**-**	**-**	**-**	**13 300**
a. Stationary Combustion Sources	**4 040**	**0.30**	**10**	**0.10**	**30**	**-**	**-**	**-**	**-**	**4 070**
Public Electricity and Heat Production	73	0.01	0.33	0.00	0.40	-	-	-	-	74
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Mining	98	0.00	0.04	0.01	2	-	-	-	-	100
Manufacturing Industries	1 320	0.05	2	0.04	10	-	-	-	-	1 330
Construction	110	0.00	0.06	0.00	0.56	-	-	-	-	110
Commercial and Institutional	1 390	0.03	0.75	0.03	8	-	-	-	-	1 400
Residential	1 010	0.30	7	0.02	6	-	-	-	-	1 020
Agriculture and Forestry	41	0.00	0.02	0.00	0.70	-	-	-	-	42
b. Transport[b]	**8 150**	**3**	**82**	**0.45**	**120**	**-**	**-**	**-**	**-**	**8 360**
Aviation	489	0.02	0.50	0.01	4	-	-	-	-	494
Road Transportation	4 440	0.30	7	0.15	40	-	-	-	-	4 490
Light-Duty Gasoline Vehicles	777	0.05	1	0.02	5	-	-	-	-	783
Light-Duty Gasoline Trucks	2 260	0.10	4	0.05	13	-	-	-	-	2 280
Heavy-Duty Gasoline Vehicles	171	0.01	0.20	0.02	4	-	-	-	-	176
Motorcycles	28	0.01	0.30	0.00	0.14	-	-	-	-	28
Light-Duty Diesel Vehicles	4	0.00	0.00	0.00	0.08	-	-	-	-	4
Light-Duty Diesel Trucks	14	0.00	0.01	0.00	0.31	-	-	-	-	15
Heavy-Duty Diesel Vehicles	1 180	0.05	1	0.07	18	-	-	-	-	1 200
Propane and Natural Gas Vehicles	1	0.00	0.02	0.00	0.01	-	-	-	-	2
Railways	418	0.02	0.70	0.20	40	-	-	-	-	461
Marine	0.39	0.00	0.00	0.00	0.00	-	-	-	-	0.40
Other Transportation	2 810	3	74	0.10	30	-	-	-	-	2 910
Off-Road Agriculture and Forestry	1 280	0.08	2	0.06	20	-	-	-	-	1 300
Off-Road Commercial and Institutional	480	0.95	27	0.02	4	-	-	-	-	511
Off-Road Manufacturing, Mining and Construction	442	0.26	7	0.03	7	-	-	-	-	456
Off-Road Residential	31	0.09	3	0.00	0.20	-	-	-	-	34
Off-Road Other Transportation	469	1	32	0.01	4	-	-	-	-	505
Pipeline Transport	108	0.11	3	0.00	0.70	-	-	-	-	112
c. Fugitive Sources	**90**	**27**	**746**	**0.00**	**0.05**	**-**	**-**	**-**	**-**	**840**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	90	27	746	0.00	0.04	-	-	-	-	836
Oil	0.75	12	346	-	-	-	-	-	-	346
Natural Gas	0.04	4	115	-	-	-	-	-	-	115
Venting	0.62	10	270	-	-	-	-	-	-	270
Flaring	88	0.56	16	0.00	0.04	-	-	-	-	104
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**451**	**-**	**-**	**0.23**	**62**	**370**	**1.00**	**2**	**-**	**886**
a. Mineral Products	**67**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**67**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**370**	**0.20**	**-**	**-**	**370**
e. Non-Energy Products from Fuels and Solvent Use[c]	**380**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**x**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**x**	**x**	**-**	**0.80**	**2**	**-**	**x**
AGRICULTURE	**350**	**100**	**2 900**	**9**	**2 500**	**-**	**-**	**-**	**-**	**5 800**
a. Enteric Fermentation	**-**	**86**	**2 400**	**-**	**-**	**-**	**-**	**-**	**-**	**2 400**
b. Manure Management	**-**	**17**	**480**	**0.80**	**200**	**-**	**-**	**-**	**-**	**680**
c. Agricultural Soils	**-**	**-**	**-**	**9**	**2 300**	**-**	**-**	**-**	**-**	**2 300**
Direct Sources	-	-	-	7	1 800	-	-	-	-	1 800
Indirect Sources	-	-	-	2	500	-	-	-	-	500
d. Field Burning of Agricultural Residues	**-**	**0.60**	**20**	**0.02**	**4**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**350**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**350**
WASTE	**-**	**46**	**1 300**	**0.30**	**70**	**-**	**-**	**-**	**-**	**1 400**
a. Landfills	**-**	**40**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	0.10	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.30**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**20**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**-**	**1**	**40**	**0.20**	**60**	**-**	**-**	**-**	**-**	**99**
Municipal Wastewater Treatment and Discharge	-	-	-	-	100	-	-	-	-	100
Industrial Wastewater Treatment and Discharge	-	-	1	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-4 300**	**0.96**	**27**	**0.03**	**9**	**-**	**-**	**-**	**-**	**-4 300**
a. Forest Land	**-990**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-990**
b. Cropland	**-3 600**	**0.67**	**19**	**0.03**	**8**	**-**	**-**	**-**	**-**	**-3 600**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**260**	**0.22**	**6**	**0.00**	**0.38**	**-**	**-**	**-**	**-**	**260**
e. Settlements	**160**	**0.07**	**2**	**0.00**	**0.75**	**-**	**-**	**-**	**-**	**170**
f. Harvested Wood Products[e]	**-170**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-170**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–16 GHG Emission Summary for Saskatchewan, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**48 500**	**80 500**	**88 600**	**86 200**	**74 600**	**76 400**	**75 200**	**73 900**
ENERGY	**41 000**	**67 300**	**75 400**	**72 900**	**61 100**	**63 100**	**61 800**	**60 500**
a. Stationary Combustion Sources	**18 300**	**25 800**	**31 200**	**30 800**	**27 600**	**30 400**	**30 300**	**29 800**
Public Electricity and Heat Production	11 100	15 300	16 400	16 000	13 900	16 100	14 800	14 600
Petroleum Refining Industries	627	750	1 110	1 170	1 030	1 160	1 120	1 150
Oil and Gas Extraction	1 400	4 480	6 240	6 290	5 990	6 230	6 920	7 200
Mining	974	1 300	2 270	2 010	1 710	2 250	2 340	2 250
Manufacturing Industries	789	541	1 300	1 260	1 250	1 080	1 160	1 180
Construction	70	43	45	36	34	34	33	35
Commercial and Institutional	984	1 540	1 670	1 750	1 580	1 550	1 720	1 530
Residential	2 080	1 620	2 040	2 130	1 910	1 880	2 030	1 730
Agriculture and Forestry	296	261	170	130	133	137	135	144
b. Transport[b]	**9 320**	**11 900**	**17 200**	**16 800**	**15 600**	**16 000**	**15 800**	**15 700**
Aviation	259	192	235	218	117	147	181	198
Road Transportation	3 160	4 980	7 190	7 040	6 390	6 670	6 480	6 390
Light-Duty Gasoline Vehicles	1 120	1 170	946	906	732	762	705	648
Light-Duty Gasoline Trucks	1 080	1 600	3 020	3 030	2 720	2 830	2 750	2 660
Heavy-Duty Gasoline Vehicles	332	237	292	287	277	262	243	235
Motorcycles	2	6	13	13	10	10	9	9
Light-Duty Diesel Vehicles	4	11	12	11	9	10	10	9
Light-Duty Diesel Trucks	21	36	53	54	47	59	64	63
Heavy-Duty Diesel Vehicles	564	1 930	2 850	2 730	2 600	2 730	2 700	2 770
Propane and Natural Gas Vehicles	39	0.40	3	4	2	2	2	2
Railways	636	670	903	894	790	743	732	735
Marine	0.00	-	-	-	-	-	-	-
Other Transportation	5 270	6 030	8 910	8 700	8 340	8 410	8 460	8 420
Off-Road Agriculture and Forestry	2 500	2 630	5 410	5 280	5 370	5 130	4 920	5 220
Off-Road Commercial and Institutional	350	329	475	473	418	442	429	423
Off-Road Manufacturing, Mining and Construction	426	434	554	536	511	491	463	473
Off-Road Residential	9	47	52	51	51	44	41	37
Off-Road Other Transportation	385	651	1 010	984	897	893	880	815
Pipeline Transport	1 600	1 940	1 420	1 370	1 100	1 420	1 730	1 460
c. Fugitive Sources	**13 000**	**30 000**	**27 000**	**25 000**	**18 000**	**17 000**	**16 000**	**15 000**
Coal Mining	20	20	20	20	10	20	20	10
Oil and Natural Gas	13 300	29 500	27 000	25 200	17 900	16 700	15 600	15 000
Oil	229	493	710	719	694	716	785	793
Natural Gas	939	604	642	513	383	371	340	334
Venting	11 500	26 800	23 600	22 100	14 900	13 500	12 700	12 000
Flaring	673	1 640	2 000	1 840	1 900	2 060	1 830	1 830
d. CO_2 Transport and Storage	**-**	**0.09**	**0.20**	**60**	**0.20**	**0.20**	**0.20**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**360**	**863**	**716**	**718**	**865**	**846**	**834**	**818**
a. Mineral Products	**104**	**22**	**4**	**4**	**5**	**5**	**5**	**5**
Cement Production	89	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	16	22	4	4	5	5	5	5
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**160**	**410**	**400**	**410**	**380**	**360**	**360**
e. Non-Energy Products from Fuels and Solvent Use[c]	**250**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**7**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
AGRICULTURE	**6 100**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**
a. Enteric Fermentation	**3 700**	**6 800**	**5 100**	**5 100**	**5 100**	**5 200**	**5 000**	**4 900**
b. Manure Management	**640**	**1 200**	**960**	**940**	**950**	**960**	**920**	**910**
c. Agricultural Soils	**1 600**	**2 400**	**3 900**	**4 000**	**4 000**	**3 700**	**4 200**	**4 100**
Direct Sources	1 200	1 800	3 000	3 000	3 000	2 800	3 300	3 100
Indirect Sources	400	600	1 000	1 000	1 000	900	900	1 000
d. Field Burning of Agricultural Residues	**80**	**30**	**30**	**30**	**30**	**20**	**30**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**190**	**450**	**1 000**	**1 000**	**1 100**	**1 200**	**1 000**	**1 200**
WASTE	**1 000**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**
a. Landfills	**900**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
Municipal Solid Waste Landfills	1 000	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**0.01**	**2**	**4**	**4**	**4**	**3**	**3**	**3**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
d. Wastewater Treatment and Discharge	**80**	**83**	**91**	**120**	**120**	**120**	**120**	**120**
Municipal Wastewater Treatment and Discharge	100	100	100	100	100	100	100	100
Industrial Wastewater Treatment and Discharge	-	-	-	100	100	100	100	100
LAND USE, LAND-USE CHANGE AND FORESTRY	**-8 300**	**-14 000**	**-15 000**	**-16 000**	**-16 000**	**-16 000**	**8 100**	**-17 000**
a. Forest Land	**-2 400**	**3 900**	**-60**	**260**	**-62**	**-90**	**-240**	**-32**
b. Cropland	**-4 100**	**-16 000**	**-14 000**	**-15 000**	**-15 000**	**-16 000**	**9 000**	**-16 000**
c. Grassland	**0.05**	**0.03**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**	**0.30**
d. Wetlands	**35**	**42**	**43**	**43**	**43**	**51**	**53**	**56**
e. Settlements	**65**	**22**	**36**	**33**	**35**	**31**	**34**	**34**
f. Harvested Wood Products[e]	**-1 900**	**-2 000**	**-1 100**	**-1 500**	**-970**	**-870**	**-750**	**-730**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–17 2023 GHG Emission Summary for Saskatchewan

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**48 700**	**700**	**20 000**	**20**	**5 200**	**360**	**0.48**	**0.59**	**-**	**73 900**
ENERGY	**47 000**	**470**	**13 000**	**2**	**500**	**-**	**-**	**-**	**-**	**60 500**
a. Stationary Combustion Sources	**29 500**	**5**	**100**	**0.60**	**200**	**-**	**-**	**-**	**-**	**29 800**
Public Electricity and Heat Production	14 500	2	42	0.40	90	-	-	-	-	14 600
Petroleum Refining Industries	1 140	0.03	0.80	0.01	3	-	-	-	-	1 150
Oil and Gas Extraction	7 060	3	100	0.10	40	-	-	-	-	7 200
Mining	2 240	0.04	1	0.04	10	-	-	-	-	2 250
Manufacturing Industries	1 170	0.04	0.97	0.03	7	-	-	-	-	1 180
Construction	35	0.00	0.02	0.00	0.20	-	-	-	-	35
Commercial and Institutional	1 520	0.03	0.82	0.03	8	-	-	-	-	1 530
Residential	1 720	0.10	4	0.03	9	-	-	-	-	1 730
Agriculture and Forestry	143	0.00	0.08	0.00	0.70	-	-	-	-	144
b. Transport[b]	**15 400**	**5**	**150**	**0.91**	**240**	**-**	**-**	**-**	**-**	**15 700**
Aviation	196	0.01	0.20	0.01	2	-	-	-	-	198
Road Transportation	6 310	0.30	10	0.29	76	-	-	-	-	6 390
Light-Duty Gasoline Vehicles	640	0.04	1	0.02	6	-	-	-	-	648
Light-Duty Gasoline Trucks	2 630	0.20	5	0.08	22	-	-	-	-	2 660
Heavy-Duty Gasoline Vehicles	229	0.01	0.30	0.02	5	-	-	-	-	235
Motorcycles	9	0.00	0.09	0.00	0.04	-	-	-	-	9
Light-Duty Diesel Vehicles	9	0.00	0.01	0.00	0.20	-	-	-	-	9
Light-Duty Diesel Trucks	62	0.00	0.04	0.01	1	-	-	-	-	63
Heavy-Duty Diesel Vehicles	2 730	0.10	3	0.15	40	-	-	-	-	2 770
Propane and Natural Gas Vehicles	2	0.00	0.03	0.00	0.01	-	-	-	-	2
Railways	665	0.04	1	0.30	70	-	-	-	-	735
Marine	-	-	-	-	-	-	-	-	-	-
Other Transportation	8 190	5	140	0.40	90	-	-	-	-	8 420
Off-Road Agriculture and Forestry	5 140	0.40	11	0.30	70	-	-	-	-	5 220
Off-Road Commercial and Institutional	394	0.89	25	0.01	3	-	-	-	-	423
Off-Road Manufacturing, Mining and Construction	457	0.33	9	0.03	7	-	-	-	-	473
Off-Road Residential	34	0.10	3	0.00	0.20	-	-	-	-	37
Off-Road Other Transportation	757	2	52	0.02	6	-	-	-	-	815
Pipeline Transport	1 410	1	39	0.04	10	-	-	-	-	1 460
c. Fugitive Sources	**2 100**	**456**	**12 800**	**0.25**	**67**	**-**	**-**	**-**	**-**	**15 000**
Coal Mining	-	0.50	10	-	-	-	-	-	-	10
Oil and Natural Gas	2 100	455	12 700	0.30	70	-	-	-	-	15 000
Oil	15	26	713	0.20	60	-	-	-	-	793
Natural Gas	0.37	12	333	-	-	-	-	-	-	334
Venting	450	412	11 500	-	-	-	-	-	-	12 000
Flaring	1 680	6	154	0.01	2	-	-	-	-	1 830
d. CO_2 Transport and Storage	**0.20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**435**	**-**	**-**	**0.10**	**27**	**360**	**0.48**	**0.59**	**-**	**818**
a. Mineral Products	**5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	5	-	-	-	-	-	-	-	-	5
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**360**	**0.17**	**-**	**-**	**360**
e. Non-Energy Products from Fuels and Solvent Use[c]	**430**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**x**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**x**	**x**	**-**	**0.30**	**0.59**	**-**	**x**
AGRICULTURE	**1 200**	**190**	**5 200**	**18**	**4 700**	**-**	**-**	**-**	**-**	**11 000**
a. Enteric Fermentation	**-**	**170**	**4 900**	**-**	**-**	**-**	**-**	**-**	**-**	**4 900**
b. Manure Management	**-**	**12**	**330**	**2**	**600**	**-**	**-**	**-**	**-**	**910**
c. Agricultural Soils	**-**	**-**	**-**	**16**	**4 100**	**-**	**-**	**-**	**-**	**4 100**
Direct Sources	-	-	-	12	3 100	-	-	-	-	3 100
Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.70**	**20**	**0.02**	**5**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1 200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 200**
WASTE	**10**	**48**	**1 300**	**0.10**	**30**	**-**	**-**	**-**	**-**	**1 400**
a. Landfills	**-**	**50**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	1	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.06**	**2**	**0.01**	**2**	**-**	**-**	**-**	**-**	**3**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
d. Wastewater Treatment and Discharge	**12**	**3**	**80**	**0.10**	**30**	**-**	**-**	**-**	**-**	**120**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	100
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	100
LAND USE, LAND-USE CHANGE AND FORESTRY	**-17 000**	**0.54**	**15**	**0.02**	**6**	**-**	**-**	**-**	**-**	**-17 000**
a. Forest Land	**-32**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-32**
b. Cropland	**-16 000**	**0.46**	**13**	**0.02**	**5**	**-**	**-**	**-**	**-**	**-16 000**
c. Grassland	**-**	**0.01**	**0.30**	**0.00**	**0.06**	**-**	**-**	**-**	**-**	**0.30**
d. Wetlands	**55**	**0.03**	**0.86**	**0.00**	**0.14**	**-**	**-**	**-**	**-**	**56**
e. Settlements	**32**	**0.05**	**1**	**0.00**	**0.54**	**-**	**-**	**-**	**-**	**34**
f. Harvested Wood Products[e]	**-730**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-730**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–18 GHG Emission Summary for Alberta, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**177 000**	**251 000**	**283 000**	**285 000**	**266 000**	**268 000**	**265 000**	**263 000**
ENERGY	**155 000**	**217 000**	**249 000**	**250 000**	**232 000**	**234 000**	**230 000**	**229 000**
a. Stationary Combustion Sources	**92 600**	**130 000**	**157 000**	**159 000**	**149 000**	**148 000**	**146 000**	**147 000**
Public Electricity and Heat Production	39 700	52 000	36 600	36 300	32 200	28 300	24 700	25 400
Petroleum Refining Industries	2 990	3 420	3 300	3 870	3 440	3 690	4 160	3 850
Oil and Gas Extraction	26 700	51 900	90 000	91 200	87 000	90 700	90 800	92 000
Mining	285	327	170	198	141	82	134	122
Manufacturing Industries	10 400	8 770	8 790	9 290	8 670	8 580	8 400	8 710
Construction	238	170	385	439	450	421	488	508
Commercial and Institutional	5 040	5 610	8 400	8 630	8 120	7 810	8 470	7 990
Residential	6 720	7 470	8 960	8 880	8 670	8 170	8 650	8 030
Agriculture and Forestry	477	238	389	403	370	373	394	415
b. Transport[b]	**21 200**	**32 200**	**41 300**	**42 300**	**35 200**	**36 500**	**38 000**	**37 300**
Aviation	1 140	1 350	1 700	1 670	901	1 040	1 440	1 610
Road Transportation	12 000	17 400	22 100	22 300	18 100	18 300	18 600	18 600
Light-Duty Gasoline Vehicles	3 700	3 740	3 040	3 040	2 330	2 280	2 340	2 300
Light-Duty Gasoline Trucks	4 050	6 180	8 610	9 010	7 370	7 380	7 620	7 820
Heavy-Duty Gasoline Vehicles	1 120	842	839	868	710	724	619	634
Motorcycles	23	66	157	173	122	138	113	112
Light-Duty Diesel Vehicles	13	42	50	50	39	37	44	40
Light-Duty Diesel Trucks	144	112	199	204	166	174	232	222
Heavy-Duty Diesel Vehicles	2 660	6 420	9 180	8 930	7 300	7 530	7 560	7 360
Propane and Natural Gas Vehicles	304	6	42	59	63	64	73	70
Railways	431	880	1 010	992	961	882	888	889
Marine	0.00	-	-	-	-	-	-	-
Other Transportation	7 610	12 600	16 500	17 300	15 200	16 300	17 000	16 200
Off-Road Agriculture and Forestry	1 990	2 790	3 090	3 230	2 720	2 840	2 800	2 610
Off-Road Commercial and Institutional	823	658	918	927	803	891	925	956
Off-Road Manufacturing, Mining and Construction	2 680	4 480	6 540	7 000	5 940	6 190	6 180	5 930
Off-Road Residential	45	153	129	131	108	111	90	87
Off-Road Other Transportation	772	1 320	1 580	1 580	1 370	1 480	1 480	1 470
Pipeline Transport	1 300	3 190	4 200	4 410	4 250	4 760	5 540	5 160
c. Fugitive Sources	**41 000**	**55 000**	**50 000**	**49 000**	**47 000**	**49 000**	**46 000**	**45 000**
Coal Mining	400	300	200	300	200	100	200	200
Oil and Natural Gas	40 900	55 000	50 100	48 500	46 900	49 000	45 900	44 900
Oil	4 150	6 260	6 850	6 930	6 620	6 670	6 740	6 780
Natural Gas	5 860	8 810	5 790	5 650	5 490	5 360	5 130	5 070
Venting	27 000	38 000	34 900	33 300	31 500	33 200	30 000	28 700
Flaring	3 970	1 930	2 540	2 600	3 330	3 770	4 070	4 350
d. CO_2 Transport and Storage	**-**	**-**	**0.10**	**0.10**	**100**	**30**	**40**	**40**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 720**	**11 300**	**12 900**	**12 700**	**12 400**	**12 700**	**12 600**	**12 300**
a. Mineral Products	**1 080**	**1 480**	**1 560**	**1 500**	**1 290**	**1 580**	**1 530**	**1 590**
Cement Production	795	1 090	x	x	x	x	x	x
Lime Production	112	131	x	x	x	x	x	x
Mineral Products Use	170	260	160	160	160	160	150	150
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**21**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	21	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**0.20**	**640**	**1 600**	**1 600**	**1 500**	**1 400**	**1 400**	**1 400**
e. Non-Energy Products from Fuels and Solvent Use[c]	**5 600**	**9 200**	**9 700**	**9 600**	**9 500**	**9 700**	**9 600**	**9 300**
f. Other Product Manufacture and Use	**16**	**35**	**57**	**59**	**59**	**60**	**60**	**64**
AGRICULTURE	**13 000**	**18 000**	**17 000**	**17 000**	**18 000**	**17 000**	**18 000**	**17 000**
a. Enteric Fermentation	**8 700**	**13 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**
b. Manure Management	**1 400**	**2 200**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**
c. Agricultural Soils	**2 200**	**2 600**	**3 400**	**3 600**	**3 900**	**3 600**	**4 100**	**3 500**
Direct Sources	1 700	1 900	2 600	2 800	3 000	2 800	3 200	2 800
Indirect Sources	500	700	800	800	900	800	800	800
d. Field Burning of Agricultural Residues	**4**	**0.80**	**0.90**	**1**	**1**	**0.70**	**1**	**0.30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**260**	**370**	**720**	**760**	**880**	**920**	**860**	**780**
WASTE	**2 100**	**3 300**	**4 600**	**4 500**	**4 600**	**4 600**	**4 600**	**4 700**
a. Landfills	**2 000**	**3 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	100	100	100	100	100	100
b. Biological Treatment of Solid Waste	**4**	**20**	**30**	**20**	**30**	**60**	**60**	**60**
c. Incineration and Open Burning of Waste	**8**	**20**	**30**	**40**	**40**	**30**	**20**	**20**
d. Wastewater Treatment and Discharge	**450**	**510**	**570**	**460**	**440**	**380**	**370**	**360**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	100	100
LAND USE, LAND-USE CHANGE AND FORESTRY	**4 500**	**16 000**	**15 000**	**16 000**	**21 000**	**18 000**	**28 000**	**12 000**
a. Forest Land	**4 500**	**30 000**	**23 000**	**20 000**	**26 000**	**21 000**	**19 000**	**18 000**
b. Cropland	**5 900**	**-5 700**	**-4 500**	**-1 400**	**-1 000**	**-2 000**	**8 900**	**-6 200**
c. Grassland	**0.60**	**0.70**	**0.90**	**0.90**	**0.90**	**0.90**	**0.90**	**0.90**
d. Wetlands	**56**	**150**	**200**	**210**	**220**	**220**	**230**	**240**
e. Settlements	**2 300**	**3 900**	**4 300**	**4 200**	**4 500**	**4 400**	**4 400**	**4 200**
f. Harvested Wood Products[e]	**-8 200**	**-11 000**	**-8 000**	**-7 000**	**-8 500**	**-5 800**	**-4 400**	**-4 400**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–19 2023 GHG Emission Summary for Alberta

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**204 000**	**1 800**	**51 000**	**24**	**6 300**	**1 400**	**3**	**4**	**-**	**263 000**
ENERGY	**193 000**	**1 300**	**35 000**	**5**	**1 000**	**-**	**-**	**-**	**-**	**229 000**
a. Stationary Combustion Sources	**144 000**	**90**	**3 000**	**3**	**800**	**-**	**-**	**-**	**-**	**147 000**
Public Electricity and Heat Production	25 100	4	120	0.60	200	-	-	-	-	25 400
Petroleum Refining Industries	3 850	0.08	2	0.02	6	-	-	-	-	3 850
Oil and Gas Extraction	89 200	90	2 000	2	500	-	-	-	-	92 000
Mining	122	0.00	0.06	0.00	0.50	-	-	-	-	122
Manufacturing Industries	8 630	0.39	11	0.27	71	-	-	-	-	8 710
Construction	503	0.01	0.25	0.02	5	-	-	-	-	508
Commercial and Institutional	7 940	0.15	4	0.20	50	-	-	-	-	7 990
Residential	7 970	0.80	20	0.20	40	-	-	-	-	8 030
Agriculture and Forestry	412	0.01	0.20	0.01	3	-	-	-	-	415
b. Transport[b]	**36 400**	**13**	**360**	**2**	**450**	**-**	**-**	**-**	**-**	**37 300**
Aviation	1 590	0.03	0.70	0.05	10	-	-	-	-	1 610
Road Transportation	18 300	1	30	0.75	200	-	-	-	-	18 600
Light-Duty Gasoline Vehicles	2 280	0.10	4	0.07	18	-	-	-	-	2 300
Light-Duty Gasoline Trucks	7 750	0.50	10	0.19	50	-	-	-	-	7 820
Heavy-Duty Gasoline Vehicles	619	0.02	0.60	0.05	14	-	-	-	-	634
Motorcycles	111	0.04	1	0.00	0.55	-	-	-	-	112
Light-Duty Diesel Vehicles	39	0.00	0.02	0.00	0.87	-	-	-	-	40
Light-Duty Diesel Trucks	217	0.01	0.20	0.02	5	-	-	-	-	222
Heavy-Duty Diesel Vehicles	7 240	0.30	9	0.41	110	-	-	-	-	7 360
Propane and Natural Gas Vehicles	65	0.20	5	0.00	0.44	-	-	-	-	70
Railways	804	0.05	1	0.30	80	-	-	-	-	889
Marine	-	-	-	-	-	-	-	-	-	-
Other Transportation	15 700	12	320	0.60	200	-	-	-	-	16 200
Off-Road Agriculture and Forestry	2 560	0.24	7	0.10	40	-	-	-	-	2 610
Off-Road Commercial and Institutional	895	2	54	0.03	7	-	-	-	-	956
Off-Road Manufacturing, Mining and Construction	5 830	1.00	28	0.30	70	-	-	-	-	5 930
Off-Road Residential	80	0.23	6	0.00	0.50	-	-	-	-	87
Off-Road Other Transportation	1 370	3	94	0.04	10	-	-	-	-	1 470
Pipeline Transport	4 990	5	130	0.10	30	-	-	-	-	5 160
c. Fugitive Sources	**13 000**	**1 160**	**32 400**	**0.06**	**16**	**-**	**-**	**-**	**-**	**45 000**
Coal Mining	-	7	200	-	-	-	-	-	-	200
Oil and Natural Gas	13 000	1 150	32 200	0.06	20	-	-	-	-	44 900
Oil	590	221	6 180	0.04	10	-	-	-	-	6 780
Natural Gas	7	181	5 060	-	-	-	-	-	-	5 070
Venting	8 300	730	20 400	-	-	-	-	-	-	28 700
Flaring	3 850	18	491	0.02	5	-	-	-	-	4 350
d. CO_2 Transport and Storage	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
INDUSTRIAL PROCESSES AND PRODUCT USE	**10 700**	**4**	**99**	**0.47**	**130**	**1 400**	**3**	**4**	**-**	**12 300**
a. Mineral Products	**1 590**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 590**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	150	-	-	-	-	-	-	-	-	150
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 400**	**2**	**2**	**-**	**1 400**
e. Non-Energy Products from Fuels and Solvent Use[c]	**9 200**	**-**	**100**	**-**	**100**	**-**	**-**	**-**	**-**	**9 300**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.23**	**61**	**-**	**0.80**	**2**	**-**	**64**
AGRICULTURE	**780**	**410**	**11 000**	**18**	**4 700**	**-**	**-**	**-**	**-**	**17 000**
a. Enteric Fermentation	**-**	**380**	**11 000**	**-**	**-**	**-**	**-**	**-**	**-**	**11 000**
b. Manure Management	**-**	**27**	**740**	**4**	**1 000**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**13**	**3 500**	**-**	**-**	**-**	**-**	**3 500**
Direct Sources	-	-	-	10	2 800	-	-	-	-	2 800
Indirect Sources	-	-	-	3	800	-	-	-	-	800
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.30**	**0.00**	**0.06**	**-**	**-**	**-**	**-**	**0.30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**780**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**780**
WASTE	**30**	**160**	**4 400**	**0.90**	**200**	**-**	**-**	**-**	**-**	**4 700**
a. Landfills	**-**	**200**	**4 000**	**-**	**-**	**-**	**-**	**-**	**-**	**4 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	100	-	-	-	-	-	-	100
b. Biological Treatment of Solid Waste	**-**	**1**	**30**	**0.09**	**20**	**-**	**-**	**-**	**-**	**60**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.01**	**0.02**	**5**	**-**	**-**	**-**	**-**	**20**
d. Wastewater Treatment and Discharge	**14**	**5**	**100**	**0.80**	**200**	**-**	**-**	**-**	**-**	**360**
Municipal Wastewater Treatment and Discharge	-	-	100	1	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	100
LAND USE, LAND-USE CHANGE AND FORESTRY	**11 000**	**6**	**170**	**0.24**	**64**	**-**	**-**	**-**	**-**	**12 000**
a. Forest Land	**18 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**18 000**
b. Cropland	**-6 300**	**3**	**82**	**0.13**	**34**	**-**	**-**	**-**	**-**	**-6 200**
c. Grassland	**-**	**0.03**	**0.70**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.90**
d. Wetlands	**240**	**0.29**	**8**	**0.00**	**0.46**	**-**	**-**	**-**	**-**	**240**
e. Settlements	**4 100**	**3**	**75**	**0.11**	**30**	**-**	**-**	**-**	**-**	**4 200**
f. Harvested Wood Products[e]	**-4 400**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-4 400**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–20 GHG Emission Summary for British Columbia, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**51 200**	**63 300**	**64 500**	**63 300**	**59 100**	**60 600**	**61 500**	**60 400**
ENERGY	**43 200**	**53 300**	**55 800**	**54 800**	**51 200**	**53 000**	**54 100**	**52 600**
a. Stationary Combustion Sources	**19 300**	**21 300**	**21 800**	**21 200**	**20 800**	**21 000**	**21 600**	**20 200**
Public Electricity and Heat Production	804	1 330	817	1 050	735	961	894	757
Petroleum Refining Industries	1 240	455	378	471	381	424	447	373
Oil and Gas Extraction	2 220	5 290	7 620	6 960	7 200	6 970	7 430	6 860
Mining	615	384	534	528	513	574	535	586
Manufacturing Industries	6 480	6 080	4 980	4 420	4 030	4 040	3 830	4 040
Construction	307	112	106	101	100	90	96	83
Commercial and Institutional	2 950	3 130	2 780	2 930	3 000	3 120	3 320	3 110
Residential	4 350	4 430	4 020	4 180	4 240	4 330	4 480	3 960
Agriculture and Forestry	323	75	614	586	578	520	543	472
b. Transport[b]	**18 900**	**24 200**	**28 100**	**27 800**	**24 900**	**26 800**	**28 100**	**28 300**
Aviation	1 340	1 550	1 600	1 600	905	1 120	1 540	1 690
Road Transportation	10 500	14 000	15 700	15 500	14 000	15 100	15 700	15 500
Light-Duty Gasoline Vehicles	4 300	4 270	3 530	3 320	2 770	2 890	2 940	2 820
Light-Duty Gasoline Trucks	3 090	5 170	6 600	6 520	5 950	6 290	6 380	6 400
Heavy-Duty Gasoline Vehicles	568	597	638	617	622	618	535	537
Motorcycles	14	39	88	89	78	83	65	64
Light-Duty Diesel Vehicles	50	83	81	78	59	69	87	81
Light-Duty Diesel Trucks	242	174	144	151	127	166	227	223
Heavy-Duty Diesel Vehicles	1 940	3 690	4 610	4 680	4 330	4 940	5 380	5 310
Propane and Natural Gas Vehicles	293	10	28	33	34	37	42	41
Railways	1 750	1 430	1 710	1 820	1 800	1 780	1 780	1 790
Marine	782	1 020	1 200	1 200	1 170	1 160	1 230	1 160
Other Transportation	4 500	6 180	7 880	7 670	7 090	7 620	7 930	8 170
Off-Road Agriculture and Forestry	1 220	1 360	1 600	1 520	1 340	1 500	1 590	1 620
Off-Road Commercial and Institutional	363	434	814	822	797	883	921	952
Off-Road Manufacturing, Mining and Construction	1 690	2 480	3 000	2 840	2 490	2 780	2 920	3 030
Off-Road Residential	36	129	108	104	110	99	75	71
Off-Road Other Transportation	325	793	1 010	1 000	1 040	1 050	1 010	983
Pipeline Transport	864	986	1 350	1 380	1 310	1 310	1 420	1 530
c. Fugitive Sources	**5 000**	**7 800**	**5 900**	**5 800**	**5 500**	**5 200**	**4 400**	**4 100**
Coal Mining	900	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Oil and Natural Gas	4 110	6 710	4 740	4 640	4 490	3 930	3 300	2 830
Oil	100	158	95	79	58	56	49	46
Natural Gas	1 000	1 380	804	741	680	686	732	711
Venting	2 650	4 510	3 300	3 310	3 230	2 540	1 850	1 330
Flaring	356	669	544	501	520	649	672	748
d. CO_2 Transport and Storage	-	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES AND PRODUCT USE	**3 190**	**4 530**	**3 980**	**3 900**	**3 630**	**3 520**	**3 270**	**3 720**
a. Mineral Products	**875**	**1 500**	**1 060**	**995**	**899**	**1 000**	**894**	**994**
Cement Production	656	1 260	x	x	x	x	x	x
Lime Production	176	198	x	x	x	x	x	x
Mineral Products Use	43	38	17	16	16	15	15	14
b. Chemical Industry[c]	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**1 550**	**1 150**	**769**	**760**	**722**	**511**	**369**	**743**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	1 550	1 150	769	760	722	511	369	743
Magnesium Production and Casting	-	2	0.01	0.01	0.01	0.01	0.01	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**0.14**	**600**	**1 500**	**1 500**	**1 500**	**1 500**	**1 400**	**1 400**
e. Non-Energy Products from Fuels and Solvent Use[c]	**690**	**1 200**	**550**	**550**	**430**	**470**	**490**	**490**
f. Other Product Manufacture and Use	**77**	**93**	**76**	**88**	**71**	**81**	**79**	**82**
AGRICULTURE	**2 100**	**2 700**	**2 400**	**2 300**	**2 300**	**2 300**	**2 300**	**2 200**
a. Enteric Fermentation	**1 500**	**2 000**	**1 600**	**1 600**	**1 600**	**1 600**	**1 600**	**1 500**
b. Manure Management	**310**	**430**	**410**	**400**	**400**	**400**	**400**	**400**
c. Agricultural Soils	**240**	**250**	**280**	**270**	**290**	**290**	**270**	**270**
Direct Sources	170	170	200	190	200	200	190	190
Indirect Sources	70	80	80	80	90	90	80	80
d. Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**25**	**24**	**33**	**33**	**43**	**46**	**36**	**35**
WASTE	**2 700**	**2 700**	**2 300**	**2 300**	**1 900**	**1 800**	**1 900**	**1 900**
a. Landfills	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**1 000**	**1 000**	**1 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**2**	**50**	**80**	**90**	**90**	**100**	**100**	**100**
c. Incineration and Open Burning of Waste	**4**	-	-	-	-	-	-	-
d. Wastewater Treatment and Discharge	**180**	**230**	**300**	**300**	**300**	**300**	**310**	**320**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	10	10	10	10	10	10	10
LAND USE, LAND-USE CHANGE AND FORESTRY	**-8 500**	**38 000**	**37 000**	**28 000**	**26 000**	**25 000**	**21 000**	**22 000**
a. Forest Land	**29 000**	**68 000**	**50 000**	**35 000**	**29 000**	**28 000**	**21 000**	**23 000**
b. Cropland	**2 200**	**1 200**	**1 100**	**790**	**1 000**	**1 100**	**1 100**	**1 100**
c. Grassland	**-**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**
d. Wetlands	**260**	**90**	**49**	**47**	**45**	**43**	**41**	**40**
e. Settlements	**1 700**	**590**	**820**	**750**	**550**	**870**	**600**	**650**
f. Harvested Wood Products[e]	**-41 000**	**-32 000**	**-15 000**	**-7 900**	**-4 000**	**-5 700**	**-2 000**	**-2 700**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–21 2023 GHG Emission Summary for British Columbia

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**50 200**	**260**	**7 300**	**6**	**1 500**	**1 400**	**99**	**12**	**-**	**60 400**
ENERGY	**48 000**	**140**	**3 900**	**3**	**700**	**-**	**-**	**-**	**-**	**52 600**
a. Stationary Combustion Sources	**19 300**	**30**	**700**	**0.70**	**200**	**-**	**-**	**-**	**-**	**20 200**
Public Electricity and Heat Production	703	2	44	0.04	10	-	-	-	-	757
Petroleum Refining Industries	372	0.01	0.30	0.00	0.70	-	-	-	-	373
Oil and Gas Extraction	6 220	20	600	0.20	40	-	-	-	-	6 860
Mining	582	0.01	0.30	0.01	3	-	-	-	-	586
Manufacturing Industries	3 940	0.61	17	0.32	86	-	-	-	-	4 040
Construction	83	0.00	0.04	0.00	0.48	-	-	-	-	83
Commercial and Institutional	3 090	0.06	2	0.07	20	-	-	-	-	3 110
Residential	3 880	2	50	0.09	20	-	-	-	-	3 960
Agriculture and Forestry	469	0.01	0.20	0.01	2	-	-	-	-	472
b. Transport[b]	**27 600**	**7**	**180**	**2**	**480**	**-**	**-**	**-**	**-**	**28 300**
Aviation	1 680	0.04	1	0.05	10	-	-	-	-	1 690
Road Transportation	15 300	1	30	0.69	180	-	-	-	-	15 500
Light-Duty Gasoline Vehicles	2 790	0.20	5	0.09	25	-	-	-	-	2 820
Light-Duty Gasoline Trucks	6 330	0.40	10	0.20	54	-	-	-	-	6 400
Heavy-Duty Gasoline Vehicles	524	0.02	0.50	0.05	12	-	-	-	-	537
Motorcycles	63	0.02	0.60	0.00	0.31	-	-	-	-	64
Light-Duty Diesel Vehicles	79	0.00	0.05	0.01	2	-	-	-	-	81
Light-Duty Diesel Trucks	218	0.01	0.20	0.02	5	-	-	-	-	223
Heavy-Duty Diesel Vehicles	5 220	0.20	7	0.31	83	-	-	-	-	5 310
Propane and Natural Gas Vehicles	37	0.10	3	0.00	0.27	-	-	-	-	41
Railways	1 610	0.09	3	0.60	200	-	-	-	-	1 790
Marine	1 150	0.11	3	0.03	8	-	-	-	-	1 160
Other Transportation	7 920	5	150	0.40	100	-	-	-	-	8 170
Off-Road Agriculture and Forestry	1 580	0.08	2	0.10	30	-	-	-	-	1 620
Off-Road Commercial and Institutional	911	1	32	0.03	9	-	-	-	-	952
Off-Road Manufacturing, Mining and Construction	2 960	0.53	15	0.20	50	-	-	-	-	3 030
Off-Road Residential	65	0.19	5	0.00	0.40	-	-	-	-	71
Off-Road Other Transportation	921	2	54	0.03	7	-	-	-	-	983
Pipeline Transport	1 480	1	39	0.04	10	-	-	-	-	1 530
c. Fugitive Sources	**1 000**	**108**	**3 020**	**0.00**	**1**	**-**	**-**	**-**	**-**	**4 100**
Coal Mining	-	40	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	1 000	64	1 790	0.00	1	-	-	-	-	2 830
Oil	0.10	2	45	0.00	0.80	-	-	-	-	46
Natural Gas	0.54	25	711	-	-	-	-	-	-	711
Venting	390	33	933	-	-	-	-	-	-	1 330
Flaring	644	4	104	0.00	0.30	-	-	-	-	748
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2 130**	**-**	**-**	**0.27**	**72**	**1 400**	**99**	**12**	**-**	**3 720**
a. Mineral Products	**994**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**994**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	14	-	-	-	-	-	-	-	-	14
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**648**	**-**	**-**	**-**	**-**	**-**	**96**	**0.01**	**-**	**743**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	648	-	-	-	-	-	96	-	-	743
Magnesium Production and Casting	-	-	-	-	-	-	-	0.01	-	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 400**	**2**	**4**	**-**	**1 400**
e. Non-Energy Products from Fuels and Solvent Use[c]	**490**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**490**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.27**	**72**	**-**	**1**	**8**	**-**	**82**
AGRICULTURE	**35**	**62**	**1 700**	**2**	**470**	**-**	**-**	**-**	**-**	**2 200**
a. Enteric Fermentation	**-**	**55**	**1 500**	**-**	**-**	**-**	**-**	**-**	**-**	**1 500**
b. Manure Management	**-**	**7**	**200**	**0.80**	**200**	**-**	**-**	**-**	**-**	**400**
c. Agricultural Soils	**-**	**-**	**-**	**1**	**270**	**-**	**-**	**-**	**-**	**270**
Direct Sources	-	-	-	0.70	190	-	-	-	-	190
Indirect Sources	-	-	-	0.30	80	-	-	-	-	80
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**35**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**35**
WASTE	**-**	**58**	**1 600**	**0.90**	**200**	**-**	**-**	**-**	**-**	**1 900**
a. Landfills	**-**	**50**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**2**	**50**	**0.20**	**50**	**-**	**-**	**-**	**-**	**100**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**-**	**5**	**100**	**0.70**	**200**	**-**	**-**	**-**	**-**	**320**
Municipal Wastewater Treatment and Discharge	-	-	-	1	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	0.10	-	-	10	-	-	-	-	10
LAND USE, LAND-USE CHANGE AND FORESTRY	**21 000**	**11**	**320**	**0.46**	**120**	**-**	**-**	**-**	**-**	**22 000**
a. Forest Land	**22 000**	**10**	**300**	**0.40**	**100**	**-**	**-**	**-**	**-**	**23 000**
b. Cropland	**1 000**	**0.62**	**17**	**0.03**	**7**	**-**	**-**	**-**	**-**	**1 100**
c. Grassland	**-**	**0.00**	**0.09**	**0.00**	**0.02**	**-**	**-**	**-**	**-**	**0.10**
d. Wetlands	**33**	**0.25**	**7**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
e. Settlements	**610**	**0.86**	**24**	**0.04**	**10**	**-**	**-**	**-**	**-**	**650**
f. Harvested Wood Products[e]	**-2 700**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-2 700**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–22 GHG Emission Summary for Yukon, Selected Years

Greenhouse Gas Categories	1990	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**550**	**565**	**644**	**689**	**593**	**647**	**660**	**674**
ENERGY	**527**	**531**	**590**	**633**	**536**	**589**	**604**	**616**
a. Stationary Combustion Sources	**218**	**194**	**86**	**107**	**107**	**94**	**87**	**83**
Public Electricity and Heat Production	90	22	33	48	54	42	39	37
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.31	67	-	-	-	-	-	-
Mining	8	x	x	14	8	6	6	5
Manufacturing Industries	6	-	16	17	16	17	18	18
Construction	4	x	x	1	1	1	0.62	0.46
Commercial and Institutional	77	41	23	20	19	21	18	18
Residential	32	46	6	7	9	6	5	4
Agriculture and Forestry	1	8	0.83	-	-	-	-	-
b. Transport[b]	**309**	**327**	**504**	**526**	**429**	**495**	**517**	**533**
Aviation	35	36	54	54	26	33	47	44
Road Transportation	173	198	287	297	266	278	286	303
Light-Duty Gasoline Vehicles	28	19	38	38	34	30	31	33
Light-Duty Gasoline Trucks	83	87	133	142	135	121	132	145
Heavy-Duty Gasoline Vehicles	14	10	15	18	13	11	10	11
Motorcycles	0.31	0.56	2	2	2	2	2	2
Light-Duty Diesel Vehicles	0.15	0.26	0.56	0.48	0.64	0.78	0.91	0.84
Light-Duty Diesel Trucks	2	1	2	2	3	4	8	8
Heavy-Duty Diesel Vehicles	46	79	97	94	79	110	103	103
Propane and Natural Gas Vehicles	-	-	0.83	1	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	2	3	0.44	0.75	0.51	0.49	1	1
Other Transportation	99	90	162	174	137	183	182	184
Off-Road Agriculture and Forestry	7	3	11	10	9	13	13	13
Off-Road Commercial and Institutional	4	9	10	13	8	11	12	12
Off-Road Manufacturing, Mining and Construction	79	54	120	118	100	138	137	137
Off-Road Residential	0.35	x	x	2	2	1	1	1
Off-Road Other Transportation	9	23	21	31	18	19	20	21
Pipeline Transport	-	x	x	-	-	-	-	-
c. Fugitive Sources	**0.11**	**11**	**0.21**	**0.31**	**0.26**	**0.19**	**0.20**	**0.22**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.11	11	0.21	0.31	0.26	0.20	0.20	0.22
Oil	-	-	-	-	-	-	-	-
Natural Gas	0.11	3	0.21	0.31	0.26	0.20	0.20	0.22
Venting	-	7	-	-	-	-	-	-
Flaring	-	1	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**7**	**20**	**21**	**21**	**21**	**19**	**20**
a. Mineral Products	**-**	**-**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	0.01	0.00	0.00	0.00	0.00	0.00
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**7**	**18**	**18**	**18**	**17**	**17**	**17**
e. Non-Energy Products from Fuels and Solvent Use[c]	**2**	**0.43**	**0.78**	**1**	**2**	**1**	**2**	**2**
f. Other Product Manufacture and Use	**0.15**	**0.33**	**1**	**2**	**2**	**3**	**0.55**	**2**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**20**	**27**	**34**	**35**	**36**	**37**	**37**	**38**
a. Landfills	**20**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**0.01**	**0.10**	**0.40**	**0.40**	**0.40**	**0.50**	**0.50**	**0.50**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**5**	**5**	**6**	**7**	**7**	**7**	**7**	**7**
Municipal Wastewater Treatment and Discharge	-	10	10	10	10	10	10	10
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-4 200**	**-4 200**	**-4 400**	**-4 400**	**-4 400**	**-4 400**	**-4 300**	**-4 300**
a. Forest Land	**-4 300**	**-4 200**	**-4 400**	**-4 400**	**-4 400**	**-4 400**	**-4 400**	**-4 400**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**81**	**44**	**34**	**33**	**33**	**33**	**33**	**32**
f. Harvested Wood Products[e]	**-28**	**16**	**7**	**8**	**8**	**7**	**8**	**7**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–23 2023 GHG Emission Summary for Yukon

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**608**	**1**	**40**	**0.03**	**8**	**17**	**0.01**	**1**	**-**	**674**
ENERGY	**606**	**0.10**	**3**	**0.03**	**7**	**-**	**-**	**-**	**-**	**616**
a. Stationary Combustion Sources	**82**	**0.03**	**0.70**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**83**
Public Electricity and Heat Production	37	0.00	0.12	0.00	0.10	-	-	-	-	37
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	5	0.00	0.00	0.00	0.08	-	-	-	-	5
Manufacturing Industries	18	0.00	0.00	0.00	0.05	-	-	-	-	18
Construction	0.46	0.00	0.00	0.00	0.01	-	-	-	-	0.46
Commercial and Institutional	18	0.00	0.01	0.00	0.20	-	-	-	-	18
Residential	3	0.02	0.60	0.00	0.10	-	-	-	-	4
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**525**	**0.06**	**2**	**0.02**	**6**	**-**	**-**	**-**	**-**	**533**
Aviation	44	0.00	0.06	0.00	0.40	-	-	-	-	44
Road Transportation	299	0.02	0.40	0.01	3	-	-	-	-	303
Light-Duty Gasoline Vehicles	33	0.00	0.06	0.00	0.24	-	-	-	-	33
Light-Duty Gasoline Trucks	144	0.01	0.20	0.00	0.89	-	-	-	-	145
Heavy-Duty Gasoline Vehicles	11	0.00	0.01	0.00	0.24	-	-	-	-	11
Motorcycles	2	0.00	0.02	0.00	0.01	-	-	-	-	2
Light-Duty Diesel Vehicles	0.82	0.00	0.00	0.00	0.02	-	-	-	-	0.84
Light-Duty Diesel Trucks	8	0.00	0.01	0.00	0.17	-	-	-	-	8
Heavy-Duty Diesel Vehicles	102	0.00	0.10	0.01	2	-	-	-	-	103
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	1	0.00	0.00	0.00	0.01	-	-	-	-	1
Other Transportation	180	0.04	1	0.01	3	-	-	-	-	184
Off-Road Agriculture and Forestry	13	0.00	0.01	0.00	0.20	-	-	-	-	13
Off-Road Commercial and Institutional	12	0.01	0.16	0.00	0.10	-	-	-	-	12
Off-Road Manufacturing, Mining and Construction	135	0.01	0.20	0.01	2	-	-	-	-	137
Off-Road Residential	1	0.00	0.09	0.00	0.01	-	-	-	-	1
Off-Road Other Transportation	20	0.03	0.76	0.00	0.20	-	-	-	-	21
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**0.01**	**0.22**	**-**	**-**	**-**	**-**	**-**	**-**	**0.22**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.01	0.22	-	-	-	-	-	-	0.22
Oil	-	-	-	-	-	-	-	-	-	-
Natural Gas	-	0.01	0.22	-	-	-	-	-	-	0.22
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.00**	**0.58**	**17**	**0.01**	**1**	**-**	**20**
a. Mineral Products	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.00**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.00	-	-	-	-	-	-	-	-	0.00
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**17**	**0.01**	**-**	**-**	**17**
e. Non-Energy Products from Fuels and Solvent Use[c]	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.58**	**-**	**-**	**1**	**-**	**2**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**-**	**1**	**37**	**0.00**	**1**	**-**	**-**	**-**	**-**	**38**
a. Landfills	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.20**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.50**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**-**	**0.20**	**7**	**0.00**	**0.80**	**-**	**-**	**-**	**-**	**7**
Municipal Wastewater Treatment and Discharge	-	-	10	-	1	-	-	-	-	10
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-4 300**	**0.01**	**0.17**	**0.00**	**0.07**	**-**	**-**	**-**	**-**	**-4 300**
a. Forest Land	**-4 400**	**0.01**	**0.20**	**0.00**	**0.07**	**-**	**-**	**-**	**-**	**-4 400**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**32**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**32**
f. Harvested Wood Products[e]	**7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

Table A11–24 GHG Emission Summary for Northwest Territories, Selected Years

Greenhouse Gas Categories	1999	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**1 250**	**1 720**	**1 430**	**1 420**	**1 220**	**1 280**	**1 350**	**1 360**
ENERGY	**1 210**	**1 660**	**1 350**	**1 350**	**1 140**	**1 210**	**1 280**	**1 290**
a. Stationary Combustion Sources	**598**	**721**	**388**	**421**	**367**	**399**	**444**	**487**
Public Electricity and Heat Production	88	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	128	215	11	57	43	49	56	55
Mining	104	164	201	192	154	183	207	203
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	0.83	x	x	x	x	x	x	x
Commercial and Institutional	192	141	51	54	58	62	67	60
Residential	85	102	57	58	50	48	54	46
Agriculture and Forestry	0.02	2	-	-	-	-	-	-
b. Transport[b]	**595**	**921**	**959**	**911**	**765**	**799**	**823**	**790**
Aviation	131	182	152	147	102	115	130	137
Road Transportation	118	502	552	501	375	418	431	419
Light-Duty Gasoline Vehicles	14	14	14	13	11	11	11	9
Light-Duty Gasoline Trucks	52	66	77	81	72	72	72	66
Heavy-Duty Gasoline Vehicles	5	7	7	8	7	7	8	7
Motorcycles	0.24	0.43	2	2	1	2	1	1
Light-Duty Diesel Vehicles	0.11	0.47	2	1	1	1	2	2
Light-Duty Diesel Trucks	2	6	9	9	10	12	15	15
Heavy-Duty Diesel Vehicles	45	408	441	386	274	314	323	319
Propane and Natural Gas Vehicles	-	-	0.16	0.22	0	-	-	-
Railways	2	5	0.34	0.21	0	0	0	0
Marine	15	24	4	7	10	9	6	7
Other Transportation	329	208	250	257	279	257	256	227
Off-Road Agriculture and Forestry	2	1	2	2	2	2	2	1
Off-Road Commercial and Institutional	7	6	7	8	8	9	9	8
Off-Road Manufacturing, Mining and Construction	295	178	217	218	240	218	217	191
Off-Road Residential	0.88	1	1	1	1	1	1	1
Off-Road Other Transportation	20	20	23	27	26	27	27	24
Pipeline Transport	4	3	0.27	0.27	1	1	1	1
c. Fugitive Sources	**18**	**22**	**6**	**15**	**12**	**12**	**12**	**11**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	18	23	6	15	12	12	12	11
Oil	2	4	1	2	2	2	2	1
Natural Gas	7	8	3	5	4	4	4	4
Venting	4	4	0.38	2	1	1	1	1
Flaring	4	7	1	7	5	5	5	5
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**11**	**26**	**36**	**35**	**33**	**32**	**32**	**30**
a. Mineral Products	**0.06**	**0.20**	**0.02**	**0.03**	**0**	**0**	**0**	**0**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.06	0.20	0.02	0.03	0	0	0	0
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**6**	**17**	**31**	**30**	**29**	**28**	**27**	**26**
e. Non-Energy Products from Fuels and Solvent Use[c]	**4**	**9**	**4**	**4**	**3**	**3**	**4**	**3**
f. Other Product Manufacture and Use	**0.46**	**0.45**	**0.55**	**0.54**	**1**	**1**	**1**	**1**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**30**	**31**	**38**	**39**	**40**	**41**	**42**	**43**
a. Landfills	**30**	**30**	**30**	**40**	**40**	**40**	**40**	**40**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**-**	**0.06**	**0.09**	**0**	**0**	**0**	**0**
c. Incineration and Open Burning of Waste	**0.01**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**3**	**3**	**4**	**4**	**4**	**4**	**4**	**4**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	0	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-700**	**-700**	**-2 000**	**-2 300**	**-2 500**	**-2 600**	**-2 600**	**-2 600**
a. Forest Land	**-760**	**-730**	**-2 100**	**-2 300**	**-2 500**	**-2 600**	**-2 700**	**-2 700**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**68**	**28**	**38**	**36**	**35**	**34**	**33**	**33**
f. Harvested Wood Products[e]	**-4**	**8**	**6**	**4**	**5**	**4**	**3**	**3**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–25 2023 GHG Emission Summary for Northwest Territories

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**1 260**	**2**	**57**	**0.05**	**14**	**26**	**0.02**	**-**	**-**	**1 360**
ENERGY	**1 260**	**0.52**	**15**	**0.05**	**10**	**-**	**-**	**-**	**-**	**1 290**
a. Stationary Combustion Sources	**478**	**0.20**	**6**	**0.01**	**2**	**-**	**-**	**-**	**-**	**487**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	51	0.10	4	0.00	0.30	-	-	-	-	55
Mining	202	0.01	0.20	0.00	0.70	-	-	-	-	203
Manufacturing Industries	x	x	x	x	x	x	x	x	x	x
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	59	0.00	0.02	0.00	0.50	-	-	-	-	60
Residential	44	0.06	2	0.00	0.50	-	-	-	-	46
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**778**	**0.08**	**2**	**0.04**	**10**	**-**	**-**	**-**	**-**	**790**
Aviation	136	0.01	0.20	0.00	1	-	-	-	-	137
Road Transportation	413	0.02	0.50	0.02	6	-	-	-	-	419
Light-Duty Gasoline Vehicles	9	0.00	0.02	0.00	0.07	-	-	-	-	9
Light-Duty Gasoline Trucks	66	0.00	0.10	0.00	0.40	-	-	-	-	66
Heavy-Duty Gasoline Vehicles	7	0.00	0.01	0.00	0.15	-	-	-	-	7
Motorcycles	1	0.00	0.01	0.00	0.00	-	-	-	-	1
Light-Duty Diesel Vehicles	1	0.00	0.00	0.00	0.03	-	-	-	-	2
Light-Duty Diesel Trucks	15	0.00	0.01	0.00	0.32	-	-	-	-	15
Heavy-Duty Diesel Vehicles	314	0.01	0.40	0.02	5	-	-	-	-	319
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	0.28	0.00	0.00	0.00	0.03	-	-	-	-	0.31
Marine	7	0.00	0.02	0.00	0.05	-	-	-	-	7
Other Transportation	222	0.05	2	0.01	3	-	-	-	-	227
Off-Road Agriculture and Forestry	1	0.00	0.00	0.00	0.03	-	-	-	-	1
Off-Road Commercial and Institutional	8	0.01	0.21	0.00	0.08	-	-	-	-	8
Off-Road Manufacturing, Mining and Construction	188	0.01	0.34	0.01	3	-	-	-	-	191
Off-Road Residential	0.72	0.00	0.05	0.00	0.00	-	-	-	-	0.78
Off-Road Other Transportation	23	0.03	0.88	0.00	0.20	-	-	-	-	24
Pipeline Transport	0.54	0.00	0.00	0.00	0.00	-	-	-	-	0.54
c. Fugitive Sources	**5**	**0.24**	**7**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**11**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	5	0.24	7	0.00	0.00	-	-	-	-	11
Oil	0.00	0.05	1	-	-	-	-	-	-	1
Natural Gas	0.00	0.14	4	-	-	-	-	-	-	4
Venting	0.00	0.03	0.95	-	-	-	-	-	-	0.95
Flaring	5	0.01	0.24	0.00	0.00	-	-	-	-	5
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**-**	**-**	**0.00**	**0.58**	**26**	**0.02**	**-**	**-**	**30**
a. Mineral Products	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.02**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.02	-	-	-	-	-	-	-	-	0.02
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**26**	**0.02**	**-**	**-**	**26**
e. Non-Energy Products from Fuels and Solvent Use[c]	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.58**	**-**	**-**	**-**	**-**	**0.58**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**-**	**2**	**42**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**43**
a. Landfills	**-**	**1**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.05**	**0.00**	**0.05**	**-**	**-**	**-**	**-**	**0.10**
c. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wastewater Treatment and Discharge	**-**	**0.10**	**3**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**4**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	0.10	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-2 600**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-2 600**
a. Forest Land	**-2 700**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-2 700**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**33**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**33**
f. Harvested Wood Products[e]	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–26 GHG Emission Summary for Nunavut, Selected Years

Greenhouse Gas Categories	1999	2005	2018	2019	2020	2021	2022	2023
	kt CO_2 eq							
TOTAL[a]	**415**	**586**	**737**	**733**	**634**	**699**	**697**	**714**
ENERGY	**389**	**553**	**682**	**675**	**575**	**640**	**637**	**653**
a. Stationary Combustion Sources	**104**	**128**	**164**	**162**	**149**	**155**	**151**	**152**
Public Electricity and Heat Production	17	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	87	0.26	-	-	-	-	-	-
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-
Commercial and Institutional	-	x	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-
b. Transport[b]	**285**	**426**	**519**	**514**	**426**	**484**	**486**	**501**
Aviation	112	141	171	168	135	157	150	156
Road Transportation	15	37	59	56	45	49	52	52
Light-Duty Gasoline Vehicles	1	3	1	1	1	1	2	1
Light-Duty Gasoline Trucks	5	12	27	26	24	28	30	31
Heavy-Duty Gasoline Vehicles	0.92	1	2	2	2	2	2	2
Motorcycles	0.01	0.04	1	1	1	1	1	1
Light-Duty Diesel Vehicles	-	0.07	0.04	0.04	0	0	0	0
Light-Duty Diesel Trucks	0.30	0.37	0.31	0.30	0	0	0	0
Heavy-Duty Diesel Vehicles	7	20	27	24	17	16	16	16
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	138	129	105	123	83	106	109	114
Other Transportation	19	119	184	166	163	172	176	179
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	0.94	4	8	8	8	8	9	9
Off-Road Manufacturing, Mining and Construction	13	100	145	129	127	132	136	139
Off-Road Residential	0.51	1	1	1	1	1	1	1
Off-Road Other Transportation	5	14	30	28	27	30	30	31
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	-	-	-	-	-	-	-
Oil	-	-	-	-	-	-	-	-
Natural Gas	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6**	**9**	**20**	**21**	**21**	**20**	**19**	**19**
a. Mineral Products	**-**	**-**	**0.01**	**0.02**	**0**	**0**	**0**	**0**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	0.01	0.02	0	0	0	0
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**6**	**9**	**19**	**20**	**20**	**19**	**18**	**18**
e. Non-Energy Products from Fuels and Solvent Use[c]	**0.21**	**0.15**	**0.62**	**0.53**	**0**	**0**	**1**	**0**
f. Other Product Manufacture and Use	**0.31**	**0.32**	**0.48**	**0.48**	**1**	**1**	**1**	**1**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**20**	**23**	**35**	**36**	**38**	**39**	**41**	**42**
a. Landfills	**20**	**20**	**30**	**30**	**40**	**40**	**40**	**40**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**-**	**0.00**	**0.00**	**0**	**0**	**0**	**0**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.00**	**0**	**0**	**0**	**0**
d. Wastewater Treatment and Discharge	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**1**	**3**	**4**	**4**	**4**	**4**	**4**	**4**
a. Forest Land	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**1**	**3**	**4**	**4**	**4**	**4**	**4**	**4**
f. Harvested Wood Products[e]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

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Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

d. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–27 2023 GHG Emission Summary for Nunavut

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	SF_6	NF_3	TOTAL
Global Warming Potential			28		265			23 500	16 100	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[a]	**646**	**2**	**44**	**0.02**	**6**	**18**	**0.01**	**-**	**-**	**714**
ENERGY	**645**	**0.08**	**2**	**0.02**	**5**	**-**	**-**	**-**	**-**	**653**
a. Stationary Combustion Sources	**151**	**0.00**	**0.10**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**152**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	-	-	-	-	-	-	-	-	-	-
Manufacturing Industries	x	x	x	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-	-	-
Commercial and Institutional	-	-	-	-	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**494**	**0.07**	**2**	**0.02**	**5**	**-**	**-**	**-**	**-**	**501**
Aviation	154	0.00	0.07	0.00	1	-	-	-	-	156
Road Transportation	51	0.00	0.08	0.00	0.49	-	-	-	-	52
Light-Duty Gasoline Vehicles	1	0.00	0.00	0.00	0.01	-	-	-	-	1
Light-Duty Gasoline Trucks	30	0.00	0.05	0.00	0.19	-	-	-	-	31
Heavy-Duty Gasoline Vehicles	2	0.00	0.00	0.00	0.04	-	-	-	-	2
Motorcycles	0.93	0.00	0.01	0.00	0.00	-	-	-	-	0.95
Light-Duty Diesel Vehicles	0.05	0.00	0.00	0.00	0.00	-	-	-	-	0.05
Light-Duty Diesel Trucks	0.47	0.00	0.00	0.00	0.01	-	-	-	-	0.48
Heavy-Duty Diesel Vehicles	16	0.00	0.02	0.00	0.24	-	-	-	-	16
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	113	0.01	0.29	0.00	0.80	-	-	-	-	114
Other Transportation	175	0.06	2	0.01	2	-	-	-	-	179
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	9	0.01	0.23	0.00	0.09	-	-	-	-	9
Off-Road Manufacturing, Mining and Construction	136	0.01	0.20	0.01	2	-	-	-	-	139
Off-Road Residential	1	0.00	0.08	0.00	0.01	-	-	-	-	1
Off-Road Other Transportation	29	0.04	1	0.00	0.30	-	-	-	-	31
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	-	-	-	-	-	-	-	-	-
Oil	-	-	-	-	-	-	-	-	-	-
Natural Gas	-	-	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**0.46**	**-**	**-**	**0.00**	**0.53**	**18**	**0.01**	**-**	**-**	**19**
a. Mineral Products	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.02**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.03	-	-	-	-	-	-	-	-	0.03
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**18**	**0.01**	**-**	**-**	**18**
e. Non-Energy Products from Fuels and Solvent Use[c]	**0.43**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.43**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.53**	**-**	**-**	**-**	**-**	**0.53**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**-**	**2**	**41**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**42**
a. Landfills	**-**	**1**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
c. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
d. Wastewater Treatment and Discharge	**-**	**0.06**	**2**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**2**
Municipal Wastewater Treatment and Discharge	-	0.10	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	0.00	0.00	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**
a. Forest Land	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**
f. Harvested Wood Products[e]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Totals may not add up due to rounding.

Estimates for the latest year are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (GWPs) used.

b. Provincial and Territorial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

c. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

d. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

e. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990−1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

f. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–28 GHG Emission Summary for Northwest Territories and Nunavut, 1990–1998

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998
	kt CO_2 eq								
TOTAL[a]	**1 790**	**1 760**	**1 570**	**1 870**	**2 040**	**2 100**	**2 110**	**1 930**	**1 750**
ENERGY	**1 740**	**1 700**	**1 520**	**1 800**	**1 890**	**1 960**	**2 060**	**1 870**	**1 690**
a. Stationary Combustion Sources	**917**	**987**	**849**	**947**	**1 010**	**1 150**	**1 020**	**971**	**729**
Public Electricity and Heat Production	156	156	126	137	139	155	118	129	173
Petroleum Refining Industries	8	6	7	5	12	11	4	-	-
Oil and Gas Extraction	277	196	112	137	135	140	150	130	126
Mining	36	42	18	36	109	212	150	158	132
Manufacturing Industries	26	16	18	8	14	20	-	-	-
Construction	6	5	6	3	4	21	0.68	0.70	0.53
Commercial and Institutional	250	367	357	389	401	473	405	370	207
Residential	156	189	192	231	190	118	197	182	90
Agriculture and Forestry	2	9	12	2	2	0.01	-	0.01	0.02
b. Transport[b]	**724**	**609**	**583**	**756**	**811**	**744**	**970**	**884**	**945**
Aviation	257	228	231	264	265	243	266	256	242
Road Transportation	105	97	97	125	133	113	137	133	131
Light-Duty Gasoline Vehicles	15	14	15	21	22	15	22	19	17
Light-Duty Gasoline Trucks	43	41	41	59	63	44	69	62	59
Heavy-Duty Gasoline Vehicles	6	6	6	8	8	6	8	7	7
Motorcycles	0.17	0.16	0.16	0.24	0.27	0.19	0.27	0.23	0.21
Light-Duty Diesel Vehicles	0.13	0.11	0.10	0.10	0.10	0.09	0.08	0.08	0.10
Light-Duty Diesel Trucks	2	2	2	2	2	2	2	2	2
Heavy-Duty Diesel Vehicles	38	35	33	35	38	45	36	43	45
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-
Railways	0.85	0.45	0.58	0.61	0.70	0.64	0.81	0.78	2
Marine	112	121	131	140	149	158	157	156	154
Other Transportation	249	163	124	226	263	229	410	339	416
Off-Road Agriculture and Forestry	2	1	0.60	1	1	0.91	2	1	2
Off-Road Commercial and Institutional	12	9	8	11	10	11	10	13	9
Off-Road Manufacturing, Mining and Construction	203	130	93	185	220	183	364	285	377
Off-Road Residential	0.40	0.41	0.44	0.75	0.96	0.74	1	1	1
Off-Road Other Transportation	32	23	21	29	29	33	32	38	27
Pipeline Transport	-	-	-	-	2	0.13	0.09	0.04	-
c. Fugitive Sources	**100**	**110**	**92**	**98**	**69**	**69**	**64**	**16**	**14**
Coal Mining	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	101	107	92	98	69	69	64	16	14
Oil	2	2	2	2	3	3	2	2	2
Natural Gas	3	3	3	3	3	3	3	3	3
Venting	6	6	6	6	6	6	5	5	5
Flaring	90	96	82	87	58	58	54	6	4
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**5**	**13**	**4**	**26**	**106**	**90**	**6**	**8**	**11**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**0.02**	**0.03**	**0.04**	**0.13**
Cement Production	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	0.02	0.04	0.04	0.13
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-
Magnesium Production and Casting	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**3**	**6**	**7**	**9**
e. Non-Energy Products from Fuels and Solvent Use[c]	**5**	**13**	**3**	**26**	**110**	**86**	**0.27**	**0.81**	**2**
f. Other Product Manufacture and Use	**0.33**	**0.32**	**0.29**	**0.28**	**0.32**	**0.38**	**0.42**	**0.43**	**0.60**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**40**	**41**	**42**	**43**	**44**	**45**	**47**	**48**	**49**
a. Landfills	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
Municipal Solid Waste Landfills	-	-	-	-	-	-	-	-	-
Industrial Wood Waste Landfills	-	-	-	-	-	-	-	-	-
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Incineration and Open Burning of Waste	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
d. Wastewater Treatment and Discharge	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Municipal Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-
Industrial Wastewater Treatment and Discharge	-	-	-	-	-	-	-	-	-
LAND USE, LAND-USE CHANGE AND FORESTRY	**-1 700**	**-1 600**	**-1 500**	**-1 300**	**-390**	**-500**	**-640**	**-960**	**-930**
a. Forest Land	**-1 700**	**-1 600**	**-1 500**	**-1 200**	**-400**	**-530**	**-620**	**-980**	**-940**
b. Cropland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Grassland	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
d. Wetlands	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Settlements	**84**	**80**	**78**	**75**	**76**	**74**	**71**	**67**	**68**
f. Harvested Wood Products[e]	**-14**	**-16**	**-17**	**-93**	**-70**	**-46**	**-88**	**-46**	**-58**

Notes:

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Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Provincial totals exclude all GHGs from the Land Use, Land-Use Change and Forestry sector.

b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial and territorial tables to protect confidential data.

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e. Due to limitations in historical commodity production data from StatCan, available only at the national level of spatial resolution, it is not possible to differentiate the emissions by province/territory from Harvested Wood Products resulting from forest harvest and forest conversion before 1990. As a result, the national total may not equal the sum of provinces and territories.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

PROVINCIAL AND TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2023

This annex contains summary tables (Table A12–2 to Table A12–15) illustrating greenhouse gas (GHG) emissions by province and territory, allocated to Canadian economic sectors, from 1990–2023. To account for the creation of Nunavut in 1999, a time series from 1999–2023 is provided for both Northwest Territories and Nunavut (Table A12–13 and Table A12–14), and the years 1990–1998 are presented as a combined region in Table A12–15. In addition, Table A12–1 provides a brief description of each economic sector.

Provincial and territorial GHG emissions allocated to Intergovernmental Panel on Climate Change (IPCC) sectors are provided in Annex 11 of this report.

Reallocating provincial and territorial emissions from IPCC sectors into Canadian economic sectors is useful for the purposes of analyzing trends and policies, as most people associate GHG emissions with a particular economic activity (e.g. producing electricity, farming, or driving a car). This re-allocation simply re-categorizes emissions under different headings but does not change the overall magnitude of the provincial and territorial emission estimates. Estimates for each economic sector include emissions from energy-related and non-energy-related processes.

Although the Modalities, procedures, and guidelines (MPGs) require that only national-level detail be reported, provincial- and territorial-level detail is important, owing to the regional differences in emission levels and trends. Note that provincial and territorial emission estimates may not necessarily sum to the national totals due to rounding.

Provincial and territorial GHG emission tables are also available in electronic file format online at: https://open.canada.ca.

The GHG inventory team is considering removing the Emissions Tables (Annex 9 to Annex 12) in future editions of the NIR. They would be available in their entirety on the Government of Canada's Open Data webpage only. For any questions or concerns, please contact GES-GHG@ec.gc.ca.

Table A12–1 **Canadian Economic Sector Descriptions**

Economic Sector	Description
OIL AND GAS	
Upstream Oil and Gas	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Natural Gas Production and Processing	– natural gas production and processing
Conventional Oil Production	Emissions resulting from:
Conventional Light Oil Production	– conventional light crude oil production
Conventional Heavy Oil Production	– conventional heavy crude oil production
Frontier Oil Production	– offshore and arctic production of crude oil
Oil Sands (Mining, In-Situ, Upgrading)	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Mining and Extraction	– crude bitumen mining and extraction
In-Situ	– in-situ extraction of crude bitumen in designated oil sands areas including primary extraction, cyclic steam stimulation (CSS), steam-assisted gravity drainage (SAGD) and other experimental techniques
Upgrading	– crude bitumen and heavy oil upgrading to synthetic crude oil
Oil, Natural Gas and CO_2 Transmission	Combustion and fugitive emissions from the transport and storage of crude oil and natural gas.
Downstream Oil and Gas	Emissions resulting from:
Petroleum Refining	– stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from petroleum refining industries
Natural Gas Distribution	– combustion and fugitive emissions from local distribution of natural gas up to and including the natural gas meter
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites. Includes post-meter, unintentional leaks from natural gas consumption.
TRANSPORT	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels. Includes post-meter, unintentional leaks from natural gas powered vehicles.
Passenger Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move people around.
Cars, Light Trucks and Motorcycles	– light duty cars and trucks and motorcycles with a Gross Vehicle Weight Rating (GVWR) less than 3856 kg
Bus, Rail and Aviation	– all buses and the passenger component of rail and aviation
Freight Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move cargo or freight around.
Heavy Duty Trucks, Rail	– vehicles with a Gross Vehicle Weight Rating (GVWR) greater than or equal to 3856 kg. Also includes the freight component of rail
Aviation and Marine	– cargo component of aviation and all domestic navigation (inclusive of all fishing and military operations)
Other: Recreational, Commercial and Residential	Combustion emissions from the non-industrial use of off-road engines (e.g., ATVs, snowmobiles, personal watercraft), including portable engines (e.g., generators, lawn mowers, chain saws). Includes post-meter, unintentional leaks from natural gas powered engines.
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricity and steam production, and process emissions. Includes post-meter, unintentional leaks from natural gas consumption.
Mining	– metal and non-metal mines, stone quarries, and gravel pits
Smelting and Refining (Non-Ferrous Metals)	– non-ferrous metals (aluminium, magnesium and other production)
Pulp and Paper	– pulp and paper (primarily pulp, paper, and paper product manufacturers)
Iron and Steel	– Iron and steel (steel foundries, casting, rolling mills and iron making)
Cement	– cement and other non-metallic mineral production
Lime and Gypsum	– lime and gypsum product manufacturing
Chemicals and Fertilizers	– chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
BUILDINGS	Stationary combustion and process (i.e. air conditioning) emissions, including post-meter, unintentional leaks from natural gas appliances from:
Service Industry	– service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.; offices, health, arts, accommodation, food, information & cultural; Federal, provincial and municipal establishments; National Defence and Canadian Coast Guard; Train stations, airports and warehouses
Residential	– personal residences (homes, apartment hotels, condominiums and farm houses)
AGRICULTURE	Emissions resulting from:
On Farm Fuel Use	– stationary combustion, onsite transportation and process emissions from the agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing, and repair); includes post-meter, unintentional leaks from natural gas consumption
Crop Production	– Application of biosolids and inorganic nitrogen fertilizers, decomposition of crop residues, loss of soil organic carbon, cultivation of organic soils, indirect emissions from leaching and volatilization, field burning of agricultural residues, liming, and urea application
Animal Production	– Animal housing, manure storage, manure deposited by grazing animals, and application of manure to managed soils
WASTE	Non-CO_2 Emissions from biomass resulting from:
Solid Waste	– municipal landfills, dedicated wood waste landfills, and other treatment of municipal solid waste
Wastewater	– municipal and industrial wastewater treatment
Waste Incineration	– municipal solid, hazardous and clinical waste, and sewage sludge incineration
COAL PRODUCTION	Stationary combustion, onsite transportation and fugitive emissions from underground and surface coal mines. Includes post-meter, unintentional leaks from natural gas consumption.
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	Stationary combustion, onsite transportation, electricity and steam production, and process emissions, including post-meter, unintentional leaks from natural gas consumption from (excluding LULUCF):
Light Manufacturing	– all other manufacturing industries not included in the Heavy Industry category above
Construction	– construction of buildings, highways etc.
Forest Resources	– forestry and logging service industry

Table A12–2 **GHG Emissions for Newfoundland and Labrador by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**9.5**	**10.3**	**10.7**	**10.8**	**8.6**	**8.0**	**8.1**	**7.9**
OIL AND GAS	**1.1**	**2.5**	**2.7**	**2.8**	**1.7**	**1.4**	**1.3**	**1.3**
Upstream Oil and Gas	**0.0**	**1.6**	**1.8**	**1.8**	**1.5**	**1.3**	**1.3**	**1.3**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.0	1.6	1.8	1.8	1.5	1.3	1.3	1.3
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.0	1.6	1.8	1.8	1.5	1.3	1.3	1.3
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**1.1**	**1.0**	**0.9**	**1.0**	**0.2**	**0.1**	**0.0**	**0.0**
Petroleum Refining	1.1	1.0	0.9	1.0	0.2	0.1	0.0	0.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**1.6**	**0.8**	**1.1**	**1.1**	**1.0**	**0.6**	**0.7**	**0.7**
TRANSPORT	**2.7**	**3.3**	**3.7**	**3.6**	**3.1**	**3.1**	**3.2**	**3.2**
Passenger Transport	**1.4**	**1.6**	**2.1**	**2.0**	**1.8**	**1.8**	**1.9**	**1.9**
Cars, Light Trucks and Motorcycles	1.2	1.2	1.8	1.7	1.6	1.6	1.7	1.6
Bus, Rail and Aviation	0.2	0.4	0.3	0.3	0.2	0.2	0.3	0.3
Freight Transport	**1.2**	**1.5**	**1.3**	**1.4**	**1.1**	**1.1**	**1.1**	**1.2**
Heavy Duty Trucks, Rail	0.4	0.5	0.6	0.7	0.5	0.5	0.5	0.5
Aviation and Marine	0.8	1.0	0.6	0.7	0.6	0.6	0.6	0.7
Other: Recreational, Commercial and Residential	**0.1**	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
HEAVY INDUSTRY	**1.9**	**1.8**	**0.9**	**1.1**	**1.0**	**1.2**	**1.2**	**1.1**
Mining	**1.4**	**1.5**	**0.8**	**1.1**	**0.9**	**1.1**	**1.1**	**1.0**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.4**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**1.1**	**0.8**	**0.9**	**0.9**	**0.8**	**0.7**	**0.7**	**0.7**
Service Industry	**0.3**	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**
Residential	**0.7**	**0.4**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**
AGRICULTURE	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
On Farm Fuel Use	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Crop Production	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Animal Production	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
WASTE	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste[a]	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.4**	**0.3**	**0.7**	**0.6**	**0.3**	**0.3**	**0.3**	**0.3**
Light Manufacturing	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.2**	**0.2**	**0.5**	**0.5**	**0.3**	**0.3**	**0.2**	**0.3**
Forest Resources	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–3 **GHG Emissions for Prince Edward Island by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**1.8**	**1.9**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**
OIL AND GAS	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TRANSPORT	**0.5**	**0.7**	**0.7**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**
Passenger Transport	**0.4**	**0.5**	**0.5**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**
Cars, Light Trucks and Motorcycles	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5
Bus, Rail and Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freight Transport	**0.1**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.2**
Heavy Duty Trucks, Rail	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aviation and Marine	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1
Other: Recreational, Commercial and Residential	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**
HEAVY INDUSTRY	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Mining	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.0**	**0.0**	**-**	**-**	**-**	**0.0**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.6**	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Service Industry	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Residential	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
AGRICULTURE	**0.4**	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**
On Farm Fuel Use	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Crop Production	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Animal Production	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
WASTE	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Solid Waste[a]	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.1**	**0.2**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**
Light Manufacturing	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Construction	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–4 **GHG Emissions for Nova Scotia by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**19.6**	**22.0**	**16.5**	**15.8**	**14.4**	**14.2**	**14.3**	**13.5**
OIL AND GAS	**0.7**	**1.4**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	**0.0**	**0.5**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Natural Gas Production and Processing	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**0.7**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.7	0.9	x	x	x	x	x	x
Natural Gas Distribution	-	0.0	x	x	x	x	x	x
ELECTRICITY	**6.9**	**10.1**	**7.0**	**6.7**	**6.3**	**6.1**	**5.8**	**4.8**
TRANSPORT	**4.1**	**5.0**	**5.2**	**5.0**	**4.3**	**4.5**	**4.7**	**4.9**
Passenger Transport	**2.6**	**3.0**	**3.4**	**3.3**	**2.7**	**2.9**	**3.1**	**3.3**
Cars, Light Trucks and Motorcycles	2.3	2.7	3.0	2.9	2.5	2.7	2.8	2.9
Bus, Rail and Aviation	0.3	0.3	0.4	0.4	0.2	0.2	0.3	0.3
Freight Transport	**1.3**	**1.6**	**1.4**	**1.4**	**1.2**	**1.2**	**1.3**	**1.3**
Heavy Duty Trucks, Rail	0.7	1.0	1.0	1.0	0.9	0.9	0.9	0.9
Aviation and Marine	0.5	0.6	0.4	0.4	0.3	0.3	0.4	0.5
Other: Recreational, Commercial and Residential	**0.3**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.1**	**1.0**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Mining	**0.2**	**0.4**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.4**	**0.3**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**
Iron and Steel	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.3**	**0.4**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Lime and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Chemicals and Fertilizers	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.1**
BUILDINGS	**2.9**	**x**	**2.1**	**2.1**	**2.0**	**1.9**	**2.0**	**1.8**
Service Industry	**0.8**	**x**	**0.8**	**0.8**	**0.7**	**0.8**	**0.8**	**0.8**
Residential	**2.1**	**1.3**	**1.3**	**1.3**	**1.2**	**1.1**	**1.2**	**1.0**
AGRICULTURE	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
On Farm Fuel Use	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Crop Production	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**
Animal Production	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
WASTE	**0.8**	**0.6**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste[a]	**0.7**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**1.8**	**0.1**	**0.2**	**0.2**	**0.1**	**0.0**	**0.1**	**0.2**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.6**	**x**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Light Manufacturing	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Construction	**0.3**	**x**	**0.2**	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**
Forest Resources	**0.2**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions
x Indicates data has been suppressed to respect confidentiality

Table A12–5 **GHG Emissions for New Brunswick by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**16.1**	**19.8**	**13.4**	**13.1**	**11.1**	**11.8**	**12.4**	**11.5**
OIL AND GAS	**1.2**	**2.7**	**2.7**	**3.1**	**2.8**	**2.8**	**2.6**	**2.7**
Upstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Natural Gas Production and Processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**1.2**	**2.6**	**2.7**	**3.1**	**2.8**	**2.7**	**2.6**	**2.6**
Petroleum Refining	1.2	2.6	x	x	x	x	x	x
Natural Gas Distribution	-	0.0	x	x	x	x	x	x
ELECTRICITY	**6.0**	**8.0**	**3.8**	**3.4**	**2.2**	**2.9**	**3.5**	**2.7**
TRANSPORT	**3.5**	**4.4**	**3.6**	**3.5**	**3.1**	**3.1**	**3.1**	**3.1**
Passenger Transport	**2.3**	**2.5**	**2.3**	**2.3**	**2.0**	**1.9**	**2.0**	**2.0**
Cars, Light Trucks and Motorcycles	2.1	2.2	2.1	2.1	1.8	1.8	1.8	1.9
Bus, Rail and Aviation	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.2
Freight Transport	**1.0**	**1.5**	**1.0**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**
Heavy Duty Trucks, Rail	0.7	1.2	0.8	0.8	0.7	0.7	0.6	0.6
Aviation and Marine	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.3
Other: Recreational, Commercial and Residential	**0.2**	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**
HEAVY INDUSTRY	**1.8**	**1.3**	**0.8**	**0.7**	**0.6**	**0.6**	**0.8**	**0.6**
Mining	**0.2**	**0.4**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Smelting and Refining (Non-Ferrous Metals)	**0.1**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**1.3**	**0.7**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**	**0.4**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**1.6**	**1.4**	**1.1**	**1.0**	**1.0**	**0.9**	**0.9**	**0.9**
Service Industry	**0.6**	**0.7**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Residential	**1.0**	**0.8**	**0.6**	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**
AGRICULTURE	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
On Farm Fuel Use	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Crop Production	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Animal Production	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
WASTE	**0.8**	**0.8**	**0.5**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**
Solid Waste[a]	**0.7**	**0.7**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.6**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.6**	**0.7**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Light Manufacturing	**0.2**	**0.4**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.2**
Construction	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Forest Resources	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions
x Indicates data has been suppressed to respect confidentiality

Table A12–6 GHG Emissions for Quebec by Canadian Economic Sector, Selected Years

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**84.3**	**84.5**	**79.9**	**81.9**	**74.5**	**77.5**	**79.3**	**78.9**
OIL AND GAS	**4.1**	**4.2**	**2.4**	**2.7**	**2.5**	**2.6**	**2.7**	**2.6**
Upstream Oil and Gas	**0.4**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Natural Gas Production and Processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Downstream Oil and Gas	**3.7**	**3.9**	**2.3**	**2.6**	**2.4**	**2.4**	**2.6**	**2.5**
Petroleum Refining	3.6	3.8	2.3	2.6	2.4	2.4	2.5	2.5
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
ELECTRICITY	**1.5**	**0.6**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**
TRANSPORT	**24.6**	**30.1**	**31.9**	**32.1**	**27.1**	**29.2**	**30.9**	**31.4**
Passenger Transport	**18.2**	**20.1**	**21.0**	**21.3**	**17.6**	**19.3**	**20.2**	**21.0**
Cars, Light Trucks and Motorcycles	16.7	18.5	19.0	19.3	16.2	17.8	18.3	19.1
Bus, Rail and Aviation	1.6	1.5	2.0	2.0	1.4	1.5	1.9	1.9
Freight Transport	**5.0**	**7.5**	**8.2**	**7.9**	**6.8**	**7.2**	**8.0**	**7.7**
Heavy Duty Trucks, Rail	4.1	6.4	7.2	6.9	6.0	6.3	7.1	6.7
Aviation and Marine	0.9	1.1	1.0	1.0	0.8	0.9	0.9	1.0
Other: Recreational, Commercial and Residential	**1.5**	**2.6**	**2.7**	**2.8**	**2.7**	**2.7**	**2.7**	**2.7**
HEAVY INDUSTRY	**24.7**	**19.9**	**17.1**	**18.1**	**17.4**	**17.8**	**17.9**	**18.1**
Mining	**2.0**	**1.9**	**2.8**	**3.1**	**2.5**	**2.6**	**2.6**	**2.5**
Smelting and Refining (Non-Ferrous Metals)	**12.7**	**9.8**	**6.7**	**6.9**	**7.5**	**7.6**	**7.8**	**7.7**
Pulp and Paper	**4.5**	**2.8**	**1.6**	**1.6**	**1.6**	**1.6**	**1.7**	**1.6**
Iron and Steel	**1.3**	**0.9**	**1.3**	**1.1**	**0.9**	**1.2**	**1.2**	**1.2**
Cement	**2.5**	**2.4**	**2.6**	**3.5**	**3.1**	**3.1**	**3.0**	**3.4**
Lime and Gypsum	**0.5**	**0.9**	**0.7**	**0.7**	**0.6**	**0.6**	**0.6**	**0.6**
Chemicals and Fertilizers	**1.2**	**1.2**	**1.3**	**1.3**	**1.3**	**1.0**	**1.1**	**1.2**
BUILDINGS	**11.5**	**12.2**	**10.0**	**10.2**	**9.1**	**9.4**	**9.6**	**8.7**
Service Industry	**4.6**	**6.4**	**6.4**	**6.5**	**5.9**	**6.2**	**6.3**	**5.7**
Residential	**6.9**	**5.8**	**3.6**	**3.7**	**3.2**	**3.2**	**3.3**	**3.0**
AGRICULTURE	**7.3**	**8.2**	**8.9**	**8.8**	**8.8**	**8.7**	**8.9**	**8.9**
On Farm Fuel Use	**0.5**	**0.7**	**1.0**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**
Crop Production	**1.4**	**1.6**	**2.5**	**2.2**	**2.5**	**2.4**	**2.6**	**2.7**
Animal Production	**5.3**	**5.9**	**5.4**	**5.5**	**5.4**	**5.4**	**5.3**	**5.3**
WASTE	**5.0**	**4.7**	**4.7**	**4.6**	**4.5**	**4.5**	**4.4**	**4.4**
Solid Waste[a]	**4.5**	**4.1**	**4.3**	**4.2**	**4.1**	**4.0**	**4.0**	**3.9**
Wastewater	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Waste Incineration	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**5.5**	**4.6**	**4.6**	**5.0**	**4.6**	**5.0**	**4.7**	**4.5**
Light Manufacturing	**3.7**	**2.8**	**2.5**	**2.8**	**2.5**	**2.9**	**2.8**	**2.7**
Construction	**1.3**	**1.3**	**1.6**	**1.7**	**1.6**	**1.7**	**1.5**	**1.4**
Forest Resources	**0.6**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–7 **GHG Emissions for Ontario by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**178.2**	**202.4**	**163.6**	**164.9**	**148.8**	**151.6**	**157.6**	**158.7**
OIL AND GAS	**10.5**	**11.7**	**7.1**	**7.7**	**7.1**	**7.6**	**8.0**	**8.3**
Upstream Oil and Gas	**3.3**	**4.0**	**1.5**	**1.5**	**1.2**	**1.4**	**1.6**	**1.9**
Natural Gas Production and Processing	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.3
Conventional Oil Production	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	3.0	3.6	1.3	1.2	1.1	1.1	1.4	1.6
Downstream Oil and Gas	**7.1**	**7.7**	**5.6**	**6.2**	**5.9**	**6.2**	**6.3**	**6.4**
Petroleum Refining	6.5	7.0	5.2	5.7	5.4	5.7	5.9	6.0
Natural Gas Distribution	0.6	0.7	0.4	0.5	0.5	0.5	0.4	0.4
ELECTRICITY	**25.7**	**32.8**	**3.5**	**3.4**	**3.8**	**4.5**	**5.5**	**6.8**
TRANSPORT	**41.4**	**57.0**	**55.1**	**55.6**	**45.2**	**47.1**	**49.7**	**50.2**
Passenger Transport	**30.2**	**36.8**	**36.8**	**37.5**	**29.0**	**29.2**	**31.7**	**32.6**
Cars, Light Trucks and Motorcycles	27.5	33.6	33.0	33.8	26.7	26.8	28.3	29.1
Bus, Rail and Aviation	2.7	3.2	3.8	3.7	2.3	2.5	3.4	3.5
Freight Transport	**8.7**	**15.6**	**14.1**	**13.8**	**12.4**	**13.8**	**13.9**	**13.5**
Heavy Duty Trucks, Rail	8.0	15.0	13.4	13.2	11.7	12.9	13.2	12.8
Aviation and Marine	0.7	0.6	0.7	0.7	0.7	0.9	0.6	0.7
Other: Recreational, Commercial and Residential	**2.4**	**4.6**	**4.2**	**4.2**	**3.8**	**4.1**	**4.1**	**4.1**
HEAVY INDUSTRY	**42.3**	**34.5**	**29.4**	**28.6**	**26.6**	**28.7**	**28.8**	**29.2**
Mining	**1.1**	**1.0**	**1.4**	**1.4**	**1.5**	**1.7**	**1.8**	**1.6**
Smelting and Refining (Non-Ferrous Metals)	**1.6**	**2.0**	**1.0**	**1.1**	**0.8**	**0.7**	**0.8**	**0.9**
Pulp and Paper	**3.3**	**2.0**	**1.6**	**1.7**	**1.5**	**1.6**	**1.8**	**1.8**
Iron and Steel	**15.0**	**15.0**	**14.4**	**13.5**	**11.5**	**13.2**	**12.4**	**12.9**
Cement	**4.6**	**6.1**	**4.4**	**4.4**	**4.5**	**4.5**	**4.4**	**4.2**
Lime and Gypsum	**1.7**	**1.7**	**1.2**	**1.1**	**1.0**	**1.1**	**1.3**	**1.1**
Chemicals and Fertilizers	**15.0**	**6.7**	**5.5**	**5.3**	**5.7**	**6.0**	**6.4**	**6.6**
BUILDINGS	**27.3**	**36.0**	**40.1**	**41.1**	**38.1**	**35.5**	**36.6**	**34.9**
Service Industry	**9.8**	**15.2**	**20.6**	**21.1**	**19.4**	**17.3**	**17.8**	**17.4**
Residential	**17.5**	**20.8**	**19.4**	**20.0**	**18.6**	**18.2**	**18.8**	**17.5**
AGRICULTURE	**10.8**	**11.0**	**11.4**	**11.7**	**12.1**	**12.2**	**12.4**	**12.9**
On Farm Fuel Use	**1.3**	**1.6**	**2.5**	**2.7**	**2.4**	**2.6**	**2.8**	**2.8**
Crop Production	**2.1**	**1.9**	**2.5**	**2.6**	**3.3**	**3.1**	**3.2**	**3.8**
Animal Production	**7.4**	**7.5**	**6.3**	**6.4**	**6.4**	**6.4**	**6.4**	**6.3**
WASTE	**7.4**	**8.0**	**7.1**	**7.2**	**7.3**	**7.4**	**7.3**	**7.3**
Solid Waste[a]	**6.7**	**7.1**	**6.0**	**6.1**	**6.2**	**6.3**	**6.1**	**6.1**
Wastewater	**0.6**	**0.8**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.1**
Waste Incineration	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**12.9**	**11.5**	**10.0**	**9.8**	**8.6**	**8.7**	**9.4**	**9.2**
Light Manufacturing	**9.9**	**8.0**	**6.6**	**6.3**	**5.8**	**5.9**	**6.5**	**6.4**
Construction	**2.7**	**3.3**	**3.3**	**3.2**	**2.5**	**2.5**	**2.6**	**2.5**
Forest Resources	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**

Notes:
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National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–8 **GHG Emissions for Manitoba by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**18.3**	**20.7**	**22.4**	**22.2**	**21.2**	**20.7**	**21.7**	**21.3**
OIL AND GAS	**1.6**	**1.0**	**1.0**	**1.0**	**0.9**	**1.0**	**1.0**	**0.9**
Upstream Oil and Gas	**1.5**	**0.9**	**1.0**	**1.0**	**0.8**	**0.9**	**1.0**	**0.9**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.3	0.3	0.7	0.7	0.6	0.6	0.6	0.7
Conventional Light Oil Production	0.3	0.3	0.7	0.7	0.6	0.6	0.6	0.7
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	1.3	0.6	0.3	0.3	0.2	0.3	0.3	0.2
Downstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.0	-	-	-	-	-	-	-
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**0.5**	**0.4**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**
TRANSPORT	**5.0**	**5.7**	**6.9**	**6.8**	**5.9**	**6.1**	**6.4**	**6.6**
Passenger Transport	**3.1**	**3.2**	**3.7**	**3.7**	**3.2**	**3.3**	**3.5**	**3.7**
Cars, Light Trucks and Motorcycles	2.6	2.6	3.2	3.2	2.8	3.0	3.0	3.2
Bus, Rail and Aviation	0.5	0.5	0.6	0.6	0.3	0.3	0.5	0.5
Freight Transport	**1.4**	**1.8**	**2.0**	**2.0**	**1.8**	**1.9**	**1.9**	**1.8**
Heavy Duty Trucks, Rail	1.3	1.7	2.0	1.9	1.7	1.7	1.8	1.8
Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	**0.5**	**0.7**	**1.1**	**1.0**	**0.9**	**0.9**	**1.0**	**1.0**
HEAVY INDUSTRY	**1.4**	**1.6**	**1.4**	**1.3**	**1.3**	**1.2**	**1.4**	**1.3**
Mining	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**	**0.2**
Smelting and Refining (Non-Ferrous Metals)	**0.3**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.3**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**
Iron and Steel	**0.1**	**0.0**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**
Cement	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**0.3**	**0.9**	**0.9**	**0.8**	**0.8**	**0.8**	**0.9**	**0.8**
BUILDINGS	**3.1**	**2.7**	**3.1**	**3.1**	**3.0**	**2.8**	**3.2**	**2.8**
Service Industry	**1.4**	**1.6**	**1.8**	**1.8**	**1.8**	**1.7**	**1.9**	**1.7**
Residential	**1.7**	**1.1**	**1.3**	**1.3**	**1.2**	**1.2**	**1.3**	**1.1**
AGRICULTURE	**5.0**	**7.1**	**7.5**	**7.4**	**7.7**	**7.3**	**7.3**	**7.1**
On Farm Fuel Use	**0.8**	**1.0**	**1.5**	**1.4**	**1.4**	**1.3**	**1.3**	**1.3**
Crop Production	**1.6**	**1.5**	**2.4**	**2.5**	**2.8**	**2.5**	**2.6**	**2.5**
Animal Production	**2.6**	**4.6**	**3.6**	**3.5**	**3.5**	**3.4**	**3.3**	**3.3**
WASTE	**0.9**	**1.3**	**1.4**	**1.4**	**1.2**	**1.2**	**1.4**	**1.4**
Solid Waste[a]	**0.8**	**1.2**	**1.3**	**1.3**	**1.1**	**1.1**	**1.3**	**1.3**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	-	-
COAL PRODUCTION	-	-	-	-	-	-	-	-
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.8**	**1.0**	**1.1**	**1.1**	**1.1**	**1.0**	**1.1**	**1.1**
Light Manufacturing	**0.4**	**0.5**	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**	**0.8**
Construction	**0.3**	**0.5**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**
Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–9 GHG Emissions for Saskatchewan by Canadian Economic Sector, Selected Years

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**48.5**	**80.5**	**88.6**	**86.2**	**74.6**	**76.4**	**75.2**	**73.9**
OIL AND GAS	**16.9**	**37.7**	**36.6**	**34.9**	**26.9**	**26.4**	**26.3**	**25.6**
Upstream Oil and Gas	**15.9**	**36.6**	**35.4**	**33.5**	**25.7**	**25.1**	**25.0**	**24.3**
Natural Gas Production and Processing	1.9	3.2	2.1	2.0	1.5	1.4	1.5	1.8
Conventional Oil Production	11.7	28.4	29.2	27.6	20.7	19.7	19.3	18.5
Conventional Light Oil Production	4.3	6.4	14.4	13.9	9.7	7.2	6.7	6.4
Conventional Heavy Oil Production	7.4	22.0	14.8	13.7	11.0	12.5	12.7	12.2
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	2.6	2.3	2.3	2.1	2.4	2.2	2.2
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	2.6	2.3	2.3	2.1	2.4	2.2	2.2
Oil, Natural Gas and CO_2 Transmission	2.3	2.4	1.8	1.7	1.3	1.6	1.9	1.6
Downstream Oil and Gas	**1.0**	**1.1**	**1.3**	**1.4**	**1.2**	**1.3**	**1.3**	**1.3**
Petroleum Refining	0.7	0.8	1.2	1.3	1.1	1.2	1.2	1.3
Natural Gas Distribution	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRICITY	**11.1**	**14.3**	**14.9**	**14.8**	**12.6**	**14.7**	**13.3**	**13.8**
TRANSPORT	**4.8**	**6.9**	**10.0**	**9.8**	**8.8**	**9.1**	**8.8**	**8.7**
Passenger Transport	**2.5**	**3.1**	**4.4**	**4.4**	**3.8**	**4.0**	**3.9**	**3.7**
Cars, Light Trucks and Motorcycles	2.2	2.8	4.1	4.1	3.6	3.7	3.6	3.4
Bus, Rail and Aviation	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3
Freight Transport	**1.6**	**2.8**	**4.0**	**3.9**	**3.6**	**3.7**	**3.6**	**3.7**
Heavy Duty Trucks, Rail	1.5	2.8	4.0	3.9	3.6	3.7	3.6	3.7
Aviation and Marine	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Other: Recreational, Commercial and Residential	**0.7**	**1.0**	**1.5**	**1.5**	**1.4**	**1.4**	**1.3**	**1.3**
HEAVY INDUSTRY	**1.7**	**2.4**	**4.1**	**3.6**	**3.6**	**4.1**	**4.2**	**3.5**
Mining	**1.1**	**1.4**	**3.0**	**2.5**	**2.4**	**3.0**	**3.2**	**2.4**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.3**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Iron and Steel	**0.0**	**0.1**	**0.2**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**
Cement	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Chemicals and Fertilizers	**0.2**	**0.6**	**0.9**	**0.8**	**1.0**	**0.8**	**0.9**	**0.8**
BUILDINGS	**3.2**	**3.4**	**4.1**	**4.3**	**3.9**	**3.9**	**4.2**	**3.7**
Service Industry	**1.0**	**1.7**	**1.9**	**2.0**	**1.9**	**1.8**	**2.0**	**1.8**
Residential	**2.1**	**1.7**	**2.2**	**2.3**	**2.0**	**2.0**	**2.2**	**1.9**
AGRICULTURE	**8.9**	**13.8**	**16.6**	**16.5**	**16.6**	**16.3**	**16.2**	**16.5**
On Farm Fuel Use	**2.8**	**2.9**	**5.5**	**5.4**	**5.5**	**5.2**	**5.0**	**5.3**
Crop Production	**1.7**	**2.7**	**4.8**	**4.9**	**4.9**	**4.8**	**5.1**	**5.2**
Animal Production	**4.4**	**8.3**	**6.3**	**6.2**	**6.2**	**6.3**	**6.1**	**5.9**
WASTE	**1.0**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**
Solid Waste[a]	**0.9**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**-**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.1**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.8**	**0.6**	**0.8**	**0.8**	**0.6**	**0.6**	**0.7**	**0.7**
Light Manufacturing	**0.5**	**0.2**	**0.5**	**0.5**	**0.4**	**0.4**	**0.4**	**0.5**
Construction	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**
Forest Resources	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–10 **GHG Emissions for Alberta by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**176.6**	**250.5**	**282.9**	**284.6**	**266.0**	**268.5**	**265.5**	**263.4**
OIL AND GAS	**72.6**	**119.1**	**155.6**	**156.1**	**148.5**	**156.1**	**154.2**	**154.1**
Upstream Oil and Gas	**69.0**	**114.9**	**151.4**	**151.5**	**144.5**	**151.7**	**149.3**	**149.5**
Natural Gas Production and Processing	31.1	59.7	47.7	46.9	44.8	46.6	42.0	40.3
Conventional Oil Production	18.7	17.2	18.7	18.0	15.9	16.7	16.7	17.1
Conventional Light Oil Production	13.6	14.1	14.9	14.4	12.7	13.4	13.4	13.7
Conventional Heavy Oil Production	5.1	3.1	3.8	3.6	3.2	3.3	3.3	3.3
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	15.3	34.0	80.3	81.6	79.1	83.3	84.6	86.5
Mining and Extraction	2.9	6.8	15.8	16.8	16.0	16.7	17.2	17.2
In-Situ	4.6	13.1	43.9	43.1	41.3	44.8	45.6	47.1
Upgrading	7.8	14.0	20.6	21.7	21.8	21.9	21.8	22.2
Oil, Natural Gas and CO_2 Transmission	3.8	4.0	4.8	4.9	4.7	5.1	5.9	5.6
Downstream Oil and Gas	**3.6**	**4.2**	**4.2**	**4.6**	**4.1**	**4.4**	**4.9**	**4.6**
Petroleum Refining	3.2	3.8	4.1	4.4	3.8	4.1	4.7	4.4
Natural Gas Distribution	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**39.8**	**47.6**	**31.4**	**31.0**	**27.0**	**22.6**	**19.4**	**19.2**
TRANSPORT	**15.3**	**22.0**	**27.9**	**28.0**	**22.6**	**23.0**	**23.7**	**23.9**
Passenger Transport	**9.2**	**11.9**	**14.4**	**14.8**	**11.4**	**11.5**	**12.4**	**12.6**
Cars, Light Trucks and Motorcycles	8.0	10.3	12.2	12.6	10.2	10.1	10.5	10.6
Bus, Rail and Aviation	1.3	1.6	2.2	2.2	1.3	1.3	1.9	2.0
Freight Transport	**4.4**	**8.0**	**10.8**	**10.6**	**8.9**	**9.1**	**8.9**	**8.7**
Heavy Duty Trucks, Rail	4.2	7.8	10.6	10.4	8.7	8.7	8.7	8.5
Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.2
Other: Recreational, Commercial and Residential	**1.6**	**2.1**	**2.6**	**2.6**	**2.3**	**2.5**	**2.5**	**2.5**
HEAVY INDUSTRY	**12.8**	**17.7**	**17.9**	**18.4**	**18.3**	**18.0**	**17.7**	**18.0**
Mining	**0.3**	**0.4**	**0.8**	**0.8**	**0.8**	**0.5**	**0.3**	**0.2**
Smelting and Refining (Non-Ferrous Metals)	**0.6**	**0.6**	**1.0**	**0.8**	**0.7**	**0.7**	**0.9**	**0.7**
Pulp and Paper	**0.5**	**0.8**	**1.8**	**1.9**	**1.5**	**1.4**	**1.3**	**1.6**
Iron and Steel	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Cement	**1.2**	**1.8**	**1.8**	**1.8**	**1.6**	**1.8**	**1.7**	**1.8**
Lime and Gypsum	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Chemicals and Fertilizers	**9.9**	**13.7**	**12.2**	**12.8**	**13.4**	**13.3**	**13.0**	**13.4**
BUILDINGS	**12.2**	**16.2**	**21.7**	**21.8**	**20.9**	**20.3**	**21.3**	**20.2**
Service Industry	**5.3**	**8.4**	**12.2**	**12.4**	**11.8**	**11.6**	**12.1**	**11.6**
Residential	**6.9**	**7.7**	**9.4**	**9.4**	**9.2**	**8.7**	**9.1**	**8.5**
AGRICULTURE	**14.7**	**21.1**	**20.0**	**20.4**	**20.4**	**20.4**	**20.9**	**19.7**
On Farm Fuel Use	**2.1**	**2.7**	**3.2**	**3.4**	**2.9**	**3.0**	**3.0**	**2.8**
Crop Production	**2.2**	**2.5**	**3.7**	**3.9**	**4.3**	**4.1**	**4.5**	**3.9**
Animal Production	**10.5**	**16.0**	**13.1**	**13.2**	**13.2**	**13.3**	**13.4**	**13.0**
WASTE	**2.1**	**3.3**	**4.6**	**4.5**	**4.6**	**4.6**	**4.7**	**4.7**
Solid Waste[a]	**1.7**	**2.8**	**4.0**	**4.0**	**4.1**	**4.2**	**4.3**	**4.3**
Wastewater	**0.5**	**0.5**	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**0.9**	**0.7**	**0.7**	**0.9**	**0.7**	**0.5**	**0.6**	**0.5**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**6.3**	**2.8**	**3.1**	**3.4**	**2.9**	**2.9**	**3.1**	**3.1**
Light Manufacturing	**4.8**	**1.4**	**2.0**	**2.2**	**1.9**	**2.0**	**2.1**	**2.2**
Construction	**1.0**	**1.1**	**0.8**	**0.9**	**0.7**	**0.7**	**0.7**	**0.7**
Forest Resources	**0.4**	**0.4**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**

Notes:
Totals may not add up due to rounding.
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Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–11 **GHG Emissions for British Columbia by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**51.2**	**63.3**	**64.5**	**63.3**	**59.1**	**60.6**	**61.5**	**60.4**
OIL AND GAS	**8.3**	**14.0**	**14.7**	**13.9**	**13.9**	**13.3**	**13.3**	**12.4**
Upstream Oil and Gas	**6.9**	**13.4**	**14.1**	**13.4**	**13.4**	**12.7**	**12.7**	**11.9**
Natural Gas Production and Processing	4.8	11.2	11.9	11.2	11.4	10.8	10.7	9.8
Conventional Oil Production	0.7	0.8	0.6	0.5	0.5	0.4	0.4	0.4
Conventional Light Oil Production	0.7	0.8	0.6	0.5	0.5	0.4	0.4	0.4
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	1.5	1.4	1.6	1.6	1.5	1.5	1.6	1.7
Downstream Oil and Gas	**1.4**	**0.6**	**0.6**	**0.6**	**0.5**	**0.6**	**0.6**	**0.5**
Petroleum Refining	1.3	0.5	0.5	0.5	0.4	0.5	0.5	0.4
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRICITY	**0.9**	**1.0**	**0.3**	**0.6**	**0.2**	**0.4**	**0.3**	**0.2**
TRANSPORT	**15.2**	**19.7**	**22.5**	**22.4**	**20.1**	**21.5**	**22.5**	**22.4**
Passenger Transport	**9.3**	**11.7**	**12.6**	**12.3**	**10.4**	**11.0**	**11.8**	**11.8**
Cars, Light Trucks and Motorcycles	7.8	9.9	10.6	10.3	9.1	9.6	9.8	9.7
Bus, Rail and Aviation	1.5	1.9	2.0	2.0	1.2	1.4	2.0	2.1
Freight Transport	**5.2**	**6.5**	**7.9**	**8.1**	**7.8**	**8.5**	**8.7**	**8.6**
Heavy Duty Trucks, Rail	4.1	5.2	6.5	6.7	6.4	6.9	7.2	7.2
Aviation and Marine	1.1	1.3	1.4	1.4	1.4	1.6	1.5	1.4
Other: Recreational, Commercial and Residential	**0.7**	**1.4**	**1.9**	**1.9**	**2.0**	**2.0**	**2.0**	**2.0**
HEAVY INDUSTRY	**8.9**	**7.1**	**6.9**	**6.5**	**5.6**	**5.5**	**5.2**	**5.5**
Mining	**0.5**	**0.4**	**0.9**	**0.8**	**0.8**	**0.7**	**0.8**	**0.6**
Smelting and Refining (Non-Ferrous Metals)	**2.0**	**1.7**	**1.1**	**1.2**	**1.1**	**0.9**	**0.7**	**1.1**
Pulp and Paper	**4.1**	**1.8**	**2.2**	**2.4**	**2.1**	**2.2**	**2.1**	**2.1**
Iron and Steel	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**1.1**	**2.0**	**2.2**	**1.6**	**1.2**	**1.3**	**1.2**	**1.3**
Lime and Gypsum	**0.2**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**1.0**	**0.9**	**0.4**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**
BUILDINGS	**7.5**	**8.4**	**8.3**	**8.7**	**8.8**	**9.0**	**9.4**	**8.6**
Service Industry	**3.1**	**3.8**	**3.9**	**4.1**	**4.1**	**4.2**	**4.4**	**4.2**
Residential	**4.5**	**4.7**	**4.5**	**4.6**	**4.7**	**4.8**	**4.9**	**4.4**
AGRICULTURE	**2.5**	**2.9**	**3.3**	**3.2**	**3.1**	**3.1**	**3.1**	**3.0**
On Farm Fuel Use	**0.4**	**0.2**	**0.9**	**0.9**	**0.8**	**0.8**	**0.8**	**0.8**
Crop Production	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Animal Production	**1.9**	**2.5**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**	**2.0**
WASTE	**2.7**	**2.7**	**2.3**	**2.3**	**1.9**	**1.8**	**1.9**	**1.9**
Solid Waste[a]	**2.5**	**2.5**	**2.0**	**2.0**	**1.6**	**1.5**	**1.6**	**1.6**
Wastewater	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Waste Incineration	**0.0**	-	-	-	-	-	-	-
COAL PRODUCTION	**1.8**	**2.1**	**2.3**	**2.3**	**2.1**	**2.5**	**2.5**	**2.8**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**3.3**	**5.3**	**3.9**	**3.4**	**3.3**	**3.4**	**3.4**	**3.5**
Light Manufacturing	**1.5**	**3.3**	**1.6**	**1.3**	**1.5**	**1.4**	**1.3**	**1.5**
Construction	**0.6**	**0.7**	**0.9**	**0.9**	**0.7**	**0.8**	**0.7**	**0.7**
Forest Resources	**1.2**	**1.3**	**1.3**	**1.3**	**1.1**	**1.2**	**1.3**	**1.3**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–12 **GHG Emissions for Yukon by Canadian Economic Sector, Selected Years**

	1990	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**0.6**	**0.6**	**0.6**	**0.7**	**0.6**	**0.6**	**0.7**	**0.7**
OIL AND GAS	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Natural Gas Production and Processing	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	-	-	-	-	-	-	-
Downstream Oil and Gas	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**
TRANSPORT	**0.2**	**0.3**	**0.4**	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**
Passenger Transport	**0.1**	**0.1**	**0.2**	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**
Cars, Light Trucks and Motorcycles	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Bus, Rail and Aviation	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Freight Transport	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Heavy Duty Trucks, Rail	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aviation and Marine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEAVY INDUSTRY	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Mining	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Service Industry	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AGRICULTURE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
On Farm Fuel Use	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Crop Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Animal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste[a]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

Table A12–13 **GHG Emissions for Northwest Territories by Canadian Economic Sector, Selected Years**

	1999	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**1.3**	**1.7**	**1.4**	**1.4**	**1.2**	**1.3**	**1.4**	**1.4**
OIL AND GAS	**0.2**	**0.3**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Upstream Oil and Gas	**0.2**	**0.3**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Natural Gas Production and Processing	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	0.0	0.0	-	-	-	-	-	-
ELECTRICITY	**0.1**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
TRANSPORT	**0.3**	**0.8**	**0.8**	**0.7**	**0.5**	**0.6**	**0.6**	**0.6**
Passenger Transport	**0.2**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**
Cars, Light Trucks and Motorcycles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bus, Rail and Aviation	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2
Freight Transport	**0.1**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.1	0.4	0.4	0.3	0.2	0.3	0.3	0.3
Aviation and Marine	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEAVY INDUSTRY	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**
Mining	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**
Smelting and Refining (Non-Ferrous Metals)	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Pulp and Paper	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Cement	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Lime and Gypsum	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.3**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Service Industry	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Residential	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**0.0**
AGRICULTURE	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
On Farm Fuel Use	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Crop Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Animal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste[a]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.0**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.0**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions
x Indicates data has been suppressed to respect confidentiality

Table A12–14 **GHG Emissions for Nunavut by Canadian Economic Sector, Selected Years**

	1999	2005	2018	2019	2020	2021	2022	2023
	Mt CO_2 eq							
GHG TOTAL	**0.4**	**0.6**	**0.7**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**
OIL AND GAS	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Upstream Oil and Gas	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	-	-	-	-	-	-	-
Downstream Oil and Gas	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.0**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
TRANSPORT	**0.3**	**0.3**	**0.4**	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**
Passenger Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**	**0.2**	**0.2**
Cars, Light Trucks and Motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus, Rail and Aviation	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1
Freight Transport	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**	**0.1**	**0.1**
Heavy Duty Trucks, Rail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aviation and Marine	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1
Other: Recreational, Commercial and Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEAVY INDUSTRY	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Mining	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Smelting and Refining (Non-Ferrous Metals)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pulp and Paper	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Lime and Gypsum	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.0**	**x**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Service Industry	**0.0**	**x**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
On Farm Fuel Use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Crop Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Animal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste[a]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**-**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.0**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.0**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Forest Resources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions
x Indicates data has been suppressed to respect confidentiality

Table A12–15 **GHG Emissions for Northwest Territories and Nunavut by Canadian Economic Sector, 1990–1998**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	Mt CO_2 eq								
GHG TOTAL	**1.8**	**1.8**	**1.6**	**1.9**	**2.0**	**2.1**	**2.1**	**1.9**	**1.7**
OIL AND GAS	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**
Upstream Oil and Gas	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**
Natural Gas Production and Processing	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Conventional Light Oil Production	-	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-	-
Frontier Oil Production	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Oil Sands (Mining, In-Situ, Upgrading)	-	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-	-
ELECTRICITY	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.2**
TRANSPORT	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Passenger Transport	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Cars, Light Trucks and Motorcycles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bus, Rail and Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other: Recreational, Commercial and Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
HEAVY INDUSTRY	**0.2**	**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.4**	**0.5**
Mining	**0.2**	**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.4**	**0.5**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
Pulp and Paper	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
Lime and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.4**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**	**0.6**	**0.6**	**0.3**
Service Industry	**0.3**	**0.4**	**0.4**	**0.4**	**0.5**	**0.6**	**0.4**	**0.4**	**0.2**
Residential	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**	**0.2**	**0.1**
AGRICULTURE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**0.0**	**0.0**
On Farm Fuel Use	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**0.0**	**0.0**
Crop Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Animal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste[a]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become available and methods and models are refined and improved.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial and territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
a. Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.
- Indicates no emissions

ELECTRICITY IN CANADA: SUMMARY AND INTENSITY TABLES

This annex presents detailed greenhouse gas (GHG) information related to the generation of electricity by the Public Electricity and Heat Production category (IPCC Category 1.A.1.a), on a national, provincial, and territorial level.

The Canadian electricity generation industry produces electricity by transforming the energy in falling water, coal, natural gas, refined petroleum products (RPPs), other miscellaneous fuels, biomass, nuclear, wind and solar resources. The process of supplying electricity to the public involves not only power generation at the plant, but also distribution through the electricity grid. The efficiency of the transmission system has an impact on the amount of electricity available to consumers. GHG emission estimates and electricity generation values are therefore based on activities that occur at the generating plant, and efforts have been made to include the impact of the transmission and distribution infrastructure (including sulphur hexafluoride (SF_6) emissions associated with switchgear and other electrical equipment, which is accounted for in the Industrial Processes and Product Use [IPPU] sector).

The electricity generation industry in Canada is composed of entities whose main activity is the production of electricity (main activity producers) and those who generate either partially or wholly for their own use (autoproducers). Main activity producers sell their electricity to the grid, can be either public or private generators and are reported under North American Industrial Classification System (NAICS) code 22111. Autoproducers are generally private companies that are generating electricity either to feed their operations or as a by-product of their operation. They may sell some or all of their electricity to the grid. Any industry that generates electricity, but whose main business is something other than electric power generation, is reported under the NAICS code associated with their primary business activity. However, in some cases, a

company may have divided their operations so that the electric power generation is a separate business entity (even if the operations are on the same site). In this case, the electric power generation is included under the Public Electricity and Heat Production category.

The analysis in this section only includes main activity producers. This analysis relies on a variety of data sources; fuel consumption and electricity production data are published by Statistics Canada in the *Report on Energy Supply and Demand in Canada* (RESD) (Statistics Canada, n.d. [a]), in the publication *Electric Power Generation, Transmission and Distribution* (EPGTD) (Statistics Canada, n.d. [b]) and online via Statistics Canada data tables 25-10-0019-01, 25-10-0020-01, 25-10-0021-01 and 25-10-0084-01 (Statistics Canada, n.d. [c], n.d. [d], n.d. [e], n.d. [f]).

A "generation intensity" indicator is derived to reflect the GHG emissions intensity of electricity as it is delivered to the electricity grid. Electricity generation intensity values were derived for each fuel type using GHG emission estimates and electricity generation data. The methodology used to develop the GHG emissions is discussed in Chapter 3 and Annex 3.1 of this report. GHG emissions are based on the total fuel consumed by the public utility sector, as provided in the RESD,[1] while generation data are from Statistics Canada data tables (2005–2023) and the EPGTD publication (1990–2004).

A "consumption intensity" indicator was also derived to reflect the GHG emissions intensity of electricity as it is delivered to the consumer. Accordingly, electric energy losses (mainly) in transmission and distribution are subtracted from the overall total electricity generation, while SF_6 emissions associated with equipment used in electricity transmission and distribution are added to overall total GHG emissions. The electric energy losses in transmission, distribution and anywhere else are taken to be the utility sector's share of "unallocated energy," as presented in Table A13–1 to Table A13–14 and calculated from data provided by Statistics Canada (n.d. [e]) or regional electricity system operators. Likewise, the SF_6 emission values are based on the electric utility sector's share of total SF_6 emissions from equipment used in electricity transmission and distribution.

Electricity intensity values for Canada, the provinces and the territories are provided in Table A13–1 to Table A13–14.

1 Occasionally, Statistics Canada revises some of its historic data, which can affect the values provided in Table A13–1 to Table A13–14.

Table A13–1 Electricity Generation and GHG Emission Details for Canada

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**94 100**	**123 000**	**102 000**	**82 900**	**70 900**	**69 600**	**62 200**	**61 500**	**58 000**	**58 100**
Coal	80 100	97 900	78 500	57 800	44 600	42 800	34 600	31 400	24 400	21 400
Natural Gas	2 720	14 500	18 900	19 900	21 500	22 400	24 000	27 000	29 500	33 600
Other Fuels[c]	11 300	10 600	4 900	5 200	4 780	4 340	3 520	3 150	4 150	3 120
Other Emissions[d]	**–**	**52**	**53**	**87**	**78**	**80**	**68**	**72**	**76**	**75**
OVERALL TOTAL[e, f, g]	**94 100**	**123 000**	**102 000**	**83 000**	**70 900**	**69 600**	**62 300**	**61 600**	**58 100**	**58 200**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**101 000**	**140 000**	**117 000**	**108 000**	**98 700**	**97 700**	**92 200**	**95 700**	**93 900**	**99 800**
Coal	82 200	93 900	74 300	57 800	47 000	44 500	35 900	32 000	24 400	21 800
Natural Gas	4 140	29 800	33 600	41 200	43 500	45 800	49 400	57 000	62 100	71 300
Other Fuels	14 800	16 700	8 650	8 560	8 210	7 360	6 820	6 640	7 400	6 690
Refined Petroleum Products	14 700	10 800	3 010	3 550	2 750	2 400	2 140	2 100	2 700	2 250
Biomass	14	1 780	2 310	1 980	2 210	1 880	2 070	2 240	1 980	2 230
Other	91	4 070	3 330	3 030	3 260	3 080	2 610	2 290	2 720	2 210
Nuclear	**68 800**	**86 800**	**85 500**	**96 000**	**95 000**	**95 500**	**92 600**	**87 400**	**82 300**	**84 000**
Hydro	**263 000**	**327 000**	**321 000**	**345 000**	**353 000**	**349 000**	**355 000**	**353 000**	**369 000**	**331 000**
Other Renewables[k]	**26**	**1 580**	**8 780**	**27 500**	**34 300**	**33 600**	**36 300**	**38 100**	**41 100**	**43 600**
Other Generation[l, m]	**–**	**32**	**10 100**	**280**	**340**	**330**	**500**	**640**	**550**	**580**
OVERALL TOTAL[f]	**433 000**	**556 000**	**542 000**	**577 000**	**581 000**	**577 000**	**577 000**	**574 000**	**587 000**	**559 000**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	220	220	190	140	120	120	110	110	100	100
CH_4 intensity (g CH_4 / kWh)	0.004	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
N_2O intensity (g N_2O / kWh)	0.004	0.004	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**220**	**220**	**190**	**140**	**120**	**120**	**110**	**110**	**100**	**100**
	Losses									
Unallocated Energy (GWh)[o, p]	31 000	33 000	40 000	46 000	41 000	42 000	44 000	38 000	38 000	37 000
SF_6 Emissions (kt CO_2 eq)[q]	210	170	190	200	170	130	160	160	100	100
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**230**	**240**	**200**	**160**	**130**	**130**	**120**	**120**	**110**	**110**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

Table A13–2 Electricity Generation and GHG Emission Details for Newfoundland and Labrador

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**1 640**	**820**	**740**	**1 340**	**1 130**	**1 140**	**950**	**650**	**690**	**680**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	1 640	820	740	1 340	1 130	1 140	950	650	690	680
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**1 640**	**820**	**740**	**1 340**	**1 130**	**1 140**	**950**	**650**	**690**	**680**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**2 090**	**1 360**	**916**	**1 560**	**1 260**	**1 320**	**1 090**	**760**	**800**	**780**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 360	920	1 560	1 260	1 320	1 090	760	800	780
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**34 300**	**38 900**	**39 400**	**38 800**	**41 800**	**40 800**	**38 500**	**39 400**	**39 500**	**42 200**
Other Renewables[k]	**–**	**–**	**180**	**170**	**210**	**180**	**180**	**160**	**180**	**170**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**36 400**	**40 300**	**40 500**	**40 500**	**43 300**	**42 300**	**39 800**	**40 300**	**40 400**	**43 100**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	45	20	18	33	26	27	24	16	17	16
CH_4 intensity (g CH_4 / kWh)	0.0005	0.0002	0.0003	0.0005	0.0004	0.0004	0.0003	0.0002	0.0002	0.0002
N_2O intensity (g N_2O / kWh)	0.0009	0.0004	0.0004	0.0006	0.0005	0.0005	0.0005	0.0003	0.0003	0.0003
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**45**	**20**	**18**	**33**	**26**	**27**	**24**	**16**	**17**	**16**
	Losses									
Unallocated Energy (GWh)[o, p]	990	860	1 200	1 900	1 930	1 900	1 800	2 100	1 900	2 400
SF_6 Emissions (kt CO_2 eq)[q]	0.97	0.52	0.55	3.5	2.2	1.9	3.6	3.2	2.9	5.7
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**46**	**21**	**19**	**35**	**27**	**28**	**25**	**17**	**18**	**17**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1

Table A13–3 Electricity Generation and GHG Emission Details for Prince Edward Island

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**100**	**5.6**	**1.9**	**14**	**2.8**	**1.1**	**0.3**	**1.9**	**1.1**	**3.6**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	100	5.6	1.9	14	2.8	1.1	0.3	1.9	1.1	3.6
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**100**	**5.6**	**1.9**	**14**	**2.8**	**1.1**	**0.3**	**1.9**	**1.1**	**3.6**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**81**	**6.3**	**3.8**	**9.8**	**3.0**	**0.93**	**0.25**	**1.8**	**1.1**	**3.4**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	81	6.3	3.8	9.8	3.0	0.93	0.25	1.8	1.1	3.4
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**–**	**40**	**460**	**610**	**640**	**650**	**660**	**600**	**530**	**500**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**81**	**46**	**460**	**620**	**640**	**650**	**660**	**600**	**530**	**500**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	1 300	120	4.0	22	4.0	2.0	0.0	3.0	2.0	7.0
CH_4 intensity (g CH_4 / kWh)	0.01	0.002	0.00008	0.0007	0.0003	0.0001	0.0	0.0002	0.0001	0.0005
N_2O intensity (g N_2O / kWh)	0.03	0.002	0.0001	0.0004	0.0	0.0	0.0	0.0	0.0	0.0001
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**1 300**	**120**	**4.0**	**23**	**4.0**	**2.0**	**0.0**	**3.0**	**2.0**	**7.0**
	Losses									
Unallocated Energy (GWh)[o, p]	unk	unk	8.6	30	27	27	28	23	22	35
SF_6 Emissions (kt CO_2 eq)[q]	0.0	–	–	–	–	–	–	–	0.0	0.2
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**	**	**	**	**	**	**	**	**	**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1 and intensity values less than 0.0001

unk Indicates unknown as appropriate data were unavailable

** Due to the high level of imports from New Brunswick, values for New Brunswick are more indicative of GHG consumption intensity. Please refer to Table A13–5.

Table A13–4 Electricity Generation and GHG Emission Details for Nova Scotia

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**6 870**	**10 000**	**8 780**	**6 700**	**6 970**	**6 670**	**6 280**	**6 040**	**5 780**	**4 810**
Coal	5 080	5 460	6 340	4 400	4 840	4 820	4 240	4 440	3 680	3 000
Natural Gas	–	x	x	690	790	780	990	920	880	1 040
Other Fuels[c]	1 790	x	x	1 610	1 340	1 070	1 050	680	1 220	770
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**6 870**	**10 000**	**8 780**	**6 700**	**6 970**	**6 670**	**6 280**	**6 040**	**5 780**	**4 810**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**8 440**	**11 100**	**10 300**	**8 220**	**7 890**	**7 410**	**7 410**	**7 260**	**6 740**	**6 600**
Coal	6 020	6 770	6 790	4 870	4 980	4 990	4 470	4 660	3 850	3 640
Natural Gas	–	180	2 270	1 300	1 420	1 360	1 860	1 670	1 630	1 930
Other Fuels	2 430	4 110	1 270	2 050	1 490	1 060	1 080	930	1 250	1 030
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**1 120**	**1 040**	**970**	**1 010**	**940**	**1 030**	**750**	**780**	**910**	**970**
Other Renewables[k]	**26**	**110**	**410**	**820**	**1 410**	**1 270**	**1 280**	**1 180**	**1 280**	**1 280**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**9 590**	**12 200**	**11 700**	**10 000**	**10 240**	**9 710**	**9 430**	**9 210**	**8 930**	**8 850**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	710	820	750	660	680	680	660	650	640	540
CH_4 intensity (g CH_4 / kWh)	0.007	0.02	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.04
N_2O intensity (g N_2O / kWh)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**720**	**820**	**750**	**670**	**680**	**690**	**670**	**660**	**650**	**540**
	Losses									
Unallocated Energy (GWh)[o, p]	580	770	670	570	670	640	640	600	540	550
SF_6 Emissions (kt CO_2 eq)[q]	24	30	28	34	26	6.2	4.2	5.7	5.7	7.5
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**770**	**880**	**800**	**710**	**730**	**740**	**710**	**700**	**690**	**580**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

x Indicates data not shown due to statistical limitations

Table A13–5 Electricity Generation and GHG Emission Details for New Brunswick

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**6 010**	**8 410**	**5 160**	**4 230**	**4 360**	**3 930**	**2 600**	**3 270**	**3 850**	**3 010**
Coal	1 170	2 900	1 800	1 560	2 070	1 750	1 140	1 390	1 850	1 090
Natural Gas	–	x	x	1 040	660	680	620	710	400	910
Other Fuels[c]	4 840	x	x	1 630	1 630	1 500	840	1 170	1 600	1 000
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**6 010**	**8 410**	**5 160**	**4 230**	**4 360**	**3 930**	**2 600**	**3 270**	**3 850**	**3 010**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**7 630**	**12 100**	**6 220**	**5 630**	**4 780**	**4 010**	**3 240**	**3 950**	**4 340**	**4 380**
Coal	1 270	2 920	2 080	1 650	2 330	1 820	1 170	1 440	1 990	1 300
Natural Gas	–	1 970	1 840	2 320	980	1 030	1 370	1 580	820	2 110
Other Fuels	6 360	7 210	2 300	1 650	1 480	1 150	700	940	1 530	980
Nuclear	**5 340**	**4 380**	**–**	**4 280**	**4 870**	**5 020**	**4 790**	**4 420**	**3 540**	**4 750**
Hydro	**3 460**	**3 820**	**3 330**	**2 620**	**2 530**	**2 990**	**2 760**	**2 630**	**3 430**	**3 540**
Other Renewables[k]	**–**	**–**	**390**	**790**	**820**	**890**	**900**	**760**	**620**	**670**
Other Generation[l, m]	**–**	**–**	**680**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**16 400**	**20 300**	**10 600**	**13 300**	**13 000**	**12 900**	**11 700**	**11 800**	**11 900**	**13 300**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	360	410	480	320	330	300	220	280	320	220
CH_4 intensity (g CH_4 / kWh)	0.004	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02
N_2O intensity (g N_2O / kWh)	0.007	0.008	0.008	0.005	0.005	0.004	0.003	0.004	0.005	0.004
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**370**	**410**	**490**	**320**	**330**	**300**	**220**	**280**	**320**	**230**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 060	650	670	700	580	580	520	450	450
SF_6 Emissions (kt CO_2 eq)[q]	0.73	–	0.36	0.85	1.4	0.75	1.0	1.0	2.3	1.1
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**390**	**440**	**520**	**330**	**350**	**320**	**230**	**290**	**340**	**230**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

x Indicates data not shown due to statistical limitations

Table A13–6 Electricity Generation and GHG Emission Details for Quebec

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**1 490**	**610**	**420**	**210**	**240**	**240**	**290**	**250**	**230**	**270**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	110	270	220	0.0	2.0	1.2	1.6	1.6	1.4	41
Other Fuels[c]	1 380	350	200	210	240	240	290	250	230	230
Other Emissions[d]	**–**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**1 490**	**620**	**420**	**210**	**240**	**240**	**290**	**250**	**230**	**270**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**1 980**	**1 390**	**1 510**	**960**	**1 350**	**1 240**	**1 260**	**1 270**	**1 190**	**1 220**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	210	200	0.0	0.0	0.0	0.9	1.8	1.4	2.1
Other Fuels	1 980	1 170	1 310	960	1 350	1 240	1 260	1 270	1 190	1 220
Nuclear	**4 070**	**4 480**	**3 550**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**112 000**	**155 000**	**161 000**	**175 000**	**180 000**	**180 000**	**176 000**	**183 000**	**185 000**	**165 000**
Other Renewables[k]	**–**	**420**	**1 550**	**6 420**	**10 200**	**10 700**	**10 800**	**10 100**	**9 700**	**9 300**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**118 000**	**161 000**	**168 000**	**182 000**	**191 000**	**191 000**	**188 000**	**195 000**	**196 000**	**175 000**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	13	3.7	2.5	1.1	1.3	1.2	1.5	1.3	1.2	1.5
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0010	0.0004	0.0	0.0	0.0002	0.0	0.0	0.0	0.0001
N_2O intensity (g N_2O / kWh)	0.0003	0.0004	0.0001	0.0	0.0	0.0001	0.0	0.0	0.0	0.0
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**13**	**3.8**	**2.5**	**1.1**	**1.3**	**1.2**	**1.5**	**1.3**	**1.2**	**1.5**
	Losses									
Unallocated Energy (GWh)[o, p]	7 280	9 060	15 600	17 250	17 890	17 800	16 870	17 410	16 220	13 620
SF_6 Emissions (kt CO_2 eq)[q]	38	31	32	76	60	39	71	71	33	44
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**14**	**4.3**	**3.0**	**1.7**	**1.7**	**1.6**	**2.1**	**1.8**	**1.5**	**1.9**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1 and intensity values less than 0.0001

x Indicates data not shown due to statistical limitations

Table A13–7 Electricity Generation and GHG Emission Details for Ontario

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**25 600**	**33 900**	**20 200**	**6 340**	**4 160**	**3 960**	**4 950**	**5 730**	**6 810**	**8 280**
Coal	24 400	28 700	12 600	–	–	–	–	–	–	–
Natural Gas	8.0	4 960	7 340	6 260	4 040	3 910	4 890	5 650	6 730	8 200
Other Fuels[c]	1 160	230	180	80	120	57	63	82	79	77
Other Emissions[d]	**–**	**1.4**	**0.23**	**–**	**–**	**0.46**	**0.46**	**0.46**	**0.46**	**0.46**
OVERALL TOTAL[e, f, g]	**25 600**	**33 900**	**20 200**	**6 340**	**4 160**	**3 970**	**4 950**	**5 740**	**6 810**	**8 280**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**29 200**	**40 900**	**27 200**	**15 900**	**10 600**	**10 100**	**11 000**	**13 000**	**16 200**	**20 400**
Coal	27 800	29 400	12 300	–	–	–	–	–	–	–
Natural Gas	3.2	10 000	14 100	15 300	9 780	9 370	10 270	12 230	15 620	19 800
Other Fuels	1 430	1 440	860	640	820	740	720	730	570	600
Nuclear	**59 400**	**78 000**	**82 000**	**91 800**	**90 200**	**90 500**	**87 800**	**83 000**	**78 800**	**79 300**
Hydro	**38 700**	**34 600**	**31 800**	**34 800**	**37 800**	**37 800**	**38 500**	**34 800**	**39 700**	**39 500**
Other Renewables[k]	**–**	**26**	**3 190**	**12 200**	**13 600**	**12 700**	**13 100**	**14 700**	**16 000**	**14 000**
Other Generation[l, m]	**–**	**–**	**3 630**	**–**	**6.0**	**11**	**21**	**19**	**15**	**31**
OVERALL TOTAL[f]	**127 000**	**153 000**	**148 000**	**155 000**	**152 000**	**151 000**	**150 000**	**145 000**	**151 000**	**153 000**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	200	220	140	40	27	26	32	39	45	53
CH_4 intensity (g CH_4 / kWh)	0.002	0.011	0.014	0.010	0.007	0.007	0.008	0.010	0.011	0.014
N_2O intensity (g N_2O / kWh)	0.003	0.004	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**200**	**220**	**140**	**41**	**27**	**26**	**33**	**39**	**45**	**54**
	Losses									
Unallocated Energy (GWh)[o, p]	10 300	12 400	15 500	16 800	10 500	13 500	15 500	9 450	9 480	12 270
SF_6 Emissions (kt CO_2 eq)[q]	79	52	61	58	59	51	70	55	38	32
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**220**	**240**	**150**	**46**	**30**	**29**	**37**	**43**	**49**	**59**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

Table A13–8 Electricity Generation and GHG Emission Details for Manitoba

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**520**	**350**	**81**	**100**	**25**	**24**	**28**	**43**	**32**	**57**
Coal	x	x	x	71	5.6	–	–	–	–	–
Natural Gas	x	x	x	32	7.2	13	16	29	19	43
Other Fuels[c]	49	19	14	–	12	12	13	14	13	14
Other Emissions[d]	**–**	**8.8**	**12**	**21**	**16**	**16**	**13**	**13**	**16**	**17**
OVERALL TOTAL[e, f, g]	**520**	**360**	**92**	**120**	**41**	**40**	**41**	**56**	**48**	**74**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**400**	**450**	**84**	**110**	**30**	**32**	**35**	**60**	**45**	**82**
Coal	380	420	44	63	5.3	–	–	–	–	–
Natural Gas	0.90	11	23	29	9.7	17	19	43	29	65
Other Fuels	22	15	17	14	15	15	16	17	16	17
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**19 800**	**36 400**	**33 300**	**34 800**	**30 700**	**32 900**	**36 200**	**28 000**	**36 700**	**32 300**
Other Renewables[k]	**–**	**53**	**340**	**900**	**870**	**880**	**960**	**960**	**970**	**850**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**20 200**	**36 900**	**33 700**	**35 800**	**31 600**	**33 900**	**37 200**	**29 000**	**37 800**	**33 200**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	26	9.7	2.7	3.4	1.3	1.2	1.1	1.9	1.2	2.2
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0002	0.0002	0.0003	0.0001	0.0001	0.0001	0.0003	0.0002	0.0004
N_2O intensity (g N_2O / kWh)	0.001	0.0002	0.0	0.0001	0.0	0.0	0.0	0.0	0.0	0.0
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**26**	**9.8**	**2.7**	**3.5**	**1.3**	**1.2**	**1.1**	**1.9**	**1.3**	**2.2**
	Losses									
Unallocated Energy (GWh)[o, p]	2 100	1 860	1 660	2 850	2 440	2 090	3 150	2 140	3 020	2 990
SF_6 Emissions (kt CO_2 eq)[q]	4.4	4.1	4.4	1.0	2.5	1.9	1.4	2.2	2.0	1.5
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**29**	**10**	**3.0**	**3.8**	**1.5**	**1.3**	**1.3**	**2.2**	**1.4**	**2.5**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1 and intensity values less than 0.0001

x Indicates data not shown due to statistical limitations

Table A13–9 Electricity Generation and GHG Emission Details for Saskatchewan

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**11 100**	**15 300**	**16 200**	**16 200**	**16 300**	**16 000**	**13 900**	**16 100**	**14 800**	**14 600**
Coal	x	x	x	12 500	11 700	11 400	8 700	11 100	9 800	9 200
Natural Gas	x	x	x	3 620	4 620	4 600	5 170	4 970	4 950	5 410
Other Fuels[c]	6.5	4.3	12	9.1	9.4	5.8	4.7	5.5	12	9
Other Emissions[d]	**–**	**18**	**30**	**39**	**41**	**41**	**35**	**38**	**35**	**32**
OVERALL TOTAL[e, f, g]	**11 100**	**15 300**	**16 200**	**16 200**	**16 400**	**16 000**	**13 900**	**16 100**	**14 800**	**14 600**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**9 660**	**14 800**	**15 100**	**19 100**	**19 400**	**19 300**	**18 800**	**20 500**	**18 900**	**19 600**
Coal	9 340	12 200	12 100	12 100	10 300	10 000	7 900	9 700	8 500	7 900
Natural Gas	310	2 610	3 040	6 990	9 020	9 270	10 890	10 840	10 380	11 650
Other Fuels	8.8	12	18	0.41	0.42	0.20	0.28	0.17	0.18	0.20
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**4 210**	**4 570**	**3 870**	**3 430**	**3 590**	**3 670**	**4 420**	**2 980**	**3 300**	**2 770**
Other Renewables[k]	**–**	**92**	**510**	**620**	**690**	**710**	**740**	**890**	**1 790**	**1 980**
Other Generation[l, m]	**–**	**–**	**630**	**–**	**210**	**220**	**180**	**210**	**170**	**250**
OVERALL TOTAL[f]	**13 900**	**19 500**	**20 100**	**23 100**	**23 900**	**23 900**	**24 100**	**24 600**	**24 200**	**24 600**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	800	780	800	700	680	670	570	650	610	590
CH_4 intensity (g CH_4 / kWh)	0.02	0.03	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.06
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**800**	**790**	**810**	**700**	**690**	**670**	**580**	**660**	**610**	**590**
	Losses									
Unallocated Energy (GWh)[o, p]	1 330	1 360	1 840	1 970	1 660	1 630	1 700	1 580	1 530	1 420
SF_6 Emissions (kt CO_2 eq)[q]	1.8	1.3	1.4	0.75	0.28	0.50	0.48	0.94	0.60	0.59
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**890**	**840**	**890**	**770**	**740**	**720**	**620**	**700**	**660**	**630**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

x Indicates data not shown due to statistical limitations

Table A13–10 Electricity Generation and GHG Emission Details for Alberta

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**39 700**	**51 900**	**49 000**	**46 700**	**36 600**	**36 300**	**32 200**	**28 300**	**24 700**	**25 400**
Coal	38 000	46 800	43 400	39 200	26 000	24 800	20 500	14 500	9 000	8 100
Natural Gas	1 700	5 120	5 580	7 510	10 600	11 500	11 700	13 800	15 700	17 200
Other Fuels[c]	11	60	18	17	0.0	10	10	8.6	8.3	8.6
Other Emissions[d]	**–**	**10**	**5.6**	**19**	**15**	**16**	**13**	**13**	**15**	**13**
OVERALL TOTAL[e, f, g]	**39 700**	**52 000**	**49 000**	**46 800**	**36 600**	**36 300**	**32 200**	**28 300**	**24 700**	**25 400**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**39 900**	**54 200**	**51 700**	**54 100**	**51 500**	**51 600**	**47 300**	**46 300**	**43 300**	**44 600**
Coal	37 300	42 200	41 000	39 100	29 400	27 700	22 400	16 300	10 000	8 900
Natural Gas	2 510	11 600	10 200	14 500	21 500	23 200	24 300	29 400	32 800	35 100
Other Fuels	22	420	500	520	660	670	640	620	550	540
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**2 060**	**2 240**	**1 480**	**1 980**	**1 990**	**2 040**	**2 150**	**2 070**	**1 990**	**1 780**
Other Renewables[k]	**–**	**840**	**1 630**	**4 090**	**4 140**	**3 970**	**5 960**	**7 040**	**8 160**	**13 160**
Other Generation[l, m]	**–**	**32**	**1 500**	**280**	**130**	**110**	**300**	**410**	**360**	**300**
OVERALL TOTAL[f]	**41 900**	**57 300**	**56 400**	**60 400**	**57 800**	**57 700**	**55 800**	**55 800**	**53 800**	**59 900**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	940	900	860	770	630	620	570	500	450	420
CH_4 intensity (g CH_4 / kWh)	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.06	0.07	0.07
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**950**	**910**	**870**	**770**	**630**	**630**	**580**	**510**	**460**	**420**
	Losses									
Unallocated Energy (GWh)[o, p]	3 380	4 870	2 490	2 210	2 060	1 590	1 590	1 600	1 700	1 870
SF_6 Emissions (kt CO_2 eq)[q]	1.7	0.45	1.0	3.3	2.4	4.1	2.9	2.9	1.9	1.9
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**1 030**	**990**	**910**	**800**	**660**	**650**	**600**	**520**	**470**	**440**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1

Table A13–11 Electricity Generation and GHG Emission Details for British Columbia

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**800**	**1 330**	**1 560**	**780**	**810**	**1 040**	**730**	**950**	**880**	**750**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	733	752	967	671	898	815	711
Other Fuels[c]	x	x	x	49	59	73	57	55	69	35
Other Emissions[d]	**–**	**4.6**	**6.0**	**7.2**	**6.9**	**7.4**	**6.7**	**8.3**	**9.3**	**11**
OVERALL TOTAL[e, f, g]	**800**	**1 330**	**1 560**	**790**	**820**	**1 050**	**730**	**960**	**890**	**760**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**1 390**	**3 820**	**3 050**	**1 610**	**1 580**	**2 280**	**1 680**	**2 280**	**1 980**	**1 700**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 140	1 850	790	750	1 420	680	1 210	780	580
Other Fuels	79	690	1 210	820	830	870	1 000	1 070	1 200	1 130
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**46 400**	**50 300**	**45 000**	**52 400**	**52 900**	**48 000**	**55 000**	**58 000**	**57 800**	**42 400**
Other Renewables[k]	**–**	**–**	**120**	**870**	**1 690**	**1 650**	**1 760**	**1 700**	**1 830**	**1 720**
Other Generation[l, m]	**–**	**–**	**3 630**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**47 800**	**54 100**	**51 800**	**54 800**	**56 200**	**52 000**	**58 400**	**62 000**	**61 600**	**45 800**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	17	24	29	14	14	19	12	15	14	15
CH_4 intensity (g CH_4 / kWh)	0.004	0.011	0.033	0.021	0.022	0.026	0.021	0.022	0.026	0.034
N_2O intensity (g N_2O / kWh)	0.0004	0.0016	0.0017	0.0009	0.0007	0.0008	0.0007	0.0009	0.0007	0.0009
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**17**	**25**	**30**	**14**	**15**	**20**	**13**	**16**	**15**	**17**
	Losses									
Unallocated Energy (GWh)[o, p]	2 210	2 120	1 940	3 170	3 950	3 190	3 830	4 180	3 820	3 040
SF_6 Emissions (kt CO_2 eq)[q]	59	49	60	21	12	23	3.9	13	10	8
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**19**	**27**	**33**	**16**	**16**	**22**	**14**	**17**	**16**	**18**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

x Indicates data not shown due to statistical limitations

Table A13–12 Electricity Generation and GHG Emission Details for Yukon

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**90**	**22**	**18**	**18**	**33**	**48**	**54**	**42**	**39**	**37**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	0.79	12	30	22	9.8	10	15
Other Fuels[c]	90	22	18	17	21	18	32	32	29	23
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**90**	**22**	**18**	**18**	**33**	**48**	**54**	**42**	**39**	**37**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**62**	**22**	**25**	**26**	**59**	**92**	**91**	**65**	**67**	**68**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	1.3	30	66	48	22	26	36
Other Fuels	62	22	25	24	29	26	44	44	41	32
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**420**	**320**	**380**	**420**	**420**	**380**	**440**	**510**	**500**	**490**
Other Renewables[k]	**–**	**0.89**	**0.09**	**0.65**	**–**	**–**	**–**	**–**	**2.0**	**2.0**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**480**	**340**	**410**	**450**	**480**	**470**	**530**	**570**	**570**	**560**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	190	64	44	41	69	100	100	70	70	70
CH_4 intensity (g CH_4 / kWh)	0.005	0.002	0.001	0.002	0.007	0.017	0.012	0.006	0.006	0.008
N_2O intensity (g N_2O / kWh)	0.002	0.0005	0.0004	0.0004	0.001	0.002	0.002	0.0009	0.0009	0.001
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**190**	**64**	**44**	**41**	**69**	**100**	**100**	**70**	**70**	**70**
	Losses									
Unallocated Energy (GWh)[o, p]	47	45	33	54	56	45	42	45	43	43
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	0.71	0.95	0.94	2.1	–	1.0
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**210**	**74**	**48**	**46**	**80**	**120**	**110**	**80**	**70**	**70**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1

Table A13–13 Electricity Generation and GHG Emission Details for the Northwest Territories

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**160**	**91**	**65**	**120**	**67**	**60**	**62**	**56**	**59**	**120**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	6.3	4.0	3.0	4.0	5.4	5.6	6.0
Other Fuels[c]	x	x	x	110	63	57	58	51	53	120
Other Emissions[d]	**–**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[e, f, g]	**160**	**96**	**65**	**120**	**67**	**60**	**62**	**56**	**59**	**120**
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**230**	**78**	**85**	**160**	**90**	**82**	**86**	**80**	**79**	**170**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	0.0	23	27	11	6.6	7.6	11	15	15	17
Other Fuels	230	54	58	150	80	74	75	65	64	160
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**230**	**260**	**250**	**160**	**250**	**270**	**260**	**260**	**240**	**130**
Other Renewables[k]	**–**	**–**	**–**	**0.14**	**0.29**	**0.30**	**0.30**	**0.31**	**0.24**	**3.1**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
OVERALL TOTAL[f]	**450**	**340**	**340**	**320**	**340**	**350**	**350**	**340**	**320**	**310**
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	340	280	190	360	200	170	180	160	180	390
CH_4 intensity (g CH_4 / kWh)	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02
N_2O intensity (g N_2O / kWh)	0.003	0.003	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.004
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**340**	**280**	**190**	**360**	**200**	**170**	**180**	**170**	**180**	**390**
	Losses									
Unallocated Energy (GWh)[o, p]	21	19	21	18	19	20	20	19	18	18
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	–	–	0.05	–	0.62	–
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**360**	**300**	**200**	**390**	**210**	**180**	**190**	**180**	**190**	**420**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0.0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

Table A13–14 Electricity Generation and GHG Emission Details for Nunavut

	1990	2005	2010	2015	2018	2019	2020	2021	2022	2023[a]
GREENHOUSE GAS EMISSIONS[b]										
	kt CO_2 equivalent									
Combustion	**	x	x	110	160	160	150	160	150	150
Coal	**	–	–	–	–	–	–	–	–	–
Natural Gas	**	x	x	–	–	–	–	–	–	–
Other Fuels[c]	**	x	x	110	160	160	150	160	150	150
Other Emissions[d]	**	–	–	–	–	–	–	–	–	–
OVERALL TOTAL[e, f, g]	**	X	X	110	160	160	150	160	150	150
ELECTRICITY GENERATION[h, i]										
	GWh									
Combustion[j]	**	140	160	160	190	190	200	190	190	190
Coal	**	–	–	–	–	–	–	–	–	–
Natural Gas	**	–	–	–	–	–	–	–	–	–
Other Fuels	**	140	160	160	190	190	200	190	190	190
Nuclear	**	–	–	–	–	–	–	–	–	–
Hydro	**	–	–	–	–	–	–	–	–	–
Other Renewables[k]	**	–	–	–	–	–	–	–	–	–
Other Generation[l, m]	**	–	–	–	–	–	–	–	–	–
OVERALL TOTAL[f]	**	140	160	160	190	190	200	190	190	190
GREENHOUSE GAS INTENSITY[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	**	x	x	720	840	840	760	790	780	780
CH_4 intensity (g CH_4 / kWh)	**	x	x	0.02	0.02	0.02	0.02	0.02	0.02	0.02
N_2O intensity (g N_2O / kWh)	**	x	x	0.01	0.01	0.01	0.01	0.01	0.01	0.01
GENERATION INTENSITY (g CO_2 eq / kWh)[f]	**	X	X	720	840	850	770	800	780	780
	Losses									
Unallocated Energy (GWh)[o, p]	**	6.7	3.4	5.5	10	5.2	8.6	9.0	8.7	4.5
SF_6 Emissions (kt CO_2 eq)[q]	**	–	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)									
CONSUMPTION INTENSITY (g CO_2 eq / kWh)[r]	**	880	760	750	890	870	800	830	820	800

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.

a. Preliminary data.
b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
c. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
e. GHG emissions from the flooding of land for hydro dams are not included.
f. Totals may not add up to overall total due to rounding.
g. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 (2005–2019), 25-10-0084-01 (2020–2023), and 25-10-0020-01 (2005–2023).
i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
j. From 2014 onward, this includes most of the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
k. Other Renewables – includes electricity generation by wind, tidal and solar.
l. NAICS category 221119, Other Electric Power Generation.
m. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, most of the electricity generation from steam from waste heat is reported as part of its original fuel source.
n. Intensity values have been rounded so as to present the estimated level of accuracy.
o. Adapted from StatCan Data Table 25-10-0021-001 (2005-2023), Cat. No. 57-202-XIB (1990-2004) or regional electricity system operators.
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRT Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

x Indicates data not shown due to statistical limitations

** Data is only available aggregated with Northwest Territories. Please refer to Table A13–13 for values.

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