NATIONAL INVENTORY REPORT 1990–2020: GREENHOUSE GAS SOURCES AND SINKS IN CANADA

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

PART 3

2022

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Canada

Cat. No.: En81-4E-PDF
ISSN: 1910-7064
EC21275.02

The Executive Summary of this report is available in HTML at: canada.ca/ghg-inventory

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

Aussi disponible en français
Rapport d'inventaire national 1990–2020 : Sources et puits de gaz à effet de serre au Canada

TABLE OF CONTENTS

LIST OF TABLES

LIST OF COMMON ABBREVIATIONS AND UNITS

Abbreviations

CAC ..... criteria air contaminant
CANSIM ..... Statistics Canada's key socioeconomic database
CEPA 1999 ..... *Canadian Environmental Protection Act, 1999*
CESI ..... Canadian Environmental Sustainability Indicators
CFC ..... chlorofluorocarbon
CFS ..... Canadian Forest Service
DOC ..... dissolved organic carbon
ECCC ..... Environment and Climate Change Canada
EF ..... emission factor
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
IPCC ..... Intergovernmental Panel on Climate Change
IPPU ..... Industrial Proccesses and Product Use
LTO ..... landing and takeoff
LULUCF ..... Land Use, Land-Use Change and Forestry
MSW ..... municipal solid waste
N/A ..... not available
NDC ..... nationally determined contribution
NIR ..... National Inventory Report
NMVOC ..... non-methane volatile organic compound
NPRI ..... National Pollutant Release Inventory
ODS ..... ozone-depleting substance
OECD ..... Organisation for Economic Co-operation and Development
PFC ..... perfluorocarbon
POP ..... persistent organic pollutant
QA ..... quality assurance
QC ..... quality control

RESD ..... *Report on Energy Supply and Demand in Canada*
TAN ..... total ammoniacal nitrogen
UOG ..... upstream oil and gas
VKT ..... vehicle kilometres traveled
UNECE ..... United Nations Economic Commission for Europe
UNFCCC ..... United Nations Framework Convention on Climate Change

Chemical Formulas

Al ..... aluminium
$CaCO_3$ ..... calcium carbonate; limestone
$CaMg(CO_3)_2$ ..... dolomite
CaO ..... lime; quicklime; calcined limestone
CF_4 ..... carbon tetrafluoride
C_2F_6 ..... carbon hexafluoride
CH_3OH ..... methanol
CH_4 ..... methane
C_2H_6 ..... ethane
C_3H_8 ..... propane
C_4H_{10} ..... butane
C_2H_4 ..... ethylene
C_6H_6 ..... benzene
CO ..... carbon monoxide
CO_2 ..... carbon dioxide
CO_2 eq ..... carbon dioxide equivalent
H_2 ..... hydrogen
H_2O ..... water
H_2S ..... hydrogen sulphide
HNO_3 ..... nitric acid
Mg ..... magnesium
$MgCO_3$ ..... magnesite; magnesium carbonate
MgO ..... magnesia; dolomitic lime
N ..... nitrogen
N_2 ..... nitrogen gas
Na_2CO_3 ..... sodium carbonate; soda ash
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 ..... nitric oxide

NO_2 ..... nitrogen dioxide
NO_3- ..... nitrate
NO_x ..... nitrogen oxides
O_2 ..... oxygen
SF_6 ..... sulphur hexafluoride
SiC ..... silicon carbide
SO_2 ..... sulphur dioxide
SO_x ..... sulphur oxides

Notation Keys

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

Units

g ..... gram
Gg ..... gigagram
Gt ..... gigatonne
ha ..... hectare
kg ..... kilogram
kha ..... kilohectare
km ..... kilometre
kt ..... kilotonne
kWh ..... kilowatt-hour
m ..... metre
Mg ..... megagram
Mha ..... million hectares
mm ..... millimetre
ML ..... megalitre
Mt ..... megatonne
MW ..... megawatt
PJ ..... petajoule
TJ ..... terajoule
t ..... tonne
TWh ..... terrawatt-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) in order 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 provided in this protocol, can be found in Table A8–1.

A large number 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, many methodological changes, refinements and updates, including updates to the uncertainty parameters themselves, have been made. 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, wo significant figures are used in spite of some high uncertainty ranges that suggest to use only one significant figures (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. The reader should also note 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 "-"). As a result of these procedures, individual values in the emission tables may not add up to the subtotals and/or overall totals.

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**	**2**	**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	2	1					3
Off-Road Commercial and Institutional	3	2	1					3
Off-Road Manufacturing, Mining and Construction	3	2	1					3
Off-Road Residential	3	2	1					3
Off-Road Other Transportation	3	2	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**	**3**	**2**	**3**	**2**	**1**	**3**
a. Mineral Products	**2**							**2**
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	2					3
c. Metal Production	**3**	**1**			**3**	**3**		**3**
Iron and Steel Production	3	1						3
Aluminium Production	3				3	3		3
SF_6 Used in Magnesium Smelters and Casters						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**		**2**		**1**	**2**		**2**
AGRICULTURE	**2**	**2**	**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**	**1**					**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**2**							**2**
WASTE	**1**	**2**	**1**					**2**
a. Solid Waste Disposal (Landfills)		**1**						**1**
b. Biological Treatment of Solid Waste		**1**	**1**					**1**
c. Wastewater Treatment and Discharge		**1**	**1**					**1**
d. Incineration and Open Burning of Waste	**2**	**1**	**1**					**2**
e. Industrial Wood Waste Landfills	**1**	**1**	**1**					**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**

CANADA'S GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2020

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 *UNFCCC Reporting Guidelines on annual inventories* for Parties included in Annex I to the Convention (Decision 24/CP.19).[1]

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.

1 Available online at http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf.

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
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 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
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
f. Other Product Manufacture and Use	– Use of N_2O as an anaesthetic and propellant; use of urea in selective catalytic reduction (SCR) equipped vehicles; use of SF_6 in electrical equipment; and PFCs in electronics industry
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, tillage, summerfallow, 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. Solid Waste Disposal (Landfills)	– Municipal solid waste management sites (landfills)
b. Biological Treatment of Solid Waste	– Composting and anaerobic digestion of municipal solid waste
c. Wastewater Treatment and Discharge	– Municipal and industrial wastewater treatment
d. Incineration and Open Burning of Waste	– Municipal solid, hazardous and clinical waste, and sewage sludge incineration
e. Industrial Wood Waste Landfills	– Private, dedicated wood waste landfills
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 and forest conversion activities in Canada

Table A9–2 Canada's 1990–2020 GHG Emissions by IPCC Sector

kt CO_2 eq

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TOTAL[a]	595 000	588 000	605 000	608 000	628 000	645 000	667 000	682 000	689 000	702 000	727 000
ENERGY	472 000	464 000	481 000	482 000	498 000	512 000	531 000	547 000	555 000	569 000	594 000
a. **Stationary Combustion Sources**	278 000	273 000	283 000	278 000	283 000	291 000	300 000	308 000	310 000	322 000	344 000
Public Electricity and Heat Production	94 500	95 900	102 000	93 200	95 400	98 800	98 400	110 000	123 000	120 000	132 000
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
Oil and Gas Extraction	30 800	29 300	31 200	34 400	35 100	36 400	36 700	35 100	37 700	48 700	52 700
Mining	4 650	4 320	3 730	4 020	4 580	4 970	5 070	5 230	4 670	4 470	4 890
Manufacturing Industries	56 200	53 900	53 000	50 800	54 200	56 000	57 600	57 700	54 700	55 700	55 800
Iron and Steel	4 950	4 960	5 290	5 390	6 020	5 780	6 150	6 160	6 230	6 320	6 200
Non-Ferrous Metals	3 310	2 700	2 940	2 830	3 430	3 220	4 010	3 890	3 880	3 690	3 570
Chemical	8 260	8 650	8 600	8 530	10 000	10 300	9 920	10 200	10 800	11 100	10 600
Pulp and Paper	14 500	14 000	13 000	13 000	12 900	12 800	13 400	13 200	12 100	12 500	12 500
Cement	3 970	3 440	3 400	3 470	4 070	4 160	4 130	4 040	4 190	4 460	4 640
Other Manufacturing	21 200	20 200	19 700	17 600	17 800	19 700	20 000	20 200	17 500	17 600	18 200
Construction	1 880	1 630	1 760	1 390	1 400	1 180	1 270	1 260	1 120	1 170	1 080
Commercial and Institutional	26 200	26 800	27 500	28 500	27 800	29 400	30 000	30 400	27 800	29 400	33 300
Residential	43 800	42 300	43 600	45 500	46 200	44 900	49 700	46 300	40 700	42 400	44 700
Agriculture and Forestry	2 410	2 740	3 250	3 050	2 550	2 770	2 930	2 920	2 600	2 680	2 570
b. **Transport**[b]	145 000	140 000	143 000	147 000	154 000	159 000	163 000	169 000	172 000	176 000	177 000
Aviation	7 510	6 500	6 390	6 020	6 380	6 700	7 080	7 240	7 500	7 890	7 800
Domestic Aviation (Civil)	7 280	6 280	6 160	5 810	6 160	6 470	6 830	6 990	7 260	7 670	7 530
Military	233	221	228	205	213	231	248	247	235	211	265
Road Transportation	83 800	79 900	80 400	81 900	85 600	86 600	90 400	96 400	103 000	108 000	111 000
Light-Duty Gasoline Vehicles	41 600	39 900	40 200	40 700	41 100	40 400	40 000	40 100	40 400	40 500	40 400
Light-Duty Gasoline Trucks	20 300	19 700	20 100	20 600	22 500	23 900	25 300	27 100	28 900	30 800	31 800
Heavy-Duty Gasoline Vehicles	6 320	6 360	6 680	7 170	7 350	7 170	7 940	8 810	9 850	10 300	10 500
Motorcycles	90	87	85	83	81	78	75	74	72	110	123
Light-Duty Diesel Vehicles	467	403	383	379	397	400	408	455	500	537	600
Light-Duty Diesel Trucks	153	138	134	138	150	156	182	222	259	294	338
Heavy-Duty Diesel Vehicles	13 600	12 200	11 800	12 100	13 100	13 600	15 700	18 900	21 900	24 700	26 500
Propane and Natural Gas Vehicles	1 160	1 140	1 070	724	913	903	797	762	795	643	522
Railways	6 920	6 410	6 700	6 680	6 910	6 260	6 120	6 210	5 980	6 330	6 530
Marine	3 070	3 130	3 180	3 230	3 280	3 330	3 380	3 440	3 490	3 540	3 600
Domestic Navigation	2 170	2 220	2 280	2 330	2 380	2 430	2 480	2 540	2 590	2 640	2 700
Fishing	875	874	874	874	873	873	873	873	872	872	872
Military Water-Borne Navigation	28	28	28	28	28	28	28	28	28	28	28
Other Transportation	43 600	43 500	46 600	49 300	52 100	55 600	55 600	55 400	52 100	50 900	48 700
Off-Road Agriculture and Forestry	9 040	9 090	9 180	10 200	11 400	12 400	12 600	12 900	12 400	11 700	11 600
Off-Road Commercial and Institutional	1 520	1 490	1 570	1 690	1 830	1 990	2 010	2 090	2 070	2 020	2 080
Off-Road Manufacturing, Mining and Construction	9 160	9 100	9 720	10 400	11 300	12 400	12 500	12 600	10 800	10 700	11 300
Off-Road Residential	241	238	248	284	327	380	451	531	615	705	775
Off-Road Other Transportation	16 700	16 000	16 000	16 300	16 400	16 300	15 600	14 700	13 700	13 300	11 700
Pipeline Transport	6 900	7 650	9 890	10 400	10 800	12 000	12 500	12 600	12 500	12 600	11 300
c. **Fugitive Sources**	50 000	51 000	55 000	57 000	60 000	63 000	68 000	70 000	73 000	71 000	72 000
Coal Mining	3 000	3 000	2 000	3 000	3 000	2 000	2 000	2 000	2 000	2 000	2 000
Oil and Natural Gas	46 800	48 000	52 300	54 400	58 000	61 100	65 700	68 200	70 600	69 100	70 000
Oil	7 710	7 730	8 100	8 510	8 740	9 310	9 730	10 400	10 100	10 500	10 900
Natural Gas	11 200	11 500	12 100	12 400	13 100	13 500	15 000	14 300	15 600	15 200	13 900
Venting	22 800	23 400	26 500	28 100	30 200	32 400	34 600	37 100	36 600	37 300	38 900
Flaring	5 050	5 350	5 590	5 450	5 910	5 910	6 300	6 420	8 270	6 270	6 360
d. **CO_2 Transport and Storage**	-	-	-	-	-	-	-	-	-	-	0.09
INDUSTRIAL PROCESSES AND PRODUCT USE	57 000	58 400	56 100	55 900	57 800	58 400	60 700	60 200	57 000	54 500	54 100
a. **Mineral Products**	8 500	7 600	7 300	7 400	8 500	9 200	8 900	9 600	9 700	9 900	10 000
Cement Production	5 820	4 770	4 800	4 890	5 770	6 530	6 190	6 660	6 830	7 120	7 230
Lime Production	1 810	1 840	1 840	1 840	1 900	1 900	1 850	1 910	1 890	1 970	1 920
Mineral Product Use	860	980	670	660	820	750	890	990	940	790	910
b. **Chemical Industry**	17 500	16 900	16 700	16 800	19 000	18 500	19 500	17 600	13 400	9 980	8 790
Ammonia Production	2 750	2 730	2 500	2 930	3 050	2 940	2 810	2 800	3 120	3 020	2 970
Nitric Acid Production	973	1 020	1 040	1 010	919	965	1 060	1 020	995	1 120	1 180
Adipic Acid Production	10 300	9 610	9 570	8 730	10 500	10 300	11 000	9 500	4 870	1 680	865
Petrochemical and Carbon Black Production	3 520	3 570	3 590	4 170	4 530	4 300	4 550	4 220	4 460	4 160	3 770
c. **Metal Production**	23 800	26 800	25 600	25 400	23 900	23 500	23 200	23 000	24 000	23 200	23 400
Iron and Steel Production	10 500	12 100	12 400	11 900	11 000	11 500	11 300	11 100	11 400	11 600	11 800
Aluminium Production	10 300	11 200	10 900	11 400	10 700	10 000	10 400	10 300	10 500	9 340	8 890
SF_6 Used in Magnesium Smelters and Casters	2 960	3 420	2 290	2 110	2 180	2 010	1 560	1 600	2 100	2 160	2 660
d. **Production and Consumption of Halocarbons, SF_6 and NF_3**[c]	980	1 100	830	5	5	500	840	1 100	1 600	2 200	2 800
e. **Non-Energy Products from Fuels and Solvent Use**	5 800	5 600	5 300	5 900	6 000	6 300	7 900	8 500	7 800	8 800	8 500
f. **Other Product Manufacture and Use**	370	370	350	350	360	390	350	390	500	580	610
AGRICULTURE	41 000	41 000	43 000	44 000	46 000	48 000	49 000	49 000	50 000	50 000	51 000
a. **Enteric Fermentation**	22 000	23 000	24 000	24 000	25 000	27 000	27 000	27 000	27 000	27 000	28 000
b. **Manure Management**	6 100	6 200	6 500	6 600	6 800	7 200	7 300	7 400	7 500	7 700	7 900
c. **Agricultural Soils**	11 000	11 000	11 000	12 000	12 000	12 000	13 000	13 000	14 000	13 000	13 000
Direct Sources	8 800	8 500	8 900	9 400	9 600	9 700	10 000	10 000	11 000	10 000	10 000
Indirect Sources	3 000	2 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
d. **Field Burning of Agricultural Residues**	200	200	200	200	200	200	200	200	200	100	100
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
WASTE	24 000	25 000	25 000	25 000	26 000	26 000	26 000	26 000	27 000	28 000	28 000
a. **Solid Waste Disposal (Landfills)**	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000
b. **Biological Treatment of Solid Waste**	70	100	100	100	200	200	200	200	200	200	200
c. **Wastewater Treatment and Discharge**	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000
d. **Incineration and Open Burning of Waste**	270	290	300	300	340	370	350	320	350	350	370
e. **Industrial Wood Waste Landfills**	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
LAND USE, LAND-USE CHANGE AND FORESTRY	-64 000	-74 000	-59 000	-47 000	-56 000	-40 000	-45 000	-49 000	-55 000	-48 000	-36 000
a. **Forest Land**	-200 000	-210 000	-210 000	-200 000	-200 000	-190 000	-190 000	-190 000	-190 000	-180 000	-170 000
b. **Cropland**	380	-6 000	-2 900	1 700	-8 400	-8 400	-8 500	-12 000	-7 700	-16 000	-19 000
c. **Grassland**	0.60	0.80	1	0.40	1	0.30	0.50	0.60	0.70	0.80	1
d. **Wetlands**	5 400	5 300	5 100	5 500	3 300	3 200	3 100	3 200	3 500	3 700	3 200
e. **Settlements**	1 900	1 900	1 700	1 500	1 300	1 200	1 200	1 100	1 300	1 300	1 300
f. **Harvested Wood Products**	130 000	130 000	140 000	150 000	150 000	150 000	150 000	150 000	140 000	150 000	150 000

Greenhouse Gas Categories	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TOTAL[a]	718 000	724 000	743 000	745 000	741 000	735 000	757 000	739 000	698 000	710 000
ENERGY	587 000	590 000	605 000	603 000	602 000	595 000	620 000	604 000	573 000	583 000
a. **Stationary Combustion Sources**	340 000	342 000	354 000	345 000	339 000	330 000	353 000	339 000	317 000	318 000
Public Electricity and Heat Production	133 000	128 000	133 000	126 000	125 000	119 000	126 000	116 000	100 000	102 000
Petroleum Refining Industries	18 000	19 100	20 100	21 600	20 100	20 100	20 500	19 300	18 700	19 000
Oil and Gas Extraction	55 300	58 400	62 500	60 800	62 900	66 100	74 100	73 500	75 700	77 000
Mining	4 900	4 540	4 930	4 810	4 350	5 150	5 740	6 100	5 670	5 760
Manufacturing Industries	51 400	51 100	49 000	50 600	47 600	45 800	46 700	44 300	39 600	41 000
Iron and Steel	4 990	5 840	5 500	5 790	5 510	5 490	5 940	5 730	4 260	4 950
Non-Ferrous Metals	3 770	3 500	3 520	3 520	3 640	3 460	3 830	3 820	2 920	3 060
Chemical	9 430	8 980	8 100	8 900	8 260	8 790	8 630	8 730	8 830	9 870
Pulp and Paper	11 500	10 900	10 300	10 100	8 600	7 430	7 680	6 230	6 340	5 920
Cement	4 590	4 970	4 990	5 460	5 400	5 720	5 030	4 910	4 490	4 080
Other Manufacturing	17 100	16 900	16 600	16 800	16 200	14 900	15 600	14 900	12 800	13 100
Construction	1 030	1 260	1 340	1 410	1 440	1 390	1 400	1 380	1 230	1 520
Commercial and Institutional	32 600	34 100	35 200	33 900	32 400	29 400	30 500	30 200	30 000	28 600
Residential	41 600	43 500	45 700	44 100	43 300	41 200	45 700	45 100	43 300	40 600
Agriculture and Forestry	2 240	2 160	2 300	2 210	2 180	2 110	2 490	2 470	2 460	2 660
b. **Transport**[b]	175 000	177 000	181 000	185 000	190 000	189 000	192 000	192 000	187 000	194 000
Aviation	7 150	7 020	7 140	7 630	7 720	7 740	7 820	7 460	6 640	6 690
Domestic Aviation (Civil)	6 950	6 760	6 840	7 330	7 460	7 510	7 510	7 160	6 380	6 430
Military	205	263	306	301	259	237	305	297	266	257
Road Transportation	116 000	118 000	122 000	125 000	130 000	130 000	133 000	133 000	132 000	137 000
Light-Duty Gasoline Vehicles	41 500	41 900	41 800	41 200	41 400	40 400	39 700	38 500	38 100	37 800
Light-Duty Gasoline Trucks	33 400	34 700	36 000	37 100	38 100	38 600	39 300	39 000	39 900	41 300
Heavy-Duty Gasoline Vehicles	11 600	11 700	12 000	12 600	11 700	11 900	12 000	12 100	12 200	12 500
Motorcycles	144	161	176	189	204	216	225	231	239	248
Light-Duty Diesel Vehicles	603	642	710	762	605	658	668	618	575	663
Light-Duty Diesel Trucks	363	370	408	442	345	329	337	361	374	422
Heavy-Duty Diesel Vehicles	27 900	27 800	30 300	32 100	36 900	38 000	40 200	41 900	40 500	44 300
Propane and Natural Gas Vehicles	574	465	429	430	381	293	199	126	62	38
Railways	6 470	5 950	6 010	6 180	6 580	6 890	7 380	7 790	6 660	6 530
Marine	3 670	3 750	3 820	3 900	3 980	3 920	3 860	3 800	3 740	3 680
Domestic Navigation	2 770	2 850	2 920	3 000	3 080	3 030	2 980	2 930	2 870	2 820
Fishing	872	872	872	871	871	863	854	845	836	828
Military Water-Borne Navigation	28	28	27	27	27	27	27	27	27	27
Other Transportation	42 200	42 500	42 300	42 900	41 900	40 400	40 500	39 800	37 600	39 500
Off-Road Agriculture and Forestry	10 500	10 300	11 200	11 400	11 400	10 700	11 000	10 600	10 200	11 100
Off-Road Commercial and Institutional	2 130	2 060	2 290	2 420	2 400	2 390	2 540	2 550	2 460	2 680
Off-Road Manufacturing, Mining and Construction	9 910	10 100	11 000	11 200	10 400	10 200	11 000	11 600	11 200	12 600
Off-Road Residential	913	1 030	1 150	1 250	1 250	1 230	1 240	1 190	1 160	1 170
Off-Road Other Transportation	8 440	8 110	7 600	7 990	6 400	6 260	6 320	6 220	6 150	6 300
Pipeline Transport	10 300	10 900	9 090	8 500	10 100	9 610	8 400	7 520	6 360	5 720
c. **Fugitive Sources**	71 000	71 000	71 000	73 000	73 000	76 000	75 000	74 000	69 000	72 000
Coal Mining	2 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Oil and Natural Gas	69 200	69 200	69 100	71 000	71 400	74 700	73 200	72 500	68 100	70 200
Oil	11 500	11 600	11 800	12 000	11 900	12 700	12 800	12 900	12 600	13 300
Natural Gas	12 800	12 200	12 800	13 900	15 200	16 200	15 000	14 600	13 800	14 500
Venting	39 100	39 100	39 100	39 700	38 800	39 900	39 700	39 800	37 200	37 400
Flaring	5 730	6 240	5 310	5 450	5 490	5 850	5 700	5 140	4 460	4 990
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
INDUSTRIAL PROCESSES AND PRODUCT USE	52 000	54 000	56 100	60 200	56 600	57 000	55 600	54 800	47 500	50 700
a. **Mineral Products**	9 400	9 700	9 700	10 000	10 000	10 000	10 000	9 300	7 200	7 800
Cement Production	6 980	7 150	7 250	7 520	7 610	7 730	7 730	6 990	5 360	6 010
Lime Production	1 690	1 720	1 700	1 830	1 750	1 670	1 630	1 580	1 220	1 420
Mineral Product Use	770	820	790	880	910	880	810	750	610	410
b. **Chemical Industry**	8 720	8 980	9 250	11 500	10 400	8 990	8 270	9 080	5 920	5 820
Ammonia Production	2 620	2 650	2 640	2 950	2 730	2 800	2 590	2 820	2 410	2 490
Nitric Acid Production	1 230	1 210	1 220	1 180	1 200	1 190	1 090	780	456	479
Adipic Acid Production	773	1 200	1 040	2 970	2 550	1 160	1 430	2 320	636	-
Petrochemical and Carbon Black Production	4 090	3 920	4 350	4 370	3 950	3 840	3 160	3 170	2 420	2 850
c. **Metal Production**	21 400	21 300	21 000	20 500	20 200	20 700	19 300	19 000	15 900	16 000
Iron and Steel Production	10 800	10 600	10 500	10 600	10 300	11 300	11 100	10 800	8 140	8 980
Aluminium Production	8 260	7 930	8 130	7 770	8 680	8 080	7 630	7 760	7 540	6 870
SF_6 Used in Magnesium Smelters and Casters	2 250	2 800	2 370	2 090	1 230	1 340	489	435	184	185
d. **Production and Consumption of Halocarbons, SF_6 and NF_3**[c]	3 200	3 600	4 000	4 600	5 100	5 400	6 100	6 100	6 900	7 700
e. **Non-Energy Products from Fuels and Solvent Use**	8 700	9 900	12 000	13 000	10 000	11 000	11 000	11 000	11 000	13 000
f. **Other Product Manufacture and Use**	680	520	610	630	540	520	540	530	470	430
AGRICULTURE	51 000	52 000	53 000	54 000	54 000	53 000	53 000	52 000	50 000	50 000
a. **Enteric Fermentation**	29 000	29 000	29 000	30 000	31 000	30 000	29 000	28 000	26 000	25 000
b. **Manure Management**	8 200	8 300	8 400	8 600	8 700	8 500	8 300	8 000	7 800	7 700
c. **Agricultural Soils**	13 000	13 000	14 000	13 000	13 000	13 000	14 000	15 000	14 000	15 000
Direct Sources	10 000	10 000	11 000	10 000	10 000	10 000	11 000	11 000	11 000	12 000
Indirect Sources	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
d. **Field Burning of Agricultural Residues**	100	100	100	30	40	50	40	50	50	30
e. **Liming, Urea Application and Other Carbon-Containing Fertilizers**	1 400	1 500	1 600	1 500	1 400	1 500	1 700	1 700	1 800	1 800
WASTE	28 000	29 000	29 000	28 000	29 000	29 000	28 000	28 000	27 000	26 000
a. **Solid Waste Disposal (Landfills)**	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000
b. **Biological Treatment of Solid Waste**	200	200	200	200	200	200	200	300	300	300
c. **Wastewater Treatment and Discharge**	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000
d. **Incineration and Open Burning of Waste**	380	360	360	350	350	320	330	340	290	300
e. **Industrial Wood Waste Landfills**	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
LAND USE, LAND-USE CHANGE AND FORESTRY	-45 000	-9 600	-10 000	-12 000	-4 200	-18 000	-16 000	-22 000	-49 000	-18 000
a. **Forest Land**	-170 000	-160 000	-150 000	-140 000	-130 000	-130 000	-130 000	-140 000	-150 000	-140 000
b. **Cropland**	-12 000	4 600	7 600	-24 000	-22 000	-25 000	-19 000	-21 000	-36 000	-22 000
c. **Grassland**	1	1	1	0.90	0.90	1	0.40	0.50	0.40	0.30
d. **Wetlands**	3 200	3 200	3 100	3 200	3 100	3 200	3 200	3 300	3 100	3 200
e. **Settlements**	1 300	1 500	1 500	1 600	1 700	2 000	2 100	2 100	1 900	1 800
f. **Harvested Wood Products**	130 000	140 000	130 000	150 000	150 000	140 000	130 000	130 000	130 000	140 000

Greenhouse Gas Categories	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL[a]	721 000	726 000	732 000	730 000	733 000	715 000	725 000	740 000	738 000	672 000
ENERGY	591 000	590 000	597 000	598 000	600 000	581 000	594 000	606 000	604 000	540 000
a. **Stationary Combustion Sources**	324 000	319 000	320 000	322 000	325 000	313 000	318 000	323 000	322 000	300 000
Public Electricity and Heat Production	94 100	91 200	87 300	84 300	87 700	81 400	79 200	70 800	69 600	62 100
Petroleum Refining Industries	18 300	17 500	16 600	16 000	16 000	16 300	14 500	14 700	15 800	14 400
Oil and Gas Extraction	83 000	87 200	90 000	93 800	97 600	94 300	97 900	104 000	104 000	100 000
Mining	5 820	6 320	5 510	5 140	4 650	4 420	5 010	6 460	6 370	6 050
Manufacturing Industries	43 900	43 600	44 800	45 100	43 800	42 300	42 600	42 600	43 000	38 500
Iron and Steel	5 260	5 500	5 600	6 050	5 750	5 620	6 000	6 380	6 070	4 680
Non-Ferrous Metals	3 410	2 970	3 100	2 910	3 130	3 210	3 250	2 820	3 270	3 050
Chemical	11 100	11 000	11 600	12 400	12 100	10 800	9 780	9 460	9 640	9 380
Pulp and Paper	6 180	5 970	6 220	6 090	6 000	6 010	6 400	7 090	7 190	6 480
Cement	4 310	4 030	3 850	4 000	3 910	3 930	4 160	4 170	4 010	3 130
Other Manufacturing	13 700	14 200	14 500	13 600	12 900	12 800	13 000	12 700	12 900	11 800
Construction	1 360	1 390	1 290	1 300	1 310	1 300	1 300	1 380	1 440	1 430
Commercial and Institutional	30 500	28 700	29 700	31 400	30 400	31 900	34 200	35 600	37 500	36 200
Residential	43 600	40 200	41 900	41 500	40 900	37 900	40 300	43 900	40 700	38 000
Agriculture and Forestry	3 160	3 260	3 150	3 000	2 960	3 180	3 080	3 180	3 490	3 100
b. **Transport**[b]	195 000	195 000	201 000	199 000	201 000	200 000	208 000	215 000	216 000	190 000
Aviation	6 590	7 600	7 880	7 590	7 590	7 520	7 940	8 660	8 590	4 810
Domestic Aviation (Civil)	6 360	7 350	7 670	7 380	7 350	7 270	7 710	8 420	8 340	4 620
Military	228	244	213	205	235	255	231	247	243	187
Road Transportation	139 000	141 000	144 000	142 000	142 000	145 000	148 000	152 000	153 000	131 000
Light-Duty Gasoline Vehicles	36 500	35 400	35 700	34 200	34 500	34 600	33 700	33 000	32 400	25 000
Light-Duty Gasoline Trucks	41 400	41 900	43 300	43 400	45 300	48 100	49 200	51 100	53 100	45 500
Heavy-Duty Gasoline Vehicles	12 100	12 800	13 400	12 400	12 300	13 000	13 300	13 400	13 500	12 600
Motorcycles	251	260	262	260	271	287	296	296	298	243
Light-Duty Diesel Vehicles	793	798	856	857	901	842	842	810	777	492
Light-Duty Diesel Trucks	482	474	535	642	809	900	1 080	1 180	1 200	991
Heavy-Duty Diesel Vehicles	47 600	48 800	50 100	49 800	48 400	46 800	49 400	51 700	51 500	46 400
Propane and Natural Gas Vehicles	40	30	18	9	8	9	10	10	10	5
Railways	7 380	7 550	7 280	7 450	7 100	6 530	7 470	7 630	7 690	7 170
Marine	3 630	3 580	3 530	3 480	3 430	3 510	3 650	3 830	4 360	4 190
Domestic Navigation	2 880	2 940	2 990	3 050	3 100	3 200	3 380	3 600	4 070	3 850
Fishing	706	585	463	342	220	232	205	193	215	232
Military Water-Borne Navigation	43	59	75	91	107	79	59	40	74	108
Other Transportation	38 400	36 200	37 800	39 100	40 500	38 200	40 600	43 300	43 000	42 600
Off-Road Agriculture and Forestry	11 000	10 400	10 500	10 400	10 400	9 650	10 400	11 200	11 100	11 600
Off-Road Commercial and Institutional	2 730	2 520	2 720	2 760	2 720	2 550	2 820	2 900	2 950	2 880
Off-Road Manufacturing, Mining and Construction	13 200	12 000	12 400	12 200	13 100	12 200	13 500	14 400	14 200	14 100
Off-Road Residential	1 300	1 220	1 180	1 210	1 220	1 170	1 190	1 230	1 240	1 230
Off-Road Other Transportation	4 450	4 310	4 300	4 540	4 820	4 920	5 120	5 260	5 050	4 980
Pipeline Transport	5 660	5 770	6 770	7 960	8 270	7 720	7 550	8 380	8 480	7 730
c. **Fugitive Sources**	73 000	75 000	76 000	78 000	74 000	68 000	68 000	68 000	66 000	50 000
Coal Mining	1 000	1 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Oil and Natural Gas	71 200	73 900	74 400	76 400	73 000	66 700	66 700	66 900	64 900	48 600
Oil	13 600	14 600	14 700	14 600	13 600	14 100	14 300	14 600	14 500	11 700
Natural Gas	14 200	13 700	13 800	13 300	12 700	12 000	11 400	11 500	11 000	8 740
Venting	38 100	39 500	38 800	41 000	39 800	34 900	35 000	34 600	33 200	21 700
Flaring	5 220	6 120	7 130	7 430	6 890	5 710	6 030	6 320	6 090	6 410
d. **CO_2 Transport and Storage**	0.09	0.09	0.09	0.10	0.20	0.30	0.30	0.30	0.30	0.50
INDUSTRIAL PROCESSES AND PRODUCT USE	54 100	58 500	56 200	54 000	53 500	54 500	52 700	53 900	53 500	50 300
a. **Mineral Products**	7 900	8 500	7 800	7 800	8 000	7 900	8 600	8 600	8 800	8 100
Cement Production	6 020	6 530	5 970	5 910	6 180	6 110	6 830	6 910	7 130	6 620
Lime Production	1 480	1 490	1 410	1 520	1 410	1 380	1 420	1 390	1 340	1 190
Mineral Product Use	450	440	380	380	410	390	330	320	310	300
b. **Chemical Industry**	6 470	6 760	6 720	6 470	6 800	7 020	6 420	6 810	6 710	6 590
Ammonia Production	2 880	3 010	3 010	2 610	2 940	2 870	2 650	2 420	2 510	2 470
Nitric Acid Production	476	358	310	213	225	261	245	272	253	189
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 110	3 390	3 400	3 650	3 630	3 880	3 520	4 110	3 950	3 930
c. **Metal Production**	16 700	16 700	14 800	15 000	14 400	15 300	14 600	14 500	13 900	13 000
Iron and Steel Production	9 880	9 980	8 050	8 900	8 470	9 220	8 450	8 880	8 280	6 990
Aluminium Production	6 620	6 470	6 530	5 830	5 720	5 990	6 010	5 510	5 290	5 900
SF_6 Used in Magnesium Smelters and Casters	183	248	213	248	235	139	139	148	296	102
d. **Production and Consumption of Halocarbons, SF_6 and NF_3**[c]	8 600	9 100	10 000	11 000	11 000	11 000	11 000	12 000	12 000	12 000
e. **Non-Energy Products from Fuels and Solvent Use**	14 000	17 000	16 000	13 000	13 000	12 000	11 000	11 000	11 000	9 900
f. **Other Product Manufacture and Use**	390	490	540	450	540	600	630	700	660	730
AGRICULTURE	49 000	51 000	53 000	51 000	52 000	53 000	52 000	53 000	53 000	55 000
a. **Enteric Fermentation**	25 000	25 000	25 000	24 000	24 000	24 000	24 000	24 000	24 000	24 000
b. **Manure Management**	7 600	7 600	7 700	7 600	7 700	7 800	7 900	7 800	7 800	7 800
c. **Agricultural Soils**	15 000	16 000	18 000	17 000	18 000	18 000	17 000	19 000	19 000	21 000
Direct Sources	12 000	13 000	14 000	13 000	14 000	15 000	14 000	15 000	15 000	16 000
Indirect Sources	3 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
d. **Field Burning of Agricultural Residues**	30	40	50	50	60	50	50	50	50	50
e. **Liming, Urea Application and Other Carbon-Containing Fertilizers**	2 000	2 300	2 700	2 500	2 600	2 500	2 400	2 600	2 700	3 000
WASTE	26 000	26 000	26 000	26 000	26 000	26 000	27 000	27 000	27 000	27 000
a. **Solid Waste Disposal (Landfills)**	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000
b. **Biological Treatment of Solid Waste**	300	300	300	300	300	300	300	400	400	400
c. **Wastewater Treatment and Discharge**	2 000	2 000	3 000	2 000	3 000	2 000	2 000	2 000	2 000	3 000
d. **Incineration and Open Burning of Waste**	300	170	190	170	200	200	190	180	180	160
e. **Industrial Wood Waste Landfills**	3 000	3 000	3 000	3 000	3 000	2 000	2 000	2 000	2 000	2 000
LAND USE, LAND-USE CHANGE AND FORESTRY	-11 000	-24 000	-20 000	-39 000	- 78	-11 000	-17 000	-8 500	-16 000	-6 800
a. **Forest Land**	-140 000	-140 000	-140 000	-140 000	-130 000	-140 000	-140 000	-130 000	-140 000	-130 000
b. **Cropland**	-15 000	-23 000	-23 000	-44 000	-10 000	-17 000	-23 000	-19 000	-14 000	-9 600
c. **Grassland**	0.60	2	2	0.80	1	1	1	1	1	1
d. **Wetlands**	3 000	3 100	3 200	3 200	3 000	3 100	3 100	2 800	2 900	2 900
e. **Settlements**	1 900	1 900	2 300	2 300	2 500	2 500	2 400	2 200	2 200	2 200
f. **Harvested Wood Products**	140 000	140 000	140 000	140 000	140 000	140 000	140 000	140 000	130 000	130 000

Notes: Estimates for the latest year (2020) 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 **2020 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			25		298			22 800	17 200	
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]	**535 000**	**3 700**	**92 000**	**110**	**33 000**	**12 000**	**810**	**300**	**0.60**	**672 000**
ENERGY	**495 000**	**1 500**	**38 000**	**20**	**6 000**	**-**	**-**	**-**	**-**	**540 000**
a. Stationary Combustion Sources	**294 000**	**200**	**4 000**	**7**	**2 000**	**-**	**-**	**-**	**-**	**300 000**
Public Electricity and Heat Production	61 600	6	160	1	400	-	-	-	-	62 100
Petroleum Refining Industries	14 400	0.30	8	0.10	30	-	-	-	-	14 400
Oil and Gas Extraction	97 100	90	2 000	2	600	-	-	-	-	100 000
Mining	6 010	0.10	3	0.10	40	-	-	-	-	6 050
Manufacturing Industries	38 000	2	58	2	430	-	-	-	-	38 500
Iron and Steel	4 650	0.10	3	0.10	30	-	-	-	-	4 680
Non-Ferrous Metals	3 030	0.06	2	0.05	10	-	-	-	-	3 050
Chemical	9 330	0.18	5	0.20	50	-	-	-	-	9 380
Pulp and Paper	6 280	1	30	0.60	200	-	-	-	-	6 480
Cement	3 110	0.20	4	0.04	10	-	-	-	-	3 130
Other Manufacturing	11 600	0.70	20	0.50	200	-	-	-	-	11 800
Construction	1 420	0.03	0.63	0.04	12	-	-	-	-	1 430
Commercial and Institutional	36 000	0.87	22	0.80	200	-	-	-	-	36 200
Residential	36 300	50	1 000	1	400	-	-	-	-	38 000
Agriculture and Forestry	3 070	0.05	1	0.08	20	-	-	-	-	3 100
b. Transport[c]	**185 000**	**36**	**910**	**12**	**3 600**	**-**	**-**	**-**	**-**	**190 000**
Aviation	4 760	0.20	4	0.10	40	-	-	-	-	4 810
Domestic Aviation (Civil)	4 580	0.20	4	0.10	40	-	-	-	-	4 620
Military	185	0.00	0.07	0.01	2	-	-	-	-	187
Road Transportation	129 000	8	200	8	2 200	-	-	-	-	131 000
Light-Duty Gasoline Vehicles	24 600	2	50	1	400	-	-	-	-	25 000
Light-Duty Gasoline Trucks	44 600	4	90	2	720	-	-	-	-	45 500
Heavy-Duty Gasoline Vehicles	12 300	0.40	10	1	320	-	-	-	-	12 600
Motorcycles	240	0.09	2	0.00	1	-	-	-	-	243
Light-Duty Diesel Vehicles	480	0.01	0.20	0.04	12	-	-	-	-	492
Light-Duty Diesel Trucks	967	0.03	0.60	0.08	24	-	-	-	-	991
Heavy-Duty Diesel Vehicles	45 500	2	50	3	770	-	-	-	-	46 400
Propane and Natural Gas Vehicles	5	0.00	0.06	0.00	0.03	-	-	-	-	5
Railways	6 410	0.40	9	3	800	-	-	-	-	7 170
Marine	4 150	0.39	10	0.10	30	-	-	-	-	4 190
Domestic Navigation	3 810	0.36	9	0.10	30	-	-	-	-	3 850
Fishing	230	0.02	0.50	0.01	2	-	-	-	-	232
Military Water-Borne Navigation	107	0.01	0.26	0.00	0.90	-	-	-	-	108
Other Transportation	41 400	27	680	2	500	-	-	-	-	42 600
Off-Road Agriculture and Forestry	11 500	0.53	13	0.50	100	-	-	-	-	11 600
Off-Road Commercial and Institutional	2 750	4	100	0.09	30	-	-	-	-	2 880
Off-Road Manufacturing, Mining and Construction	13 800	2	43	0.80	200	-	-	-	-	14 100
Off-Road Residential	1 160	3	63	0.03	10	-	-	-	-	1 230
Off-Road Other Transportation	4 660	11	280	0.10	40	-	-	-	-	4 980
Pipeline Transport	7 490	7	180	0.20	60	-	-	-	-	7 730
c. Fugitive Sources	**16 000**	**1 340**	**33 500**	**0.33**	**99**	**-**	**-**	**-**	**-**	**50 000**
Coal Mining	-	40	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	16 000	1 300	32 500	0.30	100	-	-	-	-	48 600
Oil	580	442	11 000	0.30	90	-	-	-	-	11 700
Natural Gas	47	348	8 700	-	-	-	-	-	-	8 740
Venting	9 600	486	12 100	-	-	-	-	-	-	21 700
Flaring	5 820	23	586	0.03	7	-	-	-	-	6 410
d. CO_2 Transport and Storage	**0.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.50**
INDUSTRIAL PROCESSES AND PRODUCT USE	**36 400**	**6**	**140**	**2**	**739**	**12 000**	**815**	**300**	**0.60**	**50 300**
a. Mineral Products	**8 100**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8 100**
Cement Production	6 620	-	-	-	-	-	-	-	-	6 620
Lime Production	1 190	-	-	-	-	-	-	-	-	1 190
Mineral Product Use	300	-	-	-	-	-	-	-	-	300
b. Chemical Industry	**6 240**	**6**	**140**	**0.68**	**201**	**-**	**-**	**-**	**-**	**6 590**
Ammonia Production	2 470	-	-	-	-	-	-	-	-	2 470
Nitric Acid Production	-	-	-	0.63	189	-	-	-	-	189
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 780	6	140	0.04	13	-	-	-	-	3 930
c. Metal Production	**12 100**	**0.07**	**2**	**-**	**-**	**-**	**770**	**103**	**-**	**13 000**
Iron and Steel Production	6 980	0.07	2	-	-	-	-	-	-	6 990
Aluminium Production	5 130	-	-	-	-	-	770	0.68	-	5 900
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	102	-	102
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**12 000**	**21**	**35**	**0.60**	**12 000**
e. Non-Energy Products from Fuels and Solvent Use	**9 900**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9 900**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**2**	**540**	**-**	**20**	**160**	**-**	**730**
AGRICULTURE	**3 000**	**1 100**	**28 000**	**82**	**25 000**	**-**	**-**	**-**	**-**	**55 000**
a. Enteric Fermentation	**-**	**950**	**24 000**	**-**	**-**	**-**	**-**	**-**	**-**	**24 000**
b. Manure Management	**-**	**160**	**3 900**	**10**	**4 000**	**-**	**-**	**-**	**-**	**7 800**
c. Agricultural Soils	**-**	**-**	**-**	**69**	**21 000**	**-**	**-**	**-**	**-**	**21 000**
Direct Sources	-	-	-	55	16 000	-	-	-	-	16 000
Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d. Field Burning of Agricultural Residues	**-**	**2**	**40**	**0.04**	**10**	**-**	**-**	**-**	**-**	**50**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**3 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 000**
WASTE	**100**	**1 000**	**26 000**	**6**	**2 000**	**-**	**-**	**-**	**-**	**27 000**
a. Solid Waste Disposal (Landfills)	**-**	**900**	**20 000**	**-**	**-**	**-**	**-**	**-**	**-**	**20 000**
b. Biological Treatment of Solid Waste	**-**	**7**	**200**	**0.60**	**200**	**-**	**-**	**-**	**-**	**400**
c. Wastewater Treatment and Discharge	**-**	**40**	**1 000**	**5**	**1 000**	**-**	**-**	**-**	**-**	**3 000**
d. Incineration and Open Burning of Waste	**84**	**0.03**	**0.90**	**0.30**	**80**	**-**	**-**	**-**	**-**	**160**
e. Industrial Wood Waste Landfills	**-**	**90**	**2 000**	**-**	**-**	**-**	**-**	**-**	**-**	**2 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-7 600**	**21**	**540**	**1**	**310**	**-**	**-**	**-**	**-**	**-6 800**
a. Forest Land	**-130 000**	**10**	**300**	**0.60**	**200**	**-**	**-**	**-**	**-**	**-130 000**
b. Cropland	**-9 800**	**5**	**130**	**0.25**	**73**	**-**	**-**	**-**	**-**	**-9 600**
c. Grassland	**-**	**0.04**	**0.90**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**1**
d. Wetlands	**2 900**	**0.62**	**16**	**0.01**	**4**	**-**	**-**	**-**	**-**	**2 900**
e. Settlements	**2 000**	**5**	**110**	**0.18**	**53**	**-**	**-**	**-**	**-**	**2 200**
f. Harvested Wood Products	**130 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**130 000**

Notes: Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of 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, 1990–2020

This annex contains summary tables illustrating national Greenhouse Gas (GHG) emissions for the period 1990–2020 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 includes 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* (Statistics Canada, 2021).

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, is 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 (Environment Canada, 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 (Environment Canada, 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 reallocated 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 of 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* (Statistics Canada, 2003–). 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.

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	– conventinoal 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 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
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites.
TRANSPORT	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels.
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 up to 3856 kilogram GVWR and motorcycles
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 above 3856 kilogram GVWR and 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).
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricty and steam production, and process emissions from:
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 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)
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 solid waste management sites (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
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	Stationary combustion, onsite transportation, electricty and steam production, and process emissions 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, 1990–2020**

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
	Mt CO_2 eq																														
NATIONAL GHG TOTAL	**595**	**588**	**605**	**608**	**628**	**645**	**667**	**682**	**689**	**702**	**727**	**718**	**724**	**743**	**745**	**741**	**735**	**757**	**739**	**698**	**710**	**721**	**726**	**732**	**730**	**733**	**715**	**725**	**740**	**738**	**672**
OIL AND GAS	**103**	**102**	**111**	**118**	**122**	**128**	**135**	**137**	**141**	**150**	**155**	**157**	**162**	**166**	**168**	**171**	**178**	**183**	**180**	**177**	**181**	**187**	**194**	**199**	**205**	**205**	**194**	**196**	**205**	**203**	**179**
Upstream Oil and Gas	**83**	**84**	**92**	**98**	**103**	**109**	**114**	**115**	**120**	**130**	**135**	**136**	**140**	**143**	**144**	**148**	**155**	**159**	**158**	**155**	**158**	**166**	**172**	**177**	**184**	**184**	**173**	**177**	**186**	**183**	**160**
Natural Gas Production and Processing	31	30	32	34	37	38	40	38	40	49	54	56	60	63	62	66	68	69	68	65	64	67	65	63	63	61	57	54	56	55	44
Conventional Oil Production	24	25	27	29	30	32	34	36	36	36	39	38	37	36	35	35	35	36	35	32	33	36	38	39	41	40	37	37	37	35	25
Conventional Light Oil Production	15	15	15	16	17	17	18	18	17	17	19	18	18	18	18	19	19	20	20	18	19	22	24	25	26	25	24	24	25	24	17
Conventional Heavy Oil Production	9	10	12	13	13	15	16	18	16	17	20	18	17	16	15	14	14	14	13	12	13	12	13	13	13	13	11	10	10	9	6
Frontier Oil Production	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2
Oil Sands (Mining, In-situ, Upgrading)	15	16	18	19	20	20	21	22	25	25	26	28	30	32	36	35	41	44	45	49	54	56	62	65	70	73	70	77	82	83	81
Mining and Extraction	2	2	2	2	3	3	3	3	3	3	3	4	4	5	6	6	6	7	7	8	8	8	9	10	10	11	11	13	15	15	15
In-situ	5	4	4	4	4	5	5	7	9	8	9	9	9	10	11	12	14	16	18	20	23	25	29	31	35	38	38	42	44	43	41
Upgrading	8	9	11	12	13	12	13	12	13	13	14	15	16	17	19	17	20	22	20	22	23	23	24	25	24	24	21	22	24	25	25
Oil, Natural Gas and CO_2 Transmission	12	13	16	16	17	18	19	19	19	19	15	14	13	11	10	12	11	10	9	8	7	7	8	9	10	10	10	10	11	11	10
Downstream Oil and Gas	**20**	**19**	**19**	**20**	**19**	**19**	**22**	**22**	**21**	**20**	**20**	**21**	**22**	**23**	**24**	**23**	**23**	**24**	**22**	**22**	**23**	**22**	**22**	**22**	**21**	**21**	**21**	**19**	**19**	**20**	**18**
Petroleum Refining	18	17	17	18	17	17	20	20	19	18	18	19	20	22	23	22	22	22	21	21	22	20	21	21	20	20	20	18	18	19	17
Natural Gas Distribution	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	1	1	1	1	1
ELECTRICITY	**95**	**96**	**103**	**93**	**95**	**98**	**98**	**109**	**122**	**119**	**129**	**129**	**124**	**127**	**119**	**118**	**112**	**120**	**109**	**94**	**95**	**87**	**83**	**80**	**76**	**80**	**74**	**73**	**63**	**62**	**56**
TRANSPORT	**120**	**114**	**115**	**117**	**121**	**122**	**126**	**131**	**137**	**143**	**145**	**147**	**148**	**152**	**156**	**160**	**161**	**164**	**165**	**162**	**167**	**168**	**171**	**174**	**171**	**172**	**173**	**179**	**184**	**185**	**159**
Passenger Transport	**71**	**68**	**68**	**69**	**71**	**72**	**74**	**76**	**79**	**81**	**82**	**85**	**86**	**88**	**89**	**90**	**90**	**90**	**89**	**88**	**90**	**89**	**89**	**91**	**89**	**92**	**95**	**96**	**97**	**99**	**80**
Cars, Light Trucks and Motorcycles	64	62	62	63	65	66	67	69	72	74	75	77	79	81	81	82	82	82	80	81	82	81	80	82	81	83	86	86	88	89	73
Bus, Rail and Aviation	7	6	6	6	6	6	7	7	7	8	8	7	7	7	8	8	8	9	8	8	8	8	9	9	9	9	9	9	10	10	6
Freight Transport	**31**	**29**	**29**	**30**	**31**	**31**	**34**	**38**	**42**	**46**	**48**	**50**	**50**	**53**	**56**	**60**	**61**	**64**	**66**	**63**	**67**	**71**	**73**	**75**	**74**	**72**	**70**	**74**	**77**	**78**	**70**
Heavy Duty Trucks, Rail	26	24	25	25	27	26	29	33	37	41	43	45	45	48	50	54	56	59	61	59	63	66	69	70	69	67	66	70	72	72	66
Aviation and Marine	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	6	5
Other: Recreational, Commercial and Residential	**18**	**18**	**18**	**18**	**19**	**19**	**18**	**17**	**16**	**16**	**15**	**11**	**11**	**11**	**12**	**10**	**10**	**10**	**10**	**10**	**10**	**8**	**8**	**8**	**8**	**9**	**9**	**9**	**9**	**9**	**9**
HEAVY INDUSTRY	**97**	**97**	**95**	**94**	**100**	**100**	**103**	**103**	**98**	**95**	**94**	**88**	**89**	**88**	**92**	**87**	**87**	**86**	**85**	**72**	**75**	**80**	**80**	**79**	**79**	**78**	**76**	**76**	**77**	**77**	**72**
Mining	**7**	**6**	**6**	**7**	**8**	**8**	**8**	**9**	**8**	**7**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**9**	**8**	**8**	**8**	**7**	**8**	**9**	**9**	**9**
Smelting and Refining (Non-Ferrous Metals)	**17**	**18**	**17**	**17**	**17**	**16**	**17**	**17**	**17**	**16**	**16**	**15**	**15**	**15**	**14**	**14**	**14**	**13**	**13**	**12**	**11**	**11**	**10**	**11**	**10**	**10**	**11**	**11**	**10**	**11**	**10**
Pulp and Paper	**15**	**15**	**14**	**14**	**13**	**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**
Iron and Steel	**16**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**17**	**17**	**17**	**17**	**16**	**17**	**18**	**17**	**13**	**14**	**17**	**16**	**15**	**16**	**15**	**15**	**15**	**16**	**15**	**12**
Cement	**10**	**8**	**8**	**9**	**10**	**11**	**11**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**13**	**13**	**14**	**13**	**12**	**10**	**10**	**10**	**11**	**10**	**10**	**10**	**10**	**11**	**11**	**11**	**10**
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**	**2**	**2**	**3**	**2**	**2**	**2**
Chemicals and Fertilizers	**29**	**29**	**28**	**28**	**31**	**31**	**33**	**32**	**28**	**25**	**23**	**23**	**24**	**23**	**27**	**24**	**24**	**24**	**24**	**20**	**22**	**24**	**25**	**25**	**26**	**26**	**24**	**22**	**21**	**22**	**21**
BUILDINGS	**71**	**71**	**72**	**76**	**76**	**77**	**83**	**81**	**72**	**76**	**83**	**79**	**84**	**89**	**88**	**84**	**78**	**84**	**84**	**83**	**79**	**85**	**83**	**84**	**85**	**84**	**82**	**87**	**93**	**92**	**88**
Service Industry	**27**	**28**	**29**	**30**	**30**	**32**	**34**	**34**	**32**	**34**	**38**	**38**	**40**	**43**	**43**	**40**	**37**	**38**	**39**	**39**	**38**	**40**	**42**	**42**	**42**	**42**	**43**	**45**	**47**	**49**	**48**
Residential	**44**	**42**	**44**	**46**	**46**	**45**	**50**	**46**	**41**	**42**	**45**	**42**	**44**	**46**	**44**	**44**	**41**	**46**	**45**	**44**	**41**	**44**	**41**	**43**	**43**	**42**	**39**	**42**	**46**	**43**	**40**
AGRICULTURE	**52**	**52**	**55**	**57**	**59**	**62**	**63**	**64**	**64**	**63**	**64**	**63**	**63**	**65**	**66**	**66**	**65**	**65**	**64**	**62**	**62**	**62**	**64**	**65**	**64**	**65**	**65**	**64**	**66**	**67**	**69**
On Farm Fuel Use	**11**	**11**	**11**	**12**	**13**	**14**	**14**	**15**	**14**	**13**	**13**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**12**	**11**	**12**	**13**	**13**	**13**	**12**	**12**	**12**	**12**	**13**	**13**	**13**
Crop Production	**10**	**10**	**10**	**11**	**11**	**12**	**12**	**12**	**13**	**12**	**12**	**12**	**12**	**13**	**12**	**12**	**12**	**13**	**14**	**14**	**14**	**14**	**16**	**18**	**17**	**18**	**18**	**17**	**18**	**19**	**21**
Animal Production	**31**	**31**	**33**	**33**	**35**	**37**	**37**	**37**	**37**	**38**	**39**	**40**	**40**	**40**	**42**	**42**	**41**	**40**	**39**	**37**	**36**	**35**	**35**	**35**	**34**	**34**	**35**	**35**	**35**	**35**	**34**
WASTE	**24**	**25**	**25**	**25**	**26**	**26**	**26**	**26**	**27**	**28**	**28**	**28**	**29**	**29**	**28**	**29**	**29**	**28**	**28**	**27**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**27**	**27**	**27**	**27**
Solid Waste[a]	**23**	**23**	**23**	**24**	**24**	**24**	**24**	**24**	**24**	**25**	**26**	**26**	**27**	**27**	**26**	**26**	**26**	**26**	**26**	**25**	**24**	**24**	**24**	**23**	**23**	**23**	**24**	**24**	**24**	**25**	**25**
Wastewater	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**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**
COAL PRODUCTION	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**3**	**3**	**2**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**28**	**27**	**26**	**24**	**25**	**27**	**27**	**28**	**24**	**24**	**25**	**24**	**24**	**24**	**25**	**24**	**22**	**24**	**23**	**20**	**22**	**23**	**22**	**22**	**21**	**21**	**21**	**22**	**22**	**22**	**20**
Light Manufacturing	**21**	**20**	**20**	**18**	**18**	**20**	**20**	**21**	**18**	**18**	**19**	**17**	**17**	**17**	**17**	**17**	**15**	**16**	**15**	**14**	**15**	**15**	**16**	**16**	**15**	**15**	**14**	**14**	**14**	**14**	**13**
Construction	**6**	**5**	**5**	**5**	**6**	**6**	**6**	**5**	**5**	**5**	**5**	**5**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**5**	**6**	**6**	**5**	**5**	**5**	**5**	**5**	**6**	**6**	**6**	**6**
Forest Resources	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**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 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, 2020**

ECONOMIC CATEGORY	Economic Category Total	NATIONAL INVENTORY CATEGORY[a]																										
		Energy								Industrial Processes and Product Use							Agriculture				Waste						CO_2 Captured[j]	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	Solid Waste Disposal	Biological Treatment of Solid Waste	Wastewater Treatment and Discharge	Incineration and Open Burning of Waste	Industrial Wood Waste Landfills	Total		
		Stationary Combustion			Transport	Fugitive (Unintentional)	Flaring	Venting																				
		Stationary	Industrial Cogeneration																									
			Electricity[c]	Steam for Sale																								
	Mt CO_2 equivalent																											
	National Inventory Total[a,b]	**672**	**278**	**22.3**	**0.6**	**190**	**21.5**	**6.4**	**22.7**	**541**	**8.1**	**6.6**	**13.0**	**12.0**	**9.9**	**0.7**	**50.3**	**7.8**	**23.7**	**23.7**	**55.2**	**22.1**	**0.4**	**2.5**	**0.2**	**2.2**	**27.3**	**-1.7**	
	OIL AND GAS	**179**	**102.8**	**14.1**	**0.0**	**12.1**	**20.5**	**6.4**	**22.7**	**178.5**					**1.2**		**1.2**											**-0.9**	
	Upstream Oil and Gas	**160**	**88.8**	**13.1**		**12.0**	**19.4**	**6.2**	**21.8**	**161.3**					**0.1**		**0.1**											**-0.9**	
	Natural Gas Production and Processing	44	24.6	2.0		0.3	6.3	1.8	9.1	44.1					0.0		0.0												
	Conventional Oil Production	25	7.4	0.3		0.3	9.1	2.9	5.4	25.4					0.0		0.0												
	Conventional Light Oil Production	17	3.7			0.2	7.1	2.1	3.9	17.1					0.0		0.0												
	Conventional Heavy Oil Production	6	2.7			0.1	1.9	0.3	1.5	6.5																			
	Frontier Oil Production	2	1.0	0.3		0.0	0.0	0.4	0.0	1.8																			
	Oil Sands (Mining, In-situ, Upgrading)[c]	81	56.8	10.7		3.7	2.5	1.6	6.3	81.7					0.1		0.1											-0.9	
	Mining and Extraction	15	7.8	1.3		3.7	1.9	0.2	0.0	14.9					0.1		0.1												
	In-situ	41	33.3	6.2		0.1	0.5	0.3	0.7	41.2																			
	Upgrading	25	15.6	3.3		0.0	0.1	1.1	5.6	25.7					0.0		0.0											-0.9	
	Oil, Natural Gas and CO_2 Transmission	10				7.7	1.4	0.0	0.9	10.0																			
	Downstream Oil and Gas	**18**	**14.0**	**1.0**	**0.0**	**0.1**	**1.1**	**0.2**	**0.9**	**17.3**					**1.1**		**1.1**												
	Petroleum Refining	17	14.0	1.0	0.0		0.1	0.2	0.8	16.1					1.1		1.1												
	Natural Gas Distribution	1				0.1	1.0	0.0	0.1	1.1																			
	Electricity	**56**	**56.5**		**0.2**					**56.7**						**0.2**	**0.2**											**-0.7**	
	Transport[g]	**159**				**156.5**				**156.5**				**2.5**	**0.2**		**2.7**												
	Passenger Transport	**80**				**78.4**				**78.4**				**1.2**	**0.1**		**1.3**												
	Cars, Light Trucks and Motorcycles	73				72.2				72.2				1.1	0.1		1.2												
	Bus, Rail and Aviation	6				6.1				6.1				0.1	0.0		0.1												
	Freight Transport	**70**				**69.1**				**69.1**				**1.3**	**0.1**		**1.4**												
	Heavy Duty Trucks, Rail	66				64.3				64.3				1.2	0.1		1.3												
	Aviation and Marine	5				4.8				4.8				0.2	0.0		0.2												
	Other: Recreational, Commercial and Residential	**9**				**9.0**				**9.0**																			
	Heavy Industry	**72**	**29.2**	**7.3**	**0.3**	**3.5**				**40.3**	**8.0**	**6.6**	**13.0**	**0.2**	**3.8**		**31.5**												
	Mining	**9**	**4.7**	**1.3**		**2.9**				**9.0**				**0.0**	**0.2**		**0.2**												
	Smelting and Refining (Non-Ferrous Metals)	**10**	**3.0**		**0.0**	**0.1**				**3.2**	**0.0**		**6.0**		**1.0**		**7.0**												
	Pulp and Paper	**7**	**4.9**	**2.1**	**0.1**	**0.1**				**7.2**	**0.0**				**0.0**		**0.0**												
	Iron and Steel	**12**	**4.5**	**0.2**	**0.0**	**0.2**				**4.8**			**7.0**		**0.1**		**7.1**												
	Cement	**10**	**3.1**			**0.1**				**3.2**	**6.6**				**0.0**		**6.7**												
	Lime and Gypsum	**2**	**0.8**			**0.0**				**0.8**	**1.2**				**0.0**		**1.2**												
	Chemicals and Fertilizers	**21**	**8.0**	**3.7**	**0.2**	**0.1**				**12.0**	**0.1**	**6.6**		**0.2**	**2.4**		**9.3**												
	Buildings	**88**	**73.8**	**0.4**	**0.1**					**74.3**				**8.8**	**4.2**	**0.5**	**13.5**												
	Service Industry	**48**	**35.7**	**0.4**	**0.1**					**36.2**				**6.9**	**4.2**	**0.5**	**11.6**												
	Residential	**40**	**38.0**							**38.0**				**1.8**			**1.8**												
	AGRICULTURE	**69**	**3.0**	**0.1**		**10.4**				**13.4**					**0.0**		**0.0**	**7.8**	**23.7**	**23.7**	**55.2**								
	On Farm Fuel Use[h]	**13**	**3.0**	**0.1**		**10.4**				**13.4**					**0.0**		**0.0**												
	Crop Production	**21**																		**21.0**	**21.0**								
	Animal Production	**34**																**7.8**	**23.7**	**2.7**	**34.2**								
	Waste	**27**												**0.0**			**0.0**					**22.1**	**0.4**	**2.5**	**0.2**	**2.2**	**27.3**		
	Solid Waste[i]	**25**												**0.0**			**0.0**					**22.1**	**0.4**			**2.2**	**24.7**		
	Wastewater	**3**																						**2.5**			**2.5**		
	Waste Incineration	**0**																							**0.2**		**0.2**		
	COAL PRODUCTION	**2**	**0.4**			**0.8**	**1.1**			**2.3**																			
	LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**20**	**12.0**	**0.4**	**0.0**	**6.8**				**19.2**	**0.2**			**0.4**	**0.5**	**0.0**	**1.2**												
	Light Manufacturing	**13**	**10.6**	**0.4**	**0.0**	**1.4**				**12.4**	**0.2**			**0.4**	**0.3**	**0.0**	**0.9**												
	Construction	**6**	**1.4**	**0.0**		**4.1**				**5.5**					**0.0**		**0.0**												
	Forest Resources	**1**	**0.0**			**1.3**				**1.3**					**0.2**		**0.2**												
																												-6.8

Notes:

Totals may not add up due to rounding. Economic category totals rounded to nearest megatonne (Mt). The estimates for the economic categories may not add up to the national inventory totals 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.

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, 1990–2020

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 UNFCCC Reporting Guidelines 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.

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
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 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
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
f. Other Product Manufacture and Use	– Use of N_2O as an anaesthetic and propellant; use of urea in selective catalytic reduction (SCR) equipped vehicles; use of SF_6 in electrical equipment; and PFCs in electronics industry
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, tillage, summerfallow, 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. Solid Waste Disposal (Landfills)	– Municipal solid waste management sites (landfills)
b. Biological Treatment of Solid Waste	– Composting and anaerobic digestion of municipal solid waste
c. Wastewater Treatment and Discharge	– Municipal and industrial wastewater treatment
d. Incineration and Open Burning of Waste	– Municipal solid, hazardous and clinical waste, and sewage sludge incineration
e. Industrial Wood Waste Landfills	– Private, dedicated wood waste landfills
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 and forest conversion activities in Canada

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

Greenhouse Gas Categories	1990	2005	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**9 590**	**10 500**	**11 000**	**11 200**	**11 100**	**10 900**	**11 100**	**9 500**
ENERGY	**8 730**	**9 540**	**10 100**	**10 300**	**10 200**	**9 950**	**10 200**	**8 530**
a. Stationary Combustion Sources	**5 450**	**4 690**	**4 990**	**5 150**	**5 010**	**4 490**	**4 750**	**3 860**
Public Electricity and Heat Production	1 640	819	1 340	1 520	1 530	1 130	1 140	952
Petroleum Refining Industries	1 030	948	963	1 110	892	859	951	305
Oil and Gas Extraction	-	764	1 030	1 170	1 170	1 090	1 150	1 280
Mining	1 160	1 130	692	373	390	557	675	571
Manufacturing Industries	506	276	35	40	82	82	50	34
Construction	33	24	18	5	6	7	6	6
Commercial and Institutional	320	358	599	572	488	317	352	311
Residential	728	360	306	352	446	440	422	384
Agriculture and Forestry	25	8	12	10	9	7	9	9
b. Transport[a]	**3 240**	**3 940**	**4 530**	**4 560**	**4 480**	**4 620**	**4 680**	**4 200**
Aviation	238	340	307	303	280	289	282	155
Road Transportation	1 570	2 120	3 100	3 120	3 030	3 060	3 040	2 740
Light-Duty Gasoline Vehicles	678	604	684	640	627	589	550	495
Light-Duty Gasoline Trucks	440	646	1 160	1 160	1 220	1 210	1 190	1 170
Heavy-Duty Gasoline Vehicles	86	102	223	232	253	255	244	265
Motorcycles	3	2	9	9	10	10	10	9
Light-Duty Diesel Vehicles	4	5	8	8	6	6	6	3
Light-Duty Diesel Trucks	2	6	8	10	10	11	12	9
Heavy-Duty Diesel Vehicles	358	756	1 020	1 060	903	982	1 030	790
Propane and Natural Gas Vehicles	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Railways	53	42	43	41	46	45	60	56
Marine	764	929	552	570	604	649	726	716
Other Transportation	614	513	530	522	521	576	572	528
Off-Road Agriculture and Forestry	25	34	26	23	22	26	27	24
Off-Road Commercial and Institutional	31	48	50	21	11	12	12	12
Off-Road Manufacturing, Mining and Construction	223	282	307	335	341	394	392	340
Off-Road Residential	7	25	30	29	29	29	30	32
Off-Road Other Transportation	328	124	117	114	117	116	111	120
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**41**	**910**	**560**	**560**	**660**	**840**	**740**	**470**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	908	564	561	660	836	742	472
Oil	6	50	31	36	38	40	44	42
Natural Gas	0.00	0.04	0.04	0.05	0.05	0.05	0.05	0.05
Venting	25	52	46	45	59	55	62	7
Flaring	11	805	487	480	563	741	636	424
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**99**	**149**	**191**	**203**	**237**	**253**	**225**	**237**
a. Mineral Products	**65**	**2**	**0.63**	**0.53**	**0.53**	**0.46**	**0.38**	**0.35**
Cement Production	61	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	2	0.63	0.53	0.53	0.46	0.38	0.35
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**72**	**160**	**170**	**170**	**190**	**190**	**180**
e. Non-Energy Products from Fuels and Solvent Use[b]	**29**	**69**	**20**	**28**	**59**	**57**	**29**	**42**
f. Other Product Manufacture and Use	**5**	**7**	**8**	**10**	**9**	**10**	**9**	**11**
AGRICULTURE	**49**	**61**	**81**	**83**	**78**	**80**	**82**	**81**
a. Enteric Fermentation	**23**	**31**	**31**	**31**	**31**	**33**	**34**	**34**
b. Manure Management	**17**	**20**	**26**	**26**	**26**	**26**	**26**	**26**
c. Agricultural Soils	**6**	**9**	**10**	**10**	**10**	**10**	**10**	**10**
Direct Sources	4	6	6	6	6	6	7	7
Indirect Sources	3	3	4	4	4	4	4	4
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**3**	**-**	**14**	**17**	**12**	**11**	**11**	**11**
WASTE	**720**	**700**	**630**	**650**	**660**	**650**	**650**	**660**
a. Solid Waste Disposal (Landfills)	**600**	**600**	**600**	**600**	**600**	**600**	**600**	**600**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.02**	**0.02**	**0.02**	**0.10**	**0.10**	**0.10**
c. Wastewater Treatment and Discharge	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**
d. Incineration and Open Burning of Waste	**26**	**14**	**0.15**	**0.15**	**0.15**	**0.03**	**0.03**	**0.03**
e. Industrial Wood Waste Landfills	**40**	**40**	**30**	**30**	**30**	**30**	**30**	**30**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–3 **2020 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			25		298			22 800	17 200	
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	**8 280**	**36**	**910**	**0.41**	**120**	**180**	**0.12**	**3**	**-**	**9 500**
ENERGY	**8 230**	**9**	**220**	**0.30**	**80**	**-**	**-**	**-**	**-**	**8 530**
a. Stationary Combustion Sources	**3 710**	**5**	**100**	**0.09**	**30**	**-**	**-**	**-**	**-**	**3 860**
Public Electricity and Heat Production	946	0.01	0.32	0.02	6	-	-	-	-	952
Petroleum Refining Industries	304	0.01	0.30	0.00	0.60	-	-	-	-	305
Oil and Gas Extraction	1 200	3	70	0.03	8	-	-	-	-	1 280
Mining	568	0.01	0.40	0.01	2	-	-	-	-	571
Manufacturing Industries	34	0.00	0.01	0.00	0.23	-	-	-	-	34
Construction	6	0.00	0.00	0.00	0.02	-	-	-	-	6
Commercial and Institutional	309	0.00	0.08	0.01	2	-	-	-	-	311
Residential	329	2	50	0.03	8	-	-	-	-	384
Agriculture and Forestry	9	0.00	0.00	0.00	0.03	-	-	-	-	9
b. Transport[b]	**4 130**	**0.61**	**15**	**0.18**	**55**	**-**	**-**	**-**	**-**	**4 200**
Aviation	154	0.00	0.06	0.00	1	-	-	-	-	155
Road Transportation	2 700	0.20	4	0.12	35	-	-	-	-	2 740
Light-Duty Gasoline Vehicles	489	0.04	0.90	0.02	5	-	-	-	-	495
Light-Duty Gasoline Trucks	1 160	0.09	2	0.04	11	-	-	-	-	1 170
Heavy-Duty Gasoline Vehicles	258	0.01	0.20	0.02	7	-	-	-	-	265
Motorcycles	9	0.00	0.08	0.00	0.05	-	-	-	-	9
Light-Duty Diesel Vehicles	3	0.00	0.00	0.00	0.08	-	-	-	-	3
Light-Duty Diesel Trucks	9	0.00	0.01	0.00	0.21	-	-	-	-	9
Heavy-Duty Diesel Vehicles	776	0.03	0.80	0.04	13	-	-	-	-	790
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	50	0.00	0.07	0.02	6	-	-	-	-	56
Marine	709	0.07	2	0.02	6	-	-	-	-	716
Other Transportation	512	0.37	9	0.02	7	-	-	-	-	528
Off-Road Agriculture and Forestry	24	0.00	0.04	0.00	0.50	-	-	-	-	24
Off-Road Commercial and Institutional	12	0.02	0.41	0.00	0.10	-	-	-	-	12
Off-Road Manufacturing, Mining and Construction	335	0.03	0.69	0.02	5	-	-	-	-	340
Off-Road Residential	30	0.06	1	0.00	0.20	-	-	-	-	32
Off-Road Other Transportation	112	0.26	7	0.00	0.90	-	-	-	-	120
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**390**	**3**	**81**	**0.00**	**0.42**	**-**	**-**	**-**	**-**	**470**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	390	3	81	0.00	0.40	-	-	-	-	472
Oil	0.17	2	41	0.00	0.20	-	-	-	-	42
Natural Gas	0.00	0.00	0.05	-	-	-	-	-	-	0.05
Venting	6	0.02	0.53	-	-	-	-	-	-	7
Flaring	384	2	39	0.00	0.20	-	-	-	-	424
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**42**	**-**	**-**	**0.03**	**7**	**180**	**0.12**	**3**	**-**	**237**
a. Mineral Products	**0.35**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.35**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.35	-	-	-	-	-	-	-	-	0.35
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**180**	**0.10**	**-**	**-**	**180**
e. Non-Energy Products from Fuels and Solvent Use[c]	**42**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**42**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.03**	**8**	**-**	**0.02**	**3**	**-**	**11**
AGRICULTURE	**11**	**2**	**46**	**0.08**	**24**	**-**	**-**	**-**	**-**	**81**
a. Enteric Fermentation	**-**	**1**	**34**	**-**	**-**	**-**	**-**	**-**	**-**	**34**
b. Manure Management	**-**	**0.50**	**12**	**0.05**	**10**	**-**	**-**	**-**	**-**	**26**
c. Agricultural Soils	**-**	**-**	**-**	**0.04**	**10**	**-**	**-**	**-**	**-**	**10**
Direct Sources	-	-	-	0.02	7	-	-	-	-	7
Indirect Sources	-	-	-	0.01	4	-	-	-	-	4
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**11**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11**
WASTE	**0.10**	**26**	**650**	**0.03**	**10**	**-**	**-**	**-**	**-**	**660**
a. Solid Waste Disposal (Landfills)	**-**	**20**	**600**	**-**	**-**	**-**	**-**	**-**	**-**	**600**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.05**	**0.00**	**0.08**	**-**	**-**	**-**	**-**	**0.10**
c. Wastewater Treatment and Discharge	**-**	**0.70**	**20**	**0.03**	**10**	**-**	**-**	**-**	**-**	**30**
d. Incineration and Open Burning of Waste	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.03**
e. Industrial Wood Waste Landfills	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**1 790**	**1 900**	**1 560**	**1 610**	**1 630**	**1 620**	**1 660**	**1 610**
ENERGY	**1 400**	**1 430**	**1 180**	**1 190**	**1 210**	**1 170**	**1 210**	**1 140**
a. Stationary Combustion Sources	**756**	**642**	**393**	**366**	**373**	**346**	**378**	**418**
Public Electricity and Heat Production	104	5	14	4	9	3	1	0.28
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	0.89	x	x	x	x	x	x	x
Manufacturing Industries	55	145	63	68	75	60	82	143
Construction	11	x	x	x	x	x	x	x
Commercial and Institutional	202	152	96	67	57	61	61	57
Residential	364	306	208	213	220	209	219	203
Agriculture and Forestry	19	24	10	11	11	12	13	12
b. Transport[a]	**642**	**791**	**783**	**820**	**840**	**825**	**828**	**725**
Aviation	17	13	20	21	22	24	25	9
Road Transportation	467	624	612	648	657	633	634	583
Light-Duty Gasoline Vehicles	234	243	196	206	207	187	185	157
Light-Duty Gasoline Trucks	127	228	222	247	263	254	265	246
Heavy-Duty Gasoline Vehicles	41	47	40	44	47	44	44	45
Motorcycles	0.58	0.98	1	2	2	2	2	1
Light-Duty Diesel Vehicles	1	2	3	3	2	2	2	1
Light-Duty Diesel Trucks	0.45	0.90	1	1	1	2	2	1
Heavy-Duty Diesel Vehicles	62	102	149	146	133	142	136	131
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	32	46	55	53	58	62	66	28
Other Transportation	126	107	96	99	103	106	102	105
Off-Road Agriculture and Forestry	47	48	42	37	31	34	33	34
Off-Road Commercial and Institutional	5	9	9	8	8	7	7	8
Off-Road Manufacturing, Mining and Construction	15	15	17	26	35	38	36	36
Off-Road Residential	0.86	7	5	6	6	6	6	6
Off-Road Other Transportation	60	28	22	23	24	21	20	21
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6**	**30**	**54**	**55**	**56**	**61**	**60**	**60**
a. Mineral Products	**0.34**	**0.91**	**0.70**	**0.62**	**0.39**	**0.44**	**0.45**	**0.49**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.34	0.91	0.70	0.62	0.39	0.44	0.45	0.49
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**25**	**51**	**52**	**53**	**57**	**57**	**56**
e. Non-Energy Products from Fuels and Solvent Use[b]	**5**	**2**	**1**	**1**	**0.91**	**0.85**	**0.81**	**0.83**
f. Other Product Manufacture and Use	**0.83**	**2**	**1**	**2**	**2**	**2**	**2**	**2**
AGRICULTURE	**290**	**330**	**250**	**280**	**280**	**300**	**300**	**320**
a. Enteric Fermentation	**140**	**130**	**110**	**110**	**110**	**110**	**110**	**110**
b. Manure Management	**48**	**52**	**40**	**38**	**39**	**39**	**40**	**40**
c. Agricultural Soils	**97**	**140**	**98**	**130**	**130**	**140**	**150**	**160**
Direct Sources	64	96	68	94	89	100	100	110
Indirect Sources	30	50	30	40	40	40	40	50
d. Field Burning of Agricultural Residues	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**5**	**5**	**3**	**3**	**2**	**2**	**4**	**7**
WASTE	**93**	**100**	**81**	**84**	**86**	**89**	**92**	**88**
a. Solid Waste Disposal (Landfills)	**80**	**90**	**60**	**60**	**60**	**50**	**50**	**50**
b. Biological Treatment of Solid Waste	**-**	**3**	**7**	**7**	**7**	**6**	**6**	**6**
c. Wastewater Treatment and Discharge	**10**	**10**	**10**	**20**	**20**	**30**	**30**	**30**
d. Incineration and Open Burning of Waste	**0.02**	**0.09**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.11**
e. Industrial Wood Waste Landfills	**0.60**	**0.60**	**0.40**	**0.40**	**0.40**	**0.40**	**0.40**	**0.40**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–5 **2020 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			25		298			22 800	17 200	
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	**1 120**	**9**	**230**	**0.69**	**200**	**56**	**0.06**	**-**	**-**	**1 610**
ENERGY	**1 110**	**0.65**	**16**	**0.04**	**10**	**-**	**-**	**-**	**-**	**1 140**
a. Stationary Combustion Sources	**401**	**0.50**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**418**
Public Electricity and Heat Production	0.28	0.00	0.00	0.00	0.00	-	-	-	-	0.28
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	142	0.00	0.07	0.00	0.73	-	-	-	-	143
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	56	0.01	0.22	0.00	0.70	-	-	-	-	57
Residential	187	0.50	10	0.01	2	-	-	-	-	203
Agriculture and Forestry	12	0.00	0.00	0.00	0.05	-	-	-	-	12
b. Transport[b]	**712**	**0.13**	**3**	**0.03**	**9**	**-**	**-**	**-**	**-**	**725**
Aviation	9	0.00	0.01	0.00	0.08	-	-	-	-	9
Road Transportation	574	0.04	1	0.03	8	-	-	-	-	583
Light-Duty Gasoline Vehicles	155	0.01	0.30	0.01	2	-	-	-	-	157
Light-Duty Gasoline Trucks	242	0.02	0.50	0.01	3	-	-	-	-	246
Heavy-Duty Gasoline Vehicles	44	0.00	0.04	0.00	1	-	-	-	-	45
Motorcycles	1	0.00	0.01	0.00	0.01	-	-	-	-	1
Light-Duty Diesel Vehicles	1	0.00	0.00	0.00	0.03	-	-	-	-	1
Light-Duty Diesel Trucks	1	0.00	0.00	0.00	0.03	-	-	-	-	1
Heavy-Duty Diesel Vehicles	128	0.01	0.10	0.01	2	-	-	-	-	131
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	28	0.00	0.07	0.00	0.20	-	-	-	-	28
Other Transportation	102	0.08	2	0.00	1	-	-	-	-	105
Off-Road Agriculture and Forestry	33	0.00	0.04	0.00	0.40	-	-	-	-	34
Off-Road Commercial and Institutional	7	0.01	0.25	0.00	0.07	-	-	-	-	8
Off-Road Manufacturing, Mining and Construction	36	0.01	0.15	0.00	0.50	-	-	-	-	36
Off-Road Residential	6	0.01	0.29	0.00	0.04	-	-	-	-	6
Off-Road Other Transportation	20	0.05	1	0.00	0.10	-	-	-	-	21
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**	**0.00**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.00	0.00	-	-	-	-	-	-	0.00
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	-	-	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**1**	**-**	**-**	**0.01**	**2**	**56**	**0.06**	**-**	**-**	**60**
a. Mineral Products	**0.49**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.49**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.49	-	-	-	-	-	-	-	-	0.49
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**56**	**0.04**	**-**	**-**	**56**
e. Non-Energy Products from Fuels and Solvent Use[c]	**0.83**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.83**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.01**	**2**	**-**	**0.03**	**-**	**-**	**2**
AGRICULTURE	**7**	**5**	**130**	**0.61**	**180**	**-**	**-**	**-**	**-**	**320**
a. Enteric Fermentation	**-**	**5**	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
b. Manure Management	**-**	**0.73**	**18**	**0.07**	**20**	**-**	**-**	**-**	**-**	**40**
c. Agricultural Soils	**-**	**-**	**-**	**0.54**	**160**	**-**	**-**	**-**	**-**	**160**
Direct Sources	-	-	-	0.37	110	-	-	-	-	110
Indirect Sources	-	-	-	0.20	50	-	-	-	-	50
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.20**	**0.00**	**0.05**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**
WASTE	**0.10**	**3**	**80**	**0.03**	**8**	**-**	**-**	**-**	**-**	**88**
a. Solid Waste Disposal (Landfills)	**-**	**2**	**50**	**-**	**-**	**-**	**-**	**-**	**-**	**50**
b. Biological Treatment of Solid Waste	**-**	**0.20**	**5**	**0.00**	**1**	**-**	**-**	**-**	**-**	**6**
c. Wastewater Treatment and Discharge	**-**	**0.90**	**20**	**0.02**	**7**	**-**	**-**	**-**	**-**	**30**
d. Incineration and Open Burning of Waste	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.11**
e. Industrial Wood Waste Landfills	**-**	**0.01**	**0.40**	**-**	**-**	**-**	**-**	**-**	**-**	**0.40**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**19 500**	**23 000**	**16 600**	**15 400**	**16 000**	**16 500**	**16 100**	**14 600**
ENERGY	**17 900**	**21 300**	**15 200**	**14 000**	**14 600**	**15 200**	**14 800**	**13 200**
a. Stationary Combustion Sources	**11 500**	**15 400**	**10 000**	**8 890**	**9 120**	**9 430**	**9 090**	**8 500**
Public Electricity and Heat Production	6 900	10 700	6 990	6 400	6 680	7 000	6 730	6 340
Petroleum Refining Industries	617	1 050	x	x	x	x	x	x
Oil and Gas Extraction	46	302	565	415	284	184	-	-
Mining	39	39	4	4	4	3	3	3
Manufacturing Industries	775	555	397	367	370	457	415	318
Construction	50	x	x	x	x	x	x	x
Commercial and Institutional	809	x	651	540	574	490	655	625
Residential	2 130	1 330	1 380	1 140	1 170	1 260	1 260	1 180
Agriculture and Forestry	104	96	28	24	32	31	24	23
b. Transport[a]	**4 780**	**5 680**	**5 090**	**5 060**	**5 390**	**5 620**	**5 510**	**4 690**
Aviation	299	277	269	266	278	302	295	130
Road Transportation	3 100	4 100	3 910	3 930	4 080	4 180	4 080	3 530
Light-Duty Gasoline Vehicles	1 490	1 350	1 190	1 200	1 190	1 170	1 120	929
Light-Duty Gasoline Trucks	735	1 190	1 310	1 390	1 470	1 530	1 560	1 360
Heavy-Duty Gasoline Vehicles	165	237	272	288	302	310	309	294
Motorcycles	6	5	9	10	11	11	12	9
Light-Duty Diesel Vehicles	29	42	44	38	37	27	24	20
Light-Duty Diesel Trucks	6	9	12	12	15	16	16	12
Heavy-Duty Diesel Vehicles	664	1 260	1 070	990	1 050	1 110	1 050	909
Propane and Natural Gas Vehicles	4	2	0.00	0.00	0.00	0.00	0.00	0.00
Railways	64	56	37	38	43	40	32	30
Marine	504	605	326	291	375	434	474	397
Other Transportation	815	637	550	533	621	666	619	602
Off-Road Agriculture and Forestry	86	90	63	51	57	62	57	55
Off-Road Commercial and Institutional	43	66	74	65	68	72	71	70
Off-Road Manufacturing, Mining and Construction	225	235	208	211	273	294	266	254
Off-Road Residential	9	38	38	x	x	x	48	47
Off-Road Other Transportation	452	175	161	164	177	190	176	176
Pipeline Transport	-	34	6	x	x	x	1	1
c. Fugitive Sources	**1 700**	**230**	**53**	**49**	**110**	**130**	**170**	**15**
Coal Mining	2 000	100	0.60	0.70	70	100	200	0.40
Oil and Natural Gas	51	130	52	48	38	30	15	15
Oil	7	5	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	13	14	14	13	15	14	14
Venting	31	80	20	18	13	7	0.09	0.09
Flaring	13	32	19	17	12	7	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**333**	**497**	**526**	**526**	**452**	**467**	**440**	**457**
a. Mineral Products	**190**	**250**	**200**	**190**	**110**	**110**	**94**	**97**
Cement Production	183	246	198	189	x	x	x	x
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	3	1	1	x	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**140**	**260**	**270**	**270**	**300**	**300**	**290**
e. Non-Energy Products from Fuels and Solvent Use[b]	**120**	**71**	**23**	**29**	**21**	**21**	**26**	**48**
f. Other Product Manufacture and Use	**29**	**40**	**42**	**39**	**53**	**39**	**20**	**19**
AGRICULTURE	**410**	**390**	**350**	**340**	**340**	**330**	**340**	**340**
a. Enteric Fermentation	**230**	**210**	**170**	**170**	**170**	**170**	**170**	**170**
b. Manure Management	**83**	**100**	**100**	**94**	**95**	**92**	**92**	**89**
c. Agricultural Soils	**60**	**61**	**60**	**62**	**62**	**63**	**62**	**65**
Direct Sources	34	35	38	39	40	41	41	44
Indirect Sources	30	30	20	20	20	20	20	20
d. Field Burning of Agricultural Residues	**0.06**	**0.10**	**0.05**	**0.07**	**0.07**	**0.06**	**0.06**	**0.10**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**38**	**13**	**15**	**17**	**12**	**12**	**14**	**16**
WASTE	**890**	**750**	**540**	**570**	**580**	**560**	**580**	**600**
a. Solid Waste Disposal (Landfills)	**800**	**600**	**400**	**500**	**500**	**400**	**500**	**500**
b. Biological Treatment of Solid Waste	**0.70**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
c. Wastewater Treatment and Discharge	**50**	**60**	**60**	**60**	**60**	**60**	**60**	**60**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**40**	**50**	**40**	**30**	**30**	**30**	**30**	**30**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–7 **2020 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			25		298			22 800	17 200	
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	**13 100**	**36**	**900**	**0.89**	**270**	**290**	**1**	**4**	**-**	**14 600**
ENERGY	**13 000**	**5**	**130**	**0.40**	**100**	**-**	**-**	**-**	**-**	**13 200**
a. Stationary Combustion Sources	**8 360**	**3**	**90**	**0.20**	**50**	**-**	**-**	**-**	**-**	**8 500**
Public Electricity and Heat Production	6 300	0.32	8	0.09	30	-	-	-	-	6 340
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	3	0.00	0.00	0.00	0.01	-	-	-	-	3
Manufacturing Industries	311	0.02	0.47	0.02	6	-	-	-	-	318
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	622	0.01	0.27	0.01	3	-	-	-	-	625
Residential	1 100	3	80	0.04	10	-	-	-	-	1 180
Agriculture and Forestry	23	0.00	0.01	0.00	0.08	-	-	-	-	23
b. Transport[b]	**4 610**	**0.97**	**24**	**0.20**	**60**	**-**	**-**	**-**	**-**	**4 690**
Aviation	129	0.00	0.04	0.00	1	-	-	-	-	130
Road Transportation	3 480	0.20	6	0.15	46	-	-	-	-	3 530
Light-Duty Gasoline Vehicles	918	0.07	2	0.03	9	-	-	-	-	929
Light-Duty Gasoline Trucks	1 340	0.10	3	0.05	14	-	-	-	-	1 360
Heavy-Duty Gasoline Vehicles	287	0.01	0.20	0.02	7	-	-	-	-	294
Motorcycles	9	0.00	0.09	0.00	0.05	-	-	-	-	9
Light-Duty Diesel Vehicles	19	0.00	0.01	0.00	0.46	-	-	-	-	20
Light-Duty Diesel Trucks	11	0.00	0.01	0.00	0.28	-	-	-	-	12
Heavy-Duty Diesel Vehicles	893	0.04	0.90	0.05	15	-	-	-	-	909
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	27	0.00	0.04	0.01	3	-	-	-	-	30
Marine	393	0.04	0.93	0.01	3	-	-	-	-	397
Other Transportation	578	0.69	17	0.02	7	-	-	-	-	602
Off-Road Agriculture and Forestry	54	0.00	0.09	0.00	0.80	-	-	-	-	55
Off-Road Commercial and Institutional	66	0.14	4	0.00	0.60	-	-	-	-	70
Off-Road Manufacturing, Mining and Construction	249	0.04	0.91	0.01	4	-	-	-	-	254
Off-Road Residential	45	0.09	2	0.00	0.40	-	-	-	-	47
Off-Road Other Transportation	164	0.42	11	0.00	1	-	-	-	-	176
Pipeline Transport	1	0.00	0.03	0.00	0.01	-	-	-	-	1
c. Fugitive Sources	**0.00**	**0.60**	**15**	**-**	**-**	**-**	**-**	**-**	**-**	**15**
Coal Mining	-	0.02	0.40	-	-	-	-	-	-	0.40
Oil and Natural Gas	0.00	0.58	15	-	-	-	-	-	-	15
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	0.00	0.58	14	-	-	-	-	-	-	14
Venting	0.00	0.00	0.09	-	-	-	-	-	-	0.09
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**144**	**-**	**-**	**0.05**	**14**	**290**	**1**	**4**	**-**	**457**
a. Mineral Products	**97**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**97**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**290**	**0.18**	**-**	**-**	**290**
e. Non-Energy Products from Fuels and Solvent Use[c]	**48**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**48**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.05**	**14**	**-**	**0.90**	**4**	**-**	**19**
AGRICULTURE	**16**	**9**	**210**	**0.37**	**110**	**-**	**-**	**-**	**-**	**340**
a. Enteric Fermentation	**-**	**7**	**170**	**-**	**-**	**-**	**-**	**-**	**-**	**170**
b. Manure Management	**-**	**2**	**45**	**0.20**	**40**	**-**	**-**	**-**	**-**	**89**
c. Agricultural Soils	**-**	**-**	**-**	**0.22**	**65**	**-**	**-**	**-**	**-**	**65**
Direct Sources	-	-	-	0.15	44	-	-	-	-	44
Indirect Sources	-	-	-	0.07	20	-	-	-	-	20
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.08**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**0.10**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**16**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**16**
WASTE	**-**	**22**	**560**	**0.10**	**30**	**-**	**-**	**-**	**-**	**600**
a. Solid Waste Disposal (Landfills)	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**
b. Biological Treatment of Solid Waste	**-**	**0.60**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**30**
c. Wastewater Treatment and Discharge	**-**	**2**	**40**	**0.07**	**20**	**-**	**-**	**-**	**-**	**60**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**16 200**	**19 800**	**14 000**	**14 800**	**13 800**	**13 600**	**13 100**	**12 400**
ENERGY	**14 800**	**18 100**	**12 600**	**13 300**	**12 200**	**12 000**	**11 700**	**11 000**
a. Stationary Combustion Sources	**10 700**	**13 000**	**8 480**	**8 800**	**8 070**	**7 950**	**7 760**	**7 450**
Public Electricity and Heat Production	6 020	8 050	4 180	4 530	3 830	4 210	3 790	3 470
Petroleum Refining Industries	1 160	2 250	x	x	x	x	x	x
Oil and Gas Extraction	-	-	29	26	26	34	24	39
Mining	126	161	x	x	x	x	x	x
Manufacturing Industries	1 630	1 170	673	617	624	681	661	568
Construction	69	6	28	17	10	10	7	9
Commercial and Institutional	580	601	428	381	272	306	332	301
Residential	1 060	749	816	691	628	607	522	465
Agriculture and Forestry	53	33	25	31	36	34	32	28
b. Transport[a]	**4 010**	**4 880**	**3 960**	**4 340**	**3 930**	**3 870**	**3 760**	**3 390**
Aviation	137	127	111	109	108	116	118	62
Road Transportation	2 260	3 590	3 090	3 420	3 010	2 980	2 880	2 560
Light-Duty Gasoline Vehicles	931	1 030	851	943	810	770	729	588
Light-Duty Gasoline Trucks	533	985	1 100	1 290	1 170	1 190	1 190	1 050
Heavy-Duty Gasoline Vehicles	125	197	216	251	226	222	219	216
Motorcycles	3	6	9	10	9	9	9	7
Light-Duty Diesel Vehicles	15	22	16	15	12	9	8	6
Light-Duty Diesel Trucks	6	10	6	7	7	7	7	6
Heavy-Duty Diesel Vehicles	649	1 340	891	902	768	776	718	678
Propane and Natural Gas Vehicles	0.67	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Railways	148	119	122	118	136	124	122	114
Marine	182	217	121	126	145	133	162	155
Other Transportation	1 280	829	514	563	534	510	478	500
Off-Road Agriculture and Forestry	123	167	98	87	81	78	72	76
Off-Road Commercial and Institutional	30	55	48	48	44	42	41	43
Off-Road Manufacturing, Mining and Construction	151	194	138	155	158	152	138	146
Off-Road Residential	5	x	26	32	30	x	28	29
Off-Road Other Transportation	971	386	205	229	211	200	185	187
Pipeline Transport	-	x	-	13	11	x	15	20
c. Fugitive Sources	**60**	**220**	**180**	**190**	**220**	**170**	**200**	**180**
Coal Mining	1	0.30	-	-	-	-	-	-
Oil and Natural Gas	60	216	181	193	218	167	202	180
Oil	8	18	17	17	16	13	15	16
Natural Gas	0.03	20	16	19	19	19	19	19
Venting	36	146	124	131	152	112	139	121
Flaring	15	31	25	27	32	23	29	24
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**188**	**269**	**397**	**478**	**518**	**533**	**367**	**367**
a. Mineral Products	**91**	**97**	**4**	**78**	**61**	**48**	**47**	**44**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	81	89	-	75	x	x	x	x
Mineral Products Use	10	8	4	4	x	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**130**	**240**	**240**	**240**	**270**	**260**	**260**
e. Non-Energy Products from Fuels and Solvent Use[b]	**92**	**37**	**140**	**150**	**200**	**210**	**45**	**54**
f. Other Product Manufacture and Use	**5**	**9**	**8**	**9**	**12**	**12**	**11**	**12**
AGRICULTURE	**430**	**470**	**380**	**420**	**390**	**400**	**400**	**390**
a. Enteric Fermentation	**200**	**180**	**150**	**150**	**150**	**150**	**150**	**140**
b. Manure Management	**62**	**77**	**62**	**60**	**61**	**62**	**61**	**59**
c. Agricultural Soils	**100**	**150**	**110**	**140**	**130**	**140**	**140**	**140**
Direct Sources	74	110	83	110	100	110	110	110
Indirect Sources	30	40	30	30	30	30	30	30
d. Field Burning of Agricultural Residues	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**	**0.02**	**0.02**	**0.01**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**68**	**55**	**62**	**73**	**52**	**49**	**51**	**54**
WASTE	**830**	**920**	**650**	**610**	**630**	**630**	**660**	**670**
a. Solid Waste Disposal (Landfills)	**800**	**800**	**500**	**500**	**500**	**500**	**500**	**500**
b. Biological Treatment of Solid Waste	**3**	**50**	**30**	**30**	**30**	**20**	**20**	**20**
c. Wastewater Treatment and Discharge	**50**	**50**	**90**	**70**	**60**	**50**	**70**	**70**
d. Incineration and Open Burning of Waste	**-**	**0.04**	**0.52**	**0.20**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**30**	**40**	**30**	**30**	**30**	**30**	**30**	**30**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–9 **2020 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			25		298			22 800	17 200	
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	**10 900**	**37**	**920**	**1**	**330**	**260**	**0.17**	**0.96**	**-**	**12 400**
ENERGY	**10 800**	**5**	**120**	**0.40**	**100**	**-**	**-**	**-**	**-**	**11 000**
a. Stationary Combustion Sources	**7 320**	**3**	**70**	**0.20**	**60**	**-**	**-**	**-**	**-**	**7 450**
Public Electricity and Heat Production	3 450	0.31	8	0.05	20	-	-	-	-	3 470
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	38	0.00	0.01	0.00	0.80	-	-	-	-	39
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	539	0.15	4	0.09	26	-	-	-	-	568
Construction	8	0.00	0.00	0.00	0.03	-	-	-	-	9
Commercial and Institutional	298	0.00	0.12	0.01	2	-	-	-	-	301
Residential	403	2	50	0.03	9	-	-	-	-	465
Agriculture and Forestry	28	0.00	0.01	0.00	0.10	-	-	-	-	28
b. Transport[b]	**3 310**	**0.82**	**20**	**0.19**	**56**	**-**	**-**	**-**	**-**	**3 390**
Aviation	61	0.01	0.10	0.00	0.60	-	-	-	-	62
Road Transportation	2 520	0.20	5	0.12	36	-	-	-	-	2 560
Light-Duty Gasoline Vehicles	580	0.05	1	0.02	7	-	-	-	-	588
Light-Duty Gasoline Trucks	1 040	0.09	2	0.04	13	-	-	-	-	1 050
Heavy-Duty Gasoline Vehicles	210	0.01	0.20	0.02	6	-	-	-	-	216
Motorcycles	7	0.00	0.07	0.00	0.04	-	-	-	-	7
Light-Duty Diesel Vehicles	6	0.00	0.00	0.00	0.15	-	-	-	-	6
Light-Duty Diesel Trucks	6	0.00	0.00	0.00	0.15	-	-	-	-	6
Heavy-Duty Diesel Vehicles	666	0.03	0.70	0.04	11	-	-	-	-	678
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	102	0.01	0.10	0.04	10	-	-	-	-	114
Marine	154	0.01	0.36	0.00	1	-	-	-	-	155
Other Transportation	479	0.61	15	0.02	6	-	-	-	-	500
Off-Road Agriculture and Forestry	75	0.01	0.15	0.00	1	-	-	-	-	76
Off-Road Commercial and Institutional	41	0.06	1	0.00	0.40	-	-	-	-	43
Off-Road Manufacturing, Mining and Construction	143	0.03	0.62	0.01	2	-	-	-	-	146
Off-Road Residential	27	0.06	2	0.00	0.20	-	-	-	-	29
Off-Road Other Transportation	175	0.44	11	0.01	1	-	-	-	-	187
Pipeline Transport	19	0.02	0.47	0.00	0.10	-	-	-	-	20
c. Fugitive Sources	**140**	**1**	**31**	**0.01**	**4**	**-**	**-**	**-**	**-**	**180**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	140	1	31	0.01	4	-	-	-	-	180
Oil	0.11	0.45	11	0.01	4	-	-	-	-	16
Natural Gas	0.01	0.77	19	-	-	-	-	-	-	19
Venting	120	0.01	0.15	-	-	-	-	-	-	121
Flaring	24	0.00	0.04	0.00	0.01	-	-	-	-	24
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**98**	**-**	**-**	**0.04**	**11**	**260**	**0.17**	**0.96**	**-**	**367**
a. Mineral Products	**44**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**44**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**260**	**0.16**	**-**	**-**	**260**
e. Non-Energy Products from Fuels and Solvent Use[c]	**54**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**54**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.04**	**11**	**-**	**0.01**	**0.96**	**-**	**12**
AGRICULTURE	**54**	**7**	**170**	**0.57**	**170**	**-**	**-**	**-**	**-**	**390**
a. Enteric Fermentation	**-**	**6**	**140**	**-**	**-**	**-**	**-**	**-**	**-**	**140**
b. Manure Management	**-**	**1**	**29**	**0.10**	**30**	**-**	**-**	**-**	**-**	**59**
c. Agricultural Soils	**-**	**-**	**-**	**0.47**	**140**	**-**	**-**	**-**	**-**	**140**
Direct Sources	-	-	-	0.36	110	-	-	-	-	110
Indirect Sources	-	-	-	0.10	30	-	-	-	-	30
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.01**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.01**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**54**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**54**
WASTE	**0.01**	**25**	**640**	**0.10**	**30**	**-**	**-**	**-**	**-**	**670**
a. Solid Waste Disposal (Landfills)	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**
b. Biological Treatment of Solid Waste	**-**	**0.50**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**-**	**2**	**50**	**0.07**	**20**	**-**	**-**	**-**	**-**	**70**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**84 500**	**86 300**	**78 500**	**78 100**	**80 300**	**81 800**	**83 600**	**76 200**
ENERGY	**57 900**	**60 000**	**55 100**	**54 600**	**56 600**	**57 700**	**59 200**	**51 100**
a. Stationary Combustion Sources	**30 300**	**26 400**	**21 500**	**20 600**	**20 700**	**21 700**	**22 400**	**19 200**
Public Electricity and Heat Production	1 490	617	205	233	239	242	239	291
Petroleum Refining Industries	3 460	3 640	2 010	1 770	1 520	2 030	1 900	1 900
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	824	319	571	649	826	1 470	1 540	1 350
Manufacturing Industries	12 300	9 960	9 530	8 600	8 850	8 850	9 450	7 650
Construction	458	311	355	348	367	402	412	400
Commercial and Institutional	4 410	5 410	4 850	4 890	5 160	4 850	4 950	4 300
Residential	7 070	5 790	3 480	3 590	3 240	3 370	3 470	2 980
Agriculture and Forestry	291	367	484	496	452	463	476	340
b. Transport[a]	**27 200**	**33 200**	**33 400**	**33 700**	**35 600**	**35 700**	**36 500**	**31 600**
Aviation	952	764	718	742	806	904	901	558
Road Transportation	18 100	26 300	26 800	27 400	28 600	28 500	29 000	24 800
Light-Duty Gasoline Vehicles	10 600	10 800	9 170	9 120	9 210	8 920	8 810	6 850
Light-Duty Gasoline Trucks	3 580	6 900	7 530	7 880	8 390	8 620	9 130	7 970
Heavy-Duty Gasoline Vehicles	785	1 620	1 800	1 880	2 010	1 990	2 030	1 920
Motorcycles	17	71	68	70	74	72	72	59
Light-Duty Diesel Vehicles	210	151	204	194	191	176	172	97
Light-Duty Diesel Trucks	57	69	156	184	225	231	242	196
Heavy-Duty Diesel Vehicles	2 820	6 680	7 890	8 040	8 470	8 460	8 580	7 700
Propane and Natural Gas Vehicles	2	0.99	0.20	0.17	0.11	0.11	0.12	0.16
Railways	638	594	391	367	406	525	534	499
Marine	699	947	794	818	863	916	1 100	1 090
Other Transportation	6 800	4 570	4 630	4 380	4 970	4 890	4 900	4 710
Off-Road Agriculture and Forestry	999	780	739	677	713	680	689	660
Off-Road Commercial and Institutional	359	456	585	687	876	859	892	862
Off-Road Manufacturing, Mining and Construction	2 030	1 620	1 890	1 870	2 130	2 040	2 030	1 920
Off-Road Residential	61	264	251	216	225	234	240	237
Off-Road Other Transportation	3 330	1 120	829	854	939	976	949	931
Pipeline Transport	26	334	330	80	82	98	102	100
c. Fugitive Sources	**430**	**380**	**290**	**310**	**330**	**300**	**330**	**270**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	426	384	289	308	328	301	330	271
Oil	22	28	21	22	20	20	20	19
Natural Gas	265	74	49	52	53	51	51	51
Venting	99	235	187	199	216	195	218	172
Flaring	40	47	32	35	39	35	40	29
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**14 800**	**12 700**	**10 200**	**9 900**	**10 500**	**10 200**	**10 500**	**10 800**
a. Mineral Products	**1 900**	**2 100**	**1 700**	**1 600**	**2 100**	**2 100**	**2 500**	**2 300**
Cement Production	1 450	1 330	1 270	1 210	1 630	1 600	2 080	1 850
Lime Production	286	485	347	333	x	x	x	x
Mineral Products Use	200	260	68	64	x	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**10 900**	**7 560**	**5 280**	**5 160**	**5 250**	**4 750**	**4 560**	**5 190**
Iron and Steel Production	-	-	29	29	18	7	7	7
Aluminium Production	8 660	7 460	5 240	5 130	5 220	4 740	4 540	5 180
SF_6 Used in Magnesium Smelters and Casters	2 280	103	11	8	11	11	11	9
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2**	**1 100**	**2 200**	**2 300**	**2 200**	**2 400**	**2 400**	**2 400**
e. Non-Energy Products from Fuels and Solvent Use[b]	**1 900**	**1 900**	**820**	**680**	**750**	**790**	**830**	**800**
f. Other Product Manufacture and Use	**80**	**120**	**150**	**170**	**130**	**180**	**160**	**200**
AGRICULTURE	**6 500**	**7 300**	**7 900**	**7 900**	**7 400**	**8 100**	**7 900**	**8 200**
a. Enteric Fermentation	**3 100**	**3 100**	**2 600**	**2 600**	**2 600**	**2 700**	**2 700**	**2 700**
b. Manure Management	**1 200**	**1 600**	**1 600**	**1 700**	**1 700**	**1 700**	**1 700**	**1 700**
c. Agricultural Soils	**2 000**	**2 400**	**3 400**	**3 400**	**2 900**	**3 500**	**3 300**	**3 600**
Direct Sources	1 600	2 000	2 900	2 800	2 400	2 900	2 700	3 000
Indirect Sources	400	500	500	600	500	600	500	600
d. Field Burning of Agricultural Residues	**0.30**	**0.30**	**0.20**	**0.20**	**0.10**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**220**	**160**	**220**	**260**	**190**	**240**	**220**	**230**
WASTE	**5 200**	**6 300**	**5 300**	**5 800**	**5 800**	**5 900**	**6 000**	**6 100**
a. Solid Waste Disposal (Landfills)	**4 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**
b. Biological Treatment of Solid Waste	**40**	**30**	**30**	**30**	**40**	**70**	**70**	**70**
c. Wastewater Treatment and Discharge	**300**	**300**	**400**	**400**	**400**	**400**	**400**	**400**
d. Incineration and Open Burning of Waste	**160**	**200**	**37**	**38**	**39**	**39**	**38**	**38**
e. Industrial Wood Waste Landfills	**400**	**500**	**400**	**400**	**400**	**300**	**300**	**300**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–11 **2020 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			25		298			22 800	17 200	
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	**57 300**	**430**	**11 000**	**17**	**5 200**	**2 400**	**630**	**94**	**0.60**	**76 200**
ENERGY	**49 400**	**38**	**940**	**2**	**700**	**-**	**-**	**-**	**-**	**51 100**
a. Stationary Combustion Sources	**18 200**	**30**	**700**	**0.90**	**300**	**-**	**-**	**-**	**-**	**19 200**
Public Electricity and Heat Production	290	0.01	0.13	0.01	1	-	-	-	-	291
Petroleum Refining Industries	1 890	0.04	1	0.02	7	-	-	-	-	1 900
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	1 340	0.04	0.90	0.02	6	-	-	-	-	1 350
Manufacturing Industries	7 550	0.50	12	0.30	88	-	-	-	-	7 650
Construction	398	0.01	0.19	0.01	2	-	-	-	-	400
Commercial and Institutional	4 260	0.17	4	0.10	40	-	-	-	-	4 300
Residential	2 180	30	700	0.40	100	-	-	-	-	2 980
Agriculture and Forestry	335	0.01	0.10	0.02	6	-	-	-	-	340
b. Transport[b]	**31 000**	**6**	**150**	**2**	**470**	**-**	**-**	**-**	**-**	**31 600**
Aviation	553	0.02	0.50	0.02	5	-	-	-	-	558
Road Transportation	24 400	2	40	1	350	-	-	-	-	24 800
Light-Duty Gasoline Vehicles	6 760	0.60	10	0.25	76	-	-	-	-	6 850
Light-Duty Gasoline Trucks	7 870	0.70	20	0.29	87	-	-	-	-	7 970
Heavy-Duty Gasoline Vehicles	1 870	0.06	2	0.16	49	-	-	-	-	1 920
Motorcycles	58	0.02	0.50	0.00	0.32	-	-	-	-	59
Light-Duty Diesel Vehicles	95	0.00	0.05	0.01	2	-	-	-	-	97
Light-Duty Diesel Trucks	191	0.01	0.10	0.02	5	-	-	-	-	196
Heavy-Duty Diesel Vehicles	7 560	0.30	8	0.43	130	-	-	-	-	7 700
Propane and Natural Gas Vehicles	0.15	0.00	0.00	0.00	0.00	-	-	-	-	0.16
Railways	446	0.03	0.60	0.20	50	-	-	-	-	499
Marine	1 070	0.10	3	0.03	9	-	-	-	-	1 090
Other Transportation	4 550	4	100	0.20	60	-	-	-	-	4 710
Off-Road Agriculture and Forestry	649	0.03	0.84	0.03	9	-	-	-	-	660
Off-Road Commercial and Institutional	826	1	28	0.03	8	-	-	-	-	862
Off-Road Manufacturing, Mining and Construction	1 890	0.32	8	0.10	30	-	-	-	-	1 920
Off-Road Residential	223	0.49	12	0.01	2	-	-	-	-	237
Off-Road Other Transportation	874	2	49	0.03	8	-	-	-	-	931
Pipeline Transport	97	0.10	2	0.00	0.70	-	-	-	-	100
c. Fugitive Sources	**180**	**4**	**90**	**0.02**	**5**	**-**	**-**	**-**	**-**	**270**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	180	4	90	0.02	5	-	-	-	-	271
Oil	0.13	0.55	14	0.02	5	-	-	-	-	19
Natural Gas	0.04	2	51	-	-	-	-	-	-	51
Venting	150	1	26	-	-	-	-	-	-	172
Flaring	29	0.00	0.02	0.00	0.01	-	-	-	-	29
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**7 640**	**0.00**	**0.00**	**0.41**	**122**	**2 400**	**630**	**94**	**0.60**	**10 800**
a. Mineral Products	**2 300**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 300**
Cement Production	1 850	-	-	-	-	-	-	-	-	1 850
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**4 570**	**0.00**	**0.00**	**-**	**-**	**-**	**616**	**10**	**-**	**5 190**
Iron and Steel Production	7	0.00	0.00	-	-	-	-	-	-	7
Aluminium Production	4 560	-	-	-	-	-	616	0.68	-	5 180
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	9	-	9
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**2 400**	**7**	**15**	**0.60**	**2 400**
e. Non-Energy Products from Fuels and Solvent Use[c]	**800**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**800**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.41**	**120**	**-**	**7**	**69**	**-**	**200**
AGRICULTURE	**230**	**160**	**3 900**	**14**	**4 100**	**-**	**-**	**-**	**-**	**8 200**
a. Enteric Fermentation	**-**	**110**	**2 700**	**-**	**-**	**-**	**-**	**-**	**-**	**2 700**
b. Manure Management	**-**	**48**	**1 200**	**2**	**500**	**-**	**-**	**-**	**-**	**1 700**
c. Agricultural Soils	**-**	**-**	**-**	**12**	**3 600**	**-**	**-**	**-**	**-**	**3 600**
Direct Sources	-	-	-	10	3 000	-	-	-	-	3 000
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.10**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**230**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**230**
WASTE	**10**	**230**	**5 800**	**0.90**	**300**	**-**	**-**	**-**	**-**	**6 100**
a. Solid Waste Disposal (Landfills)	**-**	**200**	**5 000**	**-**	**-**	**-**	**-**	**-**	**-**	**5 000**
b. Biological Treatment of Solid Waste	**-**	**1**	**30**	**0.10**	**30**	**-**	**-**	**-**	**-**	**70**
c. Wastewater Treatment and Discharge	**10**	**9**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**400**
d. Incineration and Open Burning of Waste	**8**	**0.00**	**0.03**	**0.10**	**30**	**-**	**-**	**-**	**-**	**38**
e. Industrial Wood Waste Landfills	**-**	**10**	**300**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**180 000**	**204 000**	**164 000**	**162 000**	**159 000**	**167 000**	**166 000**	**150 000**
ENERGY	**132 000**	**161 000**	**124 000**	**122 000**	**120 000**	**127 000**	**126 000**	**111 000**
a. Stationary Combustion Sources	**82 500**	**95 800**	**62 300**	**60 300**	**57 400**	**63 000**	**61 200**	**57 700**
Public Electricity and Heat Production	25 900	35 300	6 320	5 620	2 600	4 160	3 970	3 710
Petroleum Refining Industries	6 230	6 890	4 900	4 770	3 430	3 840	4 200	3 900
Oil and Gas Extraction	100	167	72	77	31	58	57	34
Mining	493	418	438	532	555	493	537	533
Manufacturing Industries	22 000	18 600	16 100	15 900	16 500	16 200	16 100	14 800
Construction	571	632	352	344	307	292	306	308
Commercial and Institutional	9 170	12 700	12 800	13 400	13 900	14 900	16 000	16 200
Residential	17 300	20 000	19 800	18 200	18 700	21 600	18 300	16 700
Agriculture and Forestry	775	1 030	1 430	1 520	1 370	1 410	1 770	1 540
b. Transport[a]	**47 800**	**64 100**	**60 400**	**60 000**	**60 800**	**62 700**	**63 100**	**52 200**
Aviation	2 370	2 220	2 270	2 280	2 410	2 590	2 590	1 370
Road Transportation	29 300	47 800	46 300	46 600	46 800	48 300	49 000	40 100
Light-Duty Gasoline Vehicles	16 400	16 600	12 900	12 700	12 100	12 000	11 900	8 770
Light-Duty Gasoline Trucks	7 210	15 800	16 900	17 700	18 000	19 000	19 900	16 400
Heavy-Duty Gasoline Vehicles	1 480	3 150	3 310	3 420	3 410	3 430	3 560	3 160
Motorcycles	27	61	88	93	95	95	96	74
Light-Duty Diesel Vehicles	127	217	363	337	339	337	315	191
Light-Duty Diesel Trucks	34	72	328	376	467	523	518	419
Heavy-Duty Diesel Vehicles	3 970	11 800	12 400	11 900	12 300	13 000	12 700	11 100
Propane and Natural Gas Vehicles	68	55	0.65	0.74	0.53	0.53	0.51	0.49
Railways	2 210	2 170	2 060	1 780	2 030	1 850	1 800	1 680
Marine	201	259	265	261	272	273	287	278
Other Transportation	13 700	11 700	9 510	9 060	9 260	9 680	9 380	8 780
Off-Road Agriculture and Forestry	1 340	1 410	1 170	1 040	1 040	1 120	1 090	1 040
Off-Road Commercial and Institutional	561	960	993	1 040	1 200	1 250	1 260	1 210
Off-Road Manufacturing, Mining and Construction	3 130	3 310	3 540	3 420	3 790	3 930	3 760	3 580
Off-Road Residential	89	491	475	452	460	471	481	453
Off-Road Other Transportation	6 340	2 460	1 770	1 780	1 850	1 890	1 840	1 720
Pipeline Transport	2 280	3 030	1 570	1 340	927	1 010	946	775
c. Fugitive Sources	**1 600**	**1 600**	**1 500**	**1 500**	**1 500**	**1 500**	**1 500**	**1 400**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	1 580	1 560	1 460	1 480	1 490	1 500	1 530	1 440
Oil	63	42	33	31	26	29	28	29
Natural Gas	1 020	956	916	938	956	959	961	935
Venting	340	462	445	448	450	453	474	426
Flaring	155	101	67	60	61	62	67	55
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**30 600**	**25 100**	**23 400**	**24 500**	**22 800**	**23 400**	**22 900**	**20 700**
a. Mineral Products	**3 900**	**4 800**	**3 600**	**3 500**	**3 800**	**3 700**	**3 500**	**3 500**
Cement Production	2 440	3 700	2 770	2 640	3 020	2 920	2 770	2 810
Lime Production	1 100	805	740	708	x	x	x	x
Mineral Products Use	380	320	130	120	x	x	x	x
b. Chemical Industry[b]	**10 300**	**2 550**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	10 300	2 550	-	-	-	-	-	-
c. Metal Production	**11 200**	**11 400**	**8 670**	**9 320**	**8 560**	**9 010**	**8 560**	**7 070**
Iron and Steel Production	10 500	10 300	8 440	9 190	8 430	8 870	8 270	6 980
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	687	1 130	224	130	128	137	285	93
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**970**	**2 000**	**4 200**	**4 300**	**4 200**	**4 600**	**4 600**	**4 600**
e. Non-Energy Products from Fuels and Solvent Use[b]	**4 100**	**4 100**	**6 700**	**7 200**	**6 000**	**5 800**	**5 900**	**5 300**
f. Other Product Manufacture and Use	**140**	**200**	**190**	**220**	**240**	**270**	**260**	**290**
AGRICULTURE	**9 400**	**9 300**	**8 800**	**9 100**	**9 000**	**9 000**	**9 200**	**10 000**
a. Enteric Fermentation	**4 300**	**4 100**	**3 300**	**3 300**	**3 300**	**3 300**	**3 300**	**3 400**
b. Manure Management	**1 900**	**2 100**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**
c. Agricultural Soils	**3 000**	**2 900**	**3 400**	**3 600**	**3 600**	**3 500**	**3 700**	**4 500**
Direct Sources	2 300	2 300	2 800	2 900	2 900	2 900	3 000	3 700
Indirect Sources	700	600	600	700	700	700	700	800
d. Field Burning of Agricultural Residues	**3**	**0.60**	**0.30**	**0.30**	**0.20**	**0.20**	**0.30**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**250**	**160**	**150**	**200**	**200**	**200**	**210**	**260**
WASTE	**8 100**	**8 600**	**7 300**	**7 100**	**7 500**	**7 600**	**7 600**	**7 600**
a. Solid Waste Disposal (Landfills)	**7 000**	**7 000**	**6 000**	**6 000**	**6 000**	**6 000**	**6 000**	**6 000**
b. Biological Treatment of Solid Waste	**30**	**80**	**100**	**100**	**100**	**100**	**100**	**100**
c. Wastewater Treatment and Discharge	**600**	**800**	**900**	**900**	**900**	**900**	**1 000**	**1 000**
d. Incineration and Open Burning of Waste	**71**	**110**	**130**	**130**	**110**	**110**	**100**	**88**
e. Industrial Wood Waste Landfills	**200**	**300**	**200**	**200**	**200**	**200**	**200**	**200**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–13 **2020 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			25		298			22 800	17 200	
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	**124 000**	**520**	**13 000**	**26**	**7 900**	**4 600**	**18**	**170**	**-**	**150 000**
ENERGY	**108 000**	**71**	**1 800**	**5**	**1 000**	**-**	**-**	**-**	**-**	**111 000**
a. Stationary Combustion Sources	**56 900**	**10**	**300**	**1**	**400**	**-**	**-**	**-**	**-**	**57 700**
Public Electricity and Heat Production	3 650	0.94	23	0.10	30	-	-	-	-	3 710
Petroleum Refining Industries	3 890	0.09	2	0.03	8	-	-	-	-	3 900
Oil and Gas Extraction	33	0.00	0.01	0.00	0.70	-	-	-	-	34
Mining	526	0.01	0.20	0.02	7	-	-	-	-	533
Manufacturing Industries	14 600	0.50	12	0.36	110	-	-	-	-	14 800
Construction	305	0.01	0.13	0.01	3	-	-	-	-	308
Commercial and Institutional	16 100	0.41	10	0.30	100	-	-	-	-	16 200
Residential	16 300	10	300	0.50	100	-	-	-	-	16 700
Agriculture and Forestry	1 530	0.03	0.70	0.04	10	-	-	-	-	1 540
b. Transport[b]	**50 900**	**10**	**260**	**4**	**1 100**	**-**	**-**	**-**	**-**	**52 200**
Aviation	1 350	0.03	0.90	0.04	10	-	-	-	-	1 370
Road Transportation	39 300	2	60	3	760	-	-	-	-	40 100
Light-Duty Gasoline Vehicles	8 580	0.70	20	0.58	170	-	-	-	-	8 770
Light-Duty Gasoline Trucks	16 000	1	30	0.99	300	-	-	-	-	16 400
Heavy-Duty Gasoline Vehicles	3 080	0.10	3	0.28	83	-	-	-	-	3 160
Motorcycles	73	0.03	0.70	0.00	0.42	-	-	-	-	74
Light-Duty Diesel Vehicles	186	0.00	0.09	0.02	5	-	-	-	-	191
Light-Duty Diesel Trucks	408	0.01	0.30	0.04	10	-	-	-	-	419
Heavy-Duty Diesel Vehicles	10 900	0.50	10	0.63	190	-	-	-	-	11 100
Propane and Natural Gas Vehicles	0.48	0.00	0.01	0.00	0.00	-	-	-	-	0.49
Railways	1 500	0.09	2	0.60	200	-	-	-	-	1 680
Marine	276	0.03	0.63	0.01	2	-	-	-	-	278
Other Transportation	8 480	8	190	0.40	100	-	-	-	-	8 780
Off-Road Agriculture and Forestry	1 030	0.04	1	0.04	10	-	-	-	-	1 040
Off-Road Commercial and Institutional	1 160	2	37	0.04	10	-	-	-	-	1 210
Off-Road Manufacturing, Mining and Construction	3 510	0.62	16	0.20	60	-	-	-	-	3 580
Off-Road Residential	426	0.95	24	0.01	4	-	-	-	-	453
Off-Road Other Transportation	1 610	4	97	0.05	10	-	-	-	-	1 720
Pipeline Transport	751	0.73	18	0.02	6	-	-	-	-	775
c. Fugitive Sources	**240**	**48**	**1 200**	**0.02**	**7**	**-**	**-**	**-**	**-**	**1 400**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	240	48	1 200	0.02	7	-	-	-	-	1 440
Oil	0.17	0.89	22	0.02	7	-	-	-	-	29
Natural Gas	2	37	933	-	-	-	-	-	-	935
Venting	190	10	239	-	-	-	-	-	-	426
Flaring	52	0.09	2	0.00	0.03	-	-	-	-	55
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**15 700**	**2**	**41**	**0.79**	**234**	**4 600**	**19**	**170**	**-**	**20 700**
a. Mineral Products	**3 500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 500**
Cement Production	2 810	-	-	-	-	-	-	-	-	2 810
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**6 980**	**0.07**	**2**	**-**	**-**	**-**	**-**	**93**	**-**	**7 070**
Iron and Steel Production	6 980	0.07	2	-	-	-	-	-	-	6 980
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	93	-	93
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**4 600**	**8**	**13**	**-**	**4 600**
e. Non-Energy Products from Fuels and Solvent Use[c]	**5 200**	**-**	**-**	**0.10**	**-**	**-**	**-**	**-**	**-**	**5 300**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.70**	**210**	**-**	**10**	**68**	**-**	**290**
AGRICULTURE	**260**	**170**	**4 400**	**18**	**5 400**	**-**	**-**	**-**	**-**	**10 000**
a. Enteric Fermentation	**-**	**130**	**3 400**	**-**	**-**	**-**	**-**	**-**	**-**	**3 400**
b. Manure Management	**-**	**40**	**1 000**	**3**	**900**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**15**	**4 500**	**-**	**-**	**-**	**-**	**4 500**
Direct Sources	-	-	-	12	3 700	-	-	-	-	3 700
Indirect Sources	-	-	-	3	800	-	-	-	-	800
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.20**	**0.00**	**0.06**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**260**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**260**
WASTE	**60**	**270**	**6 700**	**3**	**800**	**-**	**-**	**-**	**-**	**7 600**
a. Solid Waste Disposal (Landfills)	**-**	**200**	**6 000**	**-**	**-**	**-**	**-**	**-**	**-**	**6 000**
b. Biological Treatment of Solid Waste	**-**	**2**	**50**	**0.20**	**60**	**-**	**-**	**-**	**-**	**100**
c. Wastewater Treatment and Discharge	**10**	**10**	**300**	**2**	**700**	**-**	**-**	**-**	**-**	**1 000**
d. Incineration and Open Burning of Waste	**50**	**0.03**	**0.80**	**0.10**	**40**	**-**	**-**	**-**	**-**	**88**
e. Industrial Wood Waste Landfills	**-**	**7**	**200**	**-**	**-**	**-**	**-**	**-**	**-**	**200**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**18 300**	**20 500**	**21 100**	**21 300**	**21 800**	**22 600**	**22 300**	**21 700**
ENERGY	**12 700**	**12 600**	**13 000**	**13 200**	**13 600**	**14 200**	**14 000**	**13 000**
a. Stationary Combustion Sources	**4 910**	**4 500**	**4 070**	**4 090**	**4 310**	**4 280**	**4 320**	**4 180**
Public Electricity and Heat Production	519	357	124	69	70	41	40	41
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	1	0.46	0.00	-	0.00	0.00	-	0.00
Mining	79	96	78	59	97	120	120	128
Manufacturing Industries	1 180	1 450	1 410	1 510	1 500	1 200	1 200	1 180
Construction	63	85	105	122	114	126	123	115
Commercial and Institutional	1 400	1 400	1 310	1 260	1 370	1 530	1 560	1 500
Residential	1 620	1 060	1 010	1 050	1 110	1 220	1 230	1 170
Agriculture and Forestry	43	43	32	26	40	49	50	55
b. Transport[a]	**7 090**	**7 720**	**8 050**	**8 220**	**8 450**	**9 080**	**8 840**	**8 090**
Aviation	472	534	438	433	475	515	511	315
Road Transportation	3 260	4 180	5 250	5 540	5 660	6 020	5 910	5 390
Light-Duty Gasoline Vehicles	1 540	1 210	1 140	1 130	1 080	1 120	1 070	868
Light-Duty Gasoline Trucks	915	1 470	2 080	2 150	2 130	2 340	2 350	2 130
Heavy-Duty Gasoline Vehicles	318	443	487	497	487	520	513	507
Motorcycles	4	4	9	9	9	10	10	8
Light-Duty Diesel Vehicles	8	10	14	15	17	14	13	10
Light-Duty Diesel Trucks	6	15	11	13	15	15	15	13
Heavy-Duty Diesel Vehicles	442	1 020	1 500	1 720	1 930	2 010	1 930	1 850
Propane and Natural Gas Vehicles	31	7	0.07	0.05	0.08	0.08	0.08	0.07
Railways	602	519	616	534	620	634	610	569
Marine	2	2	1	0.13	1	4	3	3
Other Transportation	2 750	2 480	1 750	1 710	1 690	1 910	1 810	1 810
Off-Road Agriculture and Forestry	1 060	1 310	890	908	919	938	911	958
Off-Road Commercial and Institutional	41	81	92	84	88	96	95	101
Off-Road Manufacturing, Mining and Construction	193	229	215	238	297	307	288	301
Off-Road Residential	6	45	51	51	51	57	56	59
Off-Road Other Transportation	604	222	185	182	182	205	192	200
Pipeline Transport	848	594	314	250	157	308	265	192
c. Fugitive Sources	**670**	**410**	**890**	**850**	**810**	**830**	**840**	**700**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	673	414	894	848	812	827	838	696
Oil	220	250	540	513	497	500	504	393
Natural Gas	346	42	49	47	45	46	46	41
Venting	78	92	189	178	171	173	174	164
Flaring	29	31	117	111	99	108	114	97
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**493**	**713**	**924**	**910**	**932**	**1 040**	**1 000**	**990**
a. Mineral Products	**220**	**70**	**58**	**55**	**86**	**80**	**73**	**72**
Cement Production	155	-	-	-	-	-	-	-
Lime Production	61	60	52	50	x	x	x	x
Mineral Products Use	6	10	6	5	x	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**190**	**430**	**450**	**430**	**470**	**460**	**450**
e. Non-Energy Products from Fuels and Solvent Use[b]	**260**	**430**	**420**	**390**	**400**	**470**	**440**	**440**
f. Other Product Manufacture and Use	**11**	**18**	**14**	**17**	**19**	**22**	**22**	**22**
AGRICULTURE	**4 100**	**5 800**	**5 700**	**5 800**	**5 900**	**6 000**	**6 000**	**6 300**
a. Enteric Fermentation	**1 900**	**3 200**	**2 300**	**2 300**	**2 400**	**2 400**	**2 300**	**2 200**
b. Manure Management	**390**	**740**	**670**	**690**	**700**	**700**	**690**	**680**
c. Agricultural Soils	**1 600**	**1 600**	**2 400**	**2 500**	**2 500**	**2 600**	**2 600**	**3 000**
Direct Sources	1 200	1 200	1 900	2 000	2 000	2 100	2 100	2 400
Indirect Sources	300	400	500	500	500	500	500	600
d. Field Burning of Agricultural Residues	**100**	**10**	**20**	**20**	**20**	**20**	**20**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**130**	**190**	**260**	**280**	**310**	**310**	**330**	**460**
WASTE	**990**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**	**1 300**	**1 400**
a. Solid Waste Disposal (Landfills)	**900**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
b. Biological Treatment of Solid Waste	**0.20**	**5**	**9**	**9**	**9**	**10**	**10**	**8**
c. Wastewater Treatment and Discharge	**70**	**80**	**90**	**90**	**90**	**100**	**90**	**90**
d. Incineration and Open Burning of Waste	**0.41**	**0.44**	**0.09**	**0.08**	**0.08**	**0.03**	**0.03**	**0.01**
e. Industrial Wood Waste Landfills	**20**	**20**	**20**	**20**	**20**	**20**	**20**	**10**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–15 **2020 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			25		298			22 800	17 200	
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	**13 000**	**190**	**4 700**	**12**	**3 500**	**450**	**1**	**1**	**-**	**21 700**
ENERGY	**12 100**	**27**	**680**	**0.70**	**200**	**-**	**-**	**-**	**-**	**13 000**
a. Stationary Combustion Sources	**4 100**	**2**	**40**	**0.10**	**40**	**-**	**-**	**-**	**-**	**4 180**
Public Electricity and Heat Production	41	0.00	0.12	0.00	0.20	-	-	-	-	41
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Mining	125	0.00	0.05	0.01	3	-	-	-	-	128
Manufacturing Industries	1 170	0.05	1	0.04	11	-	-	-	-	1 180
Construction	114	0.00	0.05	0.00	0.66	-	-	-	-	115
Commercial and Institutional	1 490	0.03	0.70	0.03	9	-	-	-	-	1 500
Residential	1 110	2	40	0.04	10	-	-	-	-	1 170
Agriculture and Forestry	54	0.00	0.02	0.00	1	-	-	-	-	55
b. Transport[b]	**7 880**	**2**	**37**	**0.55**	**170**	**-**	**-**	**-**	**-**	**8 090**
Aviation	312	0.01	0.20	0.01	3	-	-	-	-	315
Road Transportation	5 300	0.40	10	0.28	83	-	-	-	-	5 390
Light-Duty Gasoline Vehicles	854	0.09	2	0.04	12	-	-	-	-	868
Light-Duty Gasoline Trucks	2 100	0.20	5	0.09	27	-	-	-	-	2 130
Heavy-Duty Gasoline Vehicles	493	0.02	0.50	0.05	13	-	-	-	-	507
Motorcycles	8	0.00	0.08	0.00	0.05	-	-	-	-	8
Light-Duty Diesel Vehicles	10	0.00	0.01	0.00	0.24	-	-	-	-	10
Light-Duty Diesel Trucks	12	0.00	0.01	0.00	0.30	-	-	-	-	13
Heavy-Duty Diesel Vehicles	1 820	0.08	2	0.10	30	-	-	-	-	1 850
Propane and Natural Gas Vehicles	0.07	0.00	0.00	0.00	0.00	-	-	-	-	0.07
Railways	509	0.03	0.70	0.20	60	-	-	-	-	569
Marine	3	0.00	0.01	0.00	0.02	-	-	-	-	3
Other Transportation	1 760	1	26	0.07	20	-	-	-	-	1 810
Off-Road Agriculture and Forestry	946	0.04	1	0.04	10	-	-	-	-	958
Off-Road Commercial and Institutional	96	0.15	4	0.00	0.90	-	-	-	-	101
Off-Road Manufacturing, Mining and Construction	295	0.07	2	0.02	5	-	-	-	-	301
Off-Road Residential	55	0.13	3	0.00	0.50	-	-	-	-	59
Off-Road Other Transportation	187	0.48	12	0.01	2	-	-	-	-	200
Pipeline Transport	186	0.18	5	0.01	1	-	-	-	-	192
c. Fugitive Sources	**91**	**24**	**605**	**0.00**	**0.09**	**-**	**-**	**-**	**-**	**700**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	91	24	605	0.00	0.09	-	-	-	-	696
Oil	0.83	16	392	-	-	-	-	-	-	393
Natural Gas	6	1	36	-	-	-	-	-	-	41
Venting	0.45	7	164	-	-	-	-	-	-	164
Flaring	84	0.53	13	0.00	0.09	-	-	-	-	97
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**464**	**-**	**-**	**0.23**	**69**	**450**	**1**	**1**	**-**	**990**
a. Mineral Products	**72**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**72**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**450**	**0.27**	**-**	**-**	**450**
e. Non-Energy Products from Fuels and Solvent Use[c]	**x**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**440**
f. Other Product Manufacture and Use	**x**	**-**	**-**	**x**	**x**	**-**	**0.90**	**1**	**-**	**22**
AGRICULTURE	**460**	**110**	**2 700**	**11**	**3 200**	**-**	**-**	**-**	**-**	**6 300**
a. Enteric Fermentation	**-**	**89**	**2 200**	**-**	**-**	**-**	**-**	**-**	**-**	**2 200**
b. Manure Management	**-**	**18**	**440**	**0.80**	**200**	**-**	**-**	**-**	**-**	**680**
c. Agricultural Soils	**-**	**-**	**-**	**10**	**3 000**	**-**	**-**	**-**	**-**	**3 000**
Direct Sources	-	-	-	8	2 400	-	-	-	-	2 400
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.70**	**20**	**0.02**	**5**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**460**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**460**
WASTE	**0.01**	**53**	**1 300**	**0.20**	**60**	**-**	**-**	**-**	**-**	**1 400**
a. Solid Waste Disposal (Landfills)	**-**	**50**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
b. Biological Treatment of Solid Waste	**-**	**0.10**	**3**	**0.02**	**5**	**-**	**-**	**-**	**-**	**8**
c. Wastewater Treatment and Discharge	**-**	**1**	**30**	**0.20**	**60**	**-**	**-**	**-**	**-**	**90**
d. Incineration and Open Burning of Waste	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.01**
e. Industrial Wood Waste Landfills	**-**	**0.60**	**10**	**-**	**-**	**-**	**-**	**-**	**-**	**10**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**45 100**	**71 300**	**79 100**	**76 800**	**79 400**	**80 400**	**78 000**	**65 900**
ENERGY	**37 800**	**58 400**	**66 300**	**63 800**	**66 200**	**67 200**	**64 800**	**52 500**
a. Stationary Combustion Sources	**18 300**	**26 600**	**28 400**	**28 200**	**29 000**	**29 400**	**28 300**	**25 100**
Public Electricity and Heat Production	11 100	15 300	16 200	16 200	16 700	16 400	16 000	14 000
Petroleum Refining Industries	627	782	1 230	1 260	1 260	1 160	1 170	1 110
Oil and Gas Extraction	1 400	5 210	5 020	4 740	4 260	3 790	3 540	2 910
Mining	974	1 300	1 970	1 880	2 290	2 890	2 260	2 420
Manufacturing Industries	790	541	875	834	897	1 300	1 260	1 080
Construction	70	43	68	40	46	45	36	34
Commercial and Institutional	985	1 540	1 140	1 390	1 510	1 680	1 750	1 580
Residential	2 080	1 620	1 740	1 700	1 850	2 040	2 130	1 920
Agriculture and Forestry	296	261	175	136	169	170	130	133
b. Transport[a]	**9 350**	**11 800**	**17 100**	**15 900**	**16 700**	**17 400**	**16 900**	**16 100**
Aviation	259	193	234	225	224	235	218	120
Road Transportation	3 780	5 170	9 060	9 110	9 380	9 440	9 240	8 430
Light-Duty Gasoline Vehicles	1 480	1 370	1 400	1 380	1 300	1 220	1 160	882
Light-Duty Gasoline Trucks	1 230	1 720	3 200	3 350	3 380	3 360	3 370	3 010
Heavy-Duty Gasoline Vehicles	628	777	971	1 000	1 000	978	967	935
Motorcycles	2	3	7	8	8	8	7	6
Light-Duty Diesel Vehicles	5	11	26	24	25	24	22	15
Light-Duty Diesel Trucks	8	39	37	36	40	40	40	36
Heavy-Duty Diesel Vehicles	386	1 250	3 420	3 310	3 630	3 810	3 670	3 550
Propane and Natural Gas Vehicles	37	5	0.14	0.27	0.50	0.51	0.53	0.28
Railways	777	698	936	877	1 010	1 090	1 080	1 010
Marine	0.00	-	-	-	-	-	-	-
Other Transportation	4 540	5 760	6 850	5 730	6 070	6 590	6 410	6 550
Off-Road Agriculture and Forestry	2 130	3 240	3 870	3 760	4 130	4 480	4 400	4 780
Off-Road Commercial and Institutional	32	77	128	54	32	32	33	34
Off-Road Manufacturing, Mining and Construction	166	238	438	304	287	310	269	286
Off-Road Residential	4	35	51	59	62	60	60	63
Off-Road Other Transportation	612	243	292	294	301	289	275	286
Pipeline Transport	1 590	1 930	2 060	1 250	1 250	1 410	1 370	1 100
c. Fugitive Sources	**10 000**	**20 000**	**21 000**	**20 000**	**21 000**	**20 000**	**20 000**	**11 000**
Coal Mining	20	20	20	20	20	20	20	10
Oil and Natural Gas	10 100	20 000	20 700	19 600	20 500	20 400	19 500	11 200
Oil	2 590	4 720	5 180	6 110	6 270	6 450	6 440	4 500
Natural Gas	1 920	1 780	1 420	1 360	1 310	1 320	1 260	454
Venting	4 850	11 800	11 500	9 980	10 800	10 600	9 870	4 360
Flaring	703	1 720	2 640	2 200	2 160	2 080	1 940	1 930
d. CO_2 Transport and Storage	**-**	**0.09**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**355**	**891**	**916**	**902**	**835**	**774**	**789**	**814**
a. Mineral Products	**96**	**10**	**8**	**7**	**6**	**6**	**5**	**5**
Cement Production	89	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8	10	8	7	6	6	5	5
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**180**	**410**	**410**	**420**	**460**	**450**	**440**
e. Non-Energy Products from Fuels and Solvent Use[b]	**250**	**690**	**490**	**470**	**400**	**290**	**320**	**350**
f. Other Product Manufacture and Use	**8**	**13**	**12**	**13**	**16**	**17**	**17**	**18**
AGRICULTURE	**6 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**
a. Enteric Fermentation	**3 300**	**6 100**	**4 600**	**4 600**	**4 700**	**4 600**	**4 600**	**4 600**
b. Manure Management	**670**	**1 300**	**990**	**1 000**	**1 000**	**1 000**	**980**	**990**
c. Agricultural Soils	**1 800**	**2 700**	**4 000**	**4 200**	**4 300**	**4 400**	**4 400**	**4 500**
Direct Sources	1 400	2 100	3 100	3 200	3 200	3 300	3 300	3 400
Indirect Sources	400	700	1 000	1 000	1 000	1 000	1 000	1 000
d. Field Burning of Agricultural Residues	**70**	**30**	**40**	**30**	**30**	**30**	**30**	**30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**190**	**450**	**950**	**940**	**1 000**	**1 000**	**1 000**	**1 100**
WASTE	**1 000**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**	**1 400**
a. Solid Waste Disposal (Landfills)	**900**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
b. Biological Treatment of Solid Waste	**0.01**	**2**	**3**	**3**	**4**	**4**	**4**	**4**
c. Wastewater Treatment and Discharge	**70**	**80**	**100**	**90**	**100**	**90**	**100**	**100**
d. Incineration and Open Burning of Waste	**-**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
e. Industrial Wood Waste Landfills	**80**	**80**	**60**	**60**	**60**	**60**	**60**	**50**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–17 **2020 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			25		298			22 800	17 200	
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	**44 100**	**620**	**16 000**	**19**	**5 800**	**440**	**0.64**	**0.46**	**-**	**65 900**
ENERGY	**42 700**	**370**	**9 300**	**2**	**500**	**-**	**-**	**-**	**-**	**52 500**
a. Stationary Combustion Sources	**24 800**	**7**	**200**	**0.60**	**200**	**-**	**-**	**-**	**-**	**25 100**
Public Electricity and Heat Production	13 800	2	36	0.30	100	-	-	-	-	14 000
Petroleum Refining Industries	1 110	0.02	0.60	0.01	4	-	-	-	-	1 110
Oil and Gas Extraction	2 760	5	100	0.07	20	-	-	-	-	2 910
Mining	2 400	0.05	1	0.04	10	-	-	-	-	2 420
Manufacturing Industries	1 070	0.03	0.84	0.03	8	-	-	-	-	1 080
Construction	34	0.00	0.02	0.00	0.23	-	-	-	-	34
Commercial and Institutional	1 570	0.03	0.76	0.03	9	-	-	-	-	1 580
Residential	1 890	0.40	10	0.04	10	-	-	-	-	1 920
Agriculture and Forestry	132	0.00	0.06	0.00	0.80	-	-	-	-	133
b. Transport[b]	**15 700**	**3**	**71**	**1**	**310**	**-**	**-**	**-**	**-**	**16 100**
Aviation	119	0.01	0.20	0.00	1	-	-	-	-	120
Road Transportation	8 290	0.60	10	0.44	130	-	-	-	-	8 430
Light-Duty Gasoline Vehicles	867	0.09	2	0.04	12	-	-	-	-	882
Light-Duty Gasoline Trucks	2 970	0.30	7	0.12	36	-	-	-	-	3 010
Heavy-Duty Gasoline Vehicles	910	0.04	0.90	0.08	24	-	-	-	-	935
Motorcycles	6	0.00	0.06	0.00	0.04	-	-	-	-	6
Light-Duty Diesel Vehicles	15	0.00	0.01	0.00	0.36	-	-	-	-	15
Light-Duty Diesel Trucks	35	0.00	0.02	0.00	0.85	-	-	-	-	36
Heavy-Duty Diesel Vehicles	3 490	0.10	4	0.20	58	-	-	-	-	3 550
Propane and Natural Gas Vehicles	0.28	0.00	0.00	0.00	0.00	-	-	-	-	0.28
Railways	903	0.05	1	0.40	100	-	-	-	-	1 010
Marine	-	-	-	-	-	-	-	-	-	-
Other Transportation	6 420	2	55	0.20	70	-	-	-	-	6 550
Off-Road Agriculture and Forestry	4 720	0.20	5	0.20	50	-	-	-	-	4 780
Off-Road Commercial and Institutional	32	0.06	2	0.00	0.30	-	-	-	-	34
Off-Road Manufacturing, Mining and Construction	280	0.04	0.92	0.02	5	-	-	-	-	286
Off-Road Residential	59	0.13	3	0.00	0.50	-	-	-	-	63
Off-Road Other Transportation	266	0.72	18	0.01	2	-	-	-	-	286
Pipeline Transport	1 060	1	26	0.03	8	-	-	-	-	1 100
c. Fugitive Sources	**2 200**	**361**	**9 020**	**0.21**	**64**	**-**	**-**	**-**	**-**	**11 000**
Coal Mining	-	0.50	10	-	-	-	-	-	-	10
Oil and Natural Gas	2 200	360	9 010	0.20	60	-	-	-	-	11 200
Oil	13	177	4 420	0.20	60	-	-	-	-	4 500
Natural Gas	33	17	421	-	-	-	-	-	-	454
Venting	340	161	4 020	-	-	-	-	-	-	4 360
Flaring	1 780	6	150	0.01	2	-	-	-	-	1 930
d. CO_2 Transport and Storage	**0.20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**342**	**-**	**-**	**0.10**	**29**	**440**	**0.64**	**0.46**	**-**	**814**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**440**	**0.24**	**-**	**-**	**440**
e. Non-Energy Products from Fuels and Solvent Use[c]	**x**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**350**
f. Other Product Manufacture and Use	**x**	**-**	**-**	**x**	**x**	**-**	**0.40**	**0.46**	**-**	**18**
AGRICULTURE	**1 100**	**200**	**4 900**	**17**	**5 200**	**-**	**-**	**-**	**-**	**11 000**
a. Enteric Fermentation	**-**	**180**	**4 600**	**-**	**-**	**-**	**-**	**-**	**-**	**4 600**
b. Manure Management	**-**	**12**	**300**	**2**	**700**	**-**	**-**	**-**	**-**	**990**
c. Agricultural Soils	**-**	**-**	**-**	**15**	**4 500**	**-**	**-**	**-**	**-**	**4 500**
Direct Sources	-	-	-	11	3 400	-	-	-	-	3 400
Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.90**	**20**	**0.02**	**7**	**-**	**-**	**-**	**-**	**30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1 100**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 100**
WASTE	**10**	**55**	**1 400**	**0.10**	**30**	**-**	**-**	**-**	**-**	**1 400**
a. Solid Waste Disposal (Landfills)	**-**	**50**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
b. Biological Treatment of Solid Waste	**-**	**0.06**	**1**	**0.01**	**2**	**-**	**-**	**-**	**-**	**4**
c. Wastewater Treatment and Discharge	**-**	**3**	**70**	**0.10**	**30**	**-**	**-**	**-**	**-**	**100**
d. Incineration and Open Burning of Waste	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.02**
e. Industrial Wood Waste Landfills	**-**	**2**	**50**	**-**	**-**	**-**	**-**	**-**	**-**	**50**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**166 000**	**237 000**	**284 000**	**268 000**	**276 000**	**277 000**	**279 000**	**256 000**
ENERGY	**144 000**	**204 000**	**250 000**	**234 000**	**243 000**	**243 000**	**244 000**	**223 000**
a. Stationary Combustion Sources	**92 800**	**130 000**	**165 000**	**155 000**	**162 000**	**160 000**	**161 000**	**152 000**
Public Electricity and Heat Production	39 800	52 000	51 500	45 900	46 800	36 700	36 400	32 700
Petroleum Refining Industries	2 990	4 000	4 110	4 300	4 270	4 390	4 700	4 290
Oil and Gas Extraction	26 800	51 100	84 100	80 700	84 700	91 500	92 400	88 800
Mining	298	325	160	163	151	165	346	239
Manufacturing Industries	10 500	8 780	10 300	9 700	8 760	8 800	9 300	8 740
Construction	238	170	299	310	346	386	439	450
Commercial and Institutional	5 040	5 620	5 810	6 470	7 800	8 410	8 630	8 120
Residential	6 740	7 480	8 230	7 050	8 590	8 970	8 890	8 690
Agriculture and Forestry	477	238	347	361	393	389	403	362
b. Transport[a]	**21 100**	**32 100**	**40 400**	**39 200**	**41 800**	**43 800**	**44 900**	**40 000**
Aviation	1 140	1 350	1 570	1 490	1 540	1 700	1 670	912
Road Transportation	11 900	19 400	26 400	25 800	27 200	27 900	28 600	24 600
Light-Duty Gasoline Vehicles	4 200	3 680	3 040	3 120	3 090	3 030	3 040	2 310
Light-Duty Gasoline Trucks	3 400	5 140	6 910	7 380	7 610	7 830	8 210	6 790
Heavy-Duty Gasoline Vehicles	1 720	3 200	3 180	3 390	3 490	3 520	3 580	3 230
Motorcycles	13	28	44	47	48	50	52	42
Light-Duty Diesel Vehicles	21	51	90	77	82	80	80	53
Light-Duty Diesel Trucks	16	52	122	119	144	154	161	129
Heavy-Duty Diesel Vehicles	2 180	7 200	13 000	11 600	12 800	13 300	13 500	12 000
Propane and Natural Gas Vehicles	395	97	0.96	1	2	2	2	1
Railways	527	895	1 080	1 060	1 240	1 220	1 200	1 120
Marine	0.01	0.04	0.03	0.02	0.29	-	0.01	0.01
Other Transportation	7 460	10 400	11 300	10 900	11 800	12 900	13 400	13 400
Off-Road Agriculture and Forestry	2 520	3 430	2 870	2 490	2 710	2 950	3 070	3 150
Off-Road Commercial and Institutional	165	295	363	237	204	213	220	216
Off-Road Manufacturing, Mining and Construction	1 520	2 610	4 710	4 010	4 390	4 770	4 920	5 020
Off-Road Residential	20	128	119	128	136	142	147	145
Off-Road Other Transportation	1 940	751	607	609	636	658	651	639
Pipeline Transport	1 300	3 190	2 680	3 400	3 690	4 190	4 410	4 240
c. Fugitive Sources	**31 000**	**43 000**	**44 000**	**40 000**	**39 000**	**39 000**	**38 000**	**31 000**
Coal Mining	400	300	300	300	200	200	200	100
Oil and Natural Gas	30 200	42 300	44 100	39 600	38 800	38 900	37 800	30 500
Oil	4 660	6 590	7 680	7 240	7 310	7 400	7 390	6 660
Natural Gas	6 590	10 900	9 290	8 750	8 290	8 300	7 920	6 730
Venting	15 300	22 800	24 200	21 400	20 700	20 500	19 800	13 800
Flaring	3 640	2 030	2 900	2 260	2 500	2 690	2 740	3 300
d. CO_2 Transport and Storage	**-**	**-**	**0.04**	**0.10**	**0.10**	**0.10**	**0.10**	**0.30**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 750**	**11 500**	**13 300**	**12 900**	**12 500**	**13 000**	**13 300**	**12 100**
a. Mineral Products	**1 100**	**1 500**	**1 200**	**1 400**	**1 400**	**1 500**	**1 500**	**1 300**
Cement Production	795	1 090	928	1 100	x	x	x	x
Lime Production	109	126	110	105	x	x	x	x
Mineral Products Use	190	250	170	160	150	150	150	150
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**1**	**0.67**	**0.61**	**-**	**-**	**-**
Iron and Steel Production	-	-	1	0.67	0.61	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**0.27**	**710**	**1 600**	**1 600**	**1 600**	**1 800**	**1 800**	**1 700**
e. Non-Energy Products from Fuels and Solvent Use[b]	**5 600**	**9 300**	**10 000**	**9 800**	**9 400**	**9 600**	**9 900**	**9 000**
f. Other Product Manufacture and Use	**17**	**40**	**44**	**49**	**58**	**65**	**68**	**67**
AGRICULTURE	**12 000**	**17 000**	**16 000**	**16 000**	**16 000**	**16 000**	**16 000**	**16 000**
a. Enteric Fermentation	**7 800**	**12 000**	**9 400**	**9 500**	**9 400**	**9 300**	**9 200**	**8 900**
b. Manure Management	**1 500**	**2 300**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**	**1 800**
c. Agricultural Soils	**2 500**	**2 900**	**4 200**	**4 100**	**3 600**	**3 900**	**4 100**	**4 400**
Direct Sources	2 000	2 200	3 300	3 200	2 800	3 000	3 200	3 500
Indirect Sources	600	700	900	900	800	900	900	900
d. Field Burning of Agricultural Residues	**4**	**0.70**	**1**	**0.80**	**0.80**	**0.80**	**1**	**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**260**	**370**	**870**	**730**	**610**	**720**	**760**	**880**
WASTE	**2 400**	**3 700**	**5 100**	**5 000**	**5 100**	**5 200**	**5 200**	**5 300**
a. Solid Waste Disposal (Landfills)	**2 000**	**3 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**
b. Biological Treatment of Solid Waste	**4**	**20**	**30**	**30**	**40**	**30**	**20**	**20**
c. Wastewater Treatment and Discharge	**200**	**200**	**700**	**500**	**500**	**500**	**400**	**400**
d. Incineration and Open Burning of Waste	**7**	**21**	**33**	**40**	**37**	**32**	**38**	**38**
e. Industrial Wood Waste Landfills	**400**	**500**	**400**	**400**	**400**	**300**	**300**	**300**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–19 **2020 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			25		298			22 800	17 200	
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	**211 000**	**1 500**	**36 000**	**26**	**7 700**	**1 700**	**4**	**6**	**-**	**256 000**
ENERGY	**200 000**	**860**	**22 000**	**5**	**2 000**	**-**	**-**	**-**	**-**	**223 000**
a. Stationary Combustion Sources	**150 000**	**80**	**2 000**	**3**	**900**	**-**	**-**	**-**	**-**	**152 000**
Public Electricity and Heat Production	32 400	3	81	0.70	200	-	-	-	-	32 700
Petroleum Refining Industries	4 280	0.09	2	0.02	6	-	-	-	-	4 290
Oil and Gas Extraction	86 500	70	2 000	2	500	-	-	-	-	88 800
Mining	238	0.00	0.10	0.00	1	-	-	-	-	239
Manufacturing Industries	8 640	0.42	11	0.28	85	-	-	-	-	8 740
Construction	445	0.01	0.20	0.02	5	-	-	-	-	450
Commercial and Institutional	8 070	0.15	4	0.20	50	-	-	-	-	8 120
Residential	8 600	1	40	0.20	50	-	-	-	-	8 690
Agriculture and Forestry	359	0.01	0.20	0.01	3	-	-	-	-	362
b. Transport[b]	**39 100**	**8**	**210**	**2**	**700**	**-**	**-**	**-**	**-**	**40 000**
Aviation	904	0.02	0.50	0.03	8	-	-	-	-	912
Road Transportation	24 200	1	40	1	390	-	-	-	-	24 600
Light-Duty Gasoline Vehicles	2 280	0.20	6	0.10	29	-	-	-	-	2 310
Light-Duty Gasoline Trucks	6 700	0.60	20	0.25	75	-	-	-	-	6 790
Heavy-Duty Gasoline Vehicles	3 150	0.10	3	0.28	83	-	-	-	-	3 230
Motorcycles	41	0.02	0.40	0.00	0.23	-	-	-	-	42
Light-Duty Diesel Vehicles	52	0.00	0.03	0.00	1	-	-	-	-	53
Light-Duty Diesel Trucks	126	0.00	0.08	0.01	3	-	-	-	-	129
Heavy-Duty Diesel Vehicles	11 800	0.50	10	0.67	200	-	-	-	-	12 000
Propane and Natural Gas Vehicles	1	0.00	0.01	0.00	0.01	-	-	-	-	1
Railways	1 000	0.06	1	0.40	100	-	-	-	-	1 120
Marine	0.01	0.00	0.00	0.00	0.00	-	-	-	-	0.01
Other Transportation	13 100	7	170	0.60	200	-	-	-	-	13 400
Off-Road Agriculture and Forestry	3 110	0.14	4	0.10	40	-	-	-	-	3 150
Off-Road Commercial and Institutional	201	0.50	13	0.01	2	-	-	-	-	216
Off-Road Manufacturing, Mining and Construction	4 900	0.28	7	0.40	100	-	-	-	-	5 020
Off-Road Residential	137	0.28	7	0.00	1	-	-	-	-	145
Off-Road Other Transportation	596	2	38	0.02	5	-	-	-	-	639
Pipeline Transport	4 110	4	99	0.10	30	-	-	-	-	4 240
c. Fugitive Sources	**11 000**	**780**	**19 500**	**0.06**	**17**	**-**	**-**	**-**	**-**	**31 000**
Coal Mining	-	5	100	-	-	-	-	-	-	100
Oil and Natural Gas	11 000	775	19 400	0.06	20	-	-	-	-	30 500
Oil	570	243	6 070	0.04	10	-	-	-	-	6 660
Natural Gas	6	269	6 730	-	-	-	-	-	-	6 730
Venting	7 600	250	6 260	-	-	-	-	-	-	13 800
Flaring	2 980	13	314	0.02	5	-	-	-	-	3 300
d. CO_2 Transport and Storage	**0.30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.30**
INDUSTRIAL PROCESSES AND PRODUCT USE	**10 100**	**4**	**100**	**0.59**	**176**	**1 700**	**4**	**6**	**-**	**12 100**
a. Mineral Products	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 700**	**2**	**3**	**-**	**1 700**
e. Non-Energy Products from Fuels and Solvent Use[c]	**8 800**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9 000**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.21**	**62**	**-**	**2**	**3**	**-**	**67**
AGRICULTURE	**880**	**380**	**9 500**	**19**	**5 600**	**-**	**-**	**-**	**-**	**16 000**
a. Enteric Fermentation	**-**	**360**	**8 900**	**-**	**-**	**-**	**-**	**-**	**-**	**8 900**
b. Manure Management	**-**	**26**	**640**	**4**	**1 000**	**-**	**-**	**-**	**-**	**1 800**
c. Agricultural Soils	**-**	**-**	**-**	**15**	**4 400**	**-**	**-**	**-**	**-**	**4 400**
Direct Sources	-	-	-	12	3 500	-	-	-	-	3 500
Indirect Sources	-	-	-	3	900	-	-	-	-	900
d. Field Burning of Agricultural Residues	**-**	**0.03**	**0.80**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**880**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**880**
WASTE	**40**	**200**	**5 000**	**0.70**	**200**	**-**	**-**	**-**	**-**	**5 300**
a. Solid Waste Disposal (Landfills)	**-**	**200**	**4 000**	**-**	**-**	**-**	**-**	**-**	**-**	**4 000**
b. Biological Treatment of Solid Waste	**-**	**0.60**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**-**	**8**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**400**
d. Incineration and Open Burning of Waste	**27**	**0.00**	**0.01**	**0.04**	**10**	**-**	**-**	**-**	**-**	**38**
e. Industrial Wood Waste Landfills	**-**	**10**	**300**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**51 700**	**63 600**	**60 000**	**62 400**	**63 400**	**65 800**	**65 000**	**61 700**
ENERGY	**42 400**	**51 700**	**50 600**	**52 600**	**54 000**	**55 900**	**55 400**	**52 300**
a. Stationary Combustion Sources	**19 300**	**21 200**	**19 400**	**21 000**	**21 600**	**21 600**	**21 100**	**20 400**
Public Electricity and Heat Production	804	1 320	506	682	581	710	941	427
Petroleum Refining Industries	1 240	493	530	630	501	376	472	382
Oil and Gas Extraction	2 140	5 100	6 790	7 210	7 380	7 450	6 660	6 910
Mining	616	384	468	501	483	531	666	637
Manufacturing Industries	6 490	6 120	4 430	4 690	4 890	4 970	4 520	4 040
Construction	307	112	71	96	96	106	101	101
Commercial and Institutional	2 950	3 140	2 430	2 720	2 870	2 780	2 930	3 010
Residential	4 470	4 460	3 760	3 880	4 280	4 040	4 210	4 290
Agriculture and Forestry	323	75	415	567	568	614	587	593
b. Transport[a]	**18 700**	**24 000**	**25 600**	**26 800**	**27 600**	**29 400**	**29 400**	**27 300**
Aviation	1 340	1 550	1 320	1 350	1 460	1 600	1 600	917
Road Transportation	9 600	15 500	16 800	18 000	18 200	19 200	19 000	17 500
Light-Duty Gasoline Vehicles	3 900	4 450	3 800	4 110	4 030	3 970	3 780	3 140
Light-Duty Gasoline Trucks	2 110	3 910	4 680	5 260	5 370	5 540	5 600	5 160
Heavy-Duty Gasoline Vehicles	950	1 860	1 740	1 960	1 990	2 050	1 970	1 960
Motorcycles	15	21	27	30	30	30	29	25
Light-Duty Diesel Vehicles	44	93	131	128	127	131	130	93
Light-Duty Diesel Trucks	17	45	107	119	135	157	166	149
Heavy-Duty Diesel Vehicles	1 940	4 890	6 300	6 350	6 520	7 270	7 320	6 970
Propane and Natural Gas Vehicles	624	214	6	6	7	7	7	3
Railways	1 900	1 490	1 810	1 710	1 930	2 100	2 250	2 090
Marine	576	809	1 190	1 260	1 200	1 240	1 400	1 410
Other Transportation	5 240	4 690	4 510	4 480	4 820	5 320	5 190	5 320
Off-Road Agriculture and Forestry	707	873	656	576	660	792	778	839
Off-Road Commercial and Institutional	243	330	359	301	284	317	313	328
Off-Road Manufacturing, Mining and Construction	1 350	1 460	1 410	1 440	1 650	2 040	1 960	2 030
Off-Road Residential	35	183	169	145	140	147	141	151
Off-Road Other Transportation	2 050	867	608	634	647	682	622	663
Pipeline Transport	862	984	1 310	1 390	1 430	1 340	1 380	1 310
c. Fugitive Sources	**4 400**	**6 400**	**5 600**	**4 900**	**4 700**	**4 900**	**4 900**	**4 700**
Coal Mining	800	1 000	900	1 000	900	1 000	1 000	900
Oil and Natural Gas	3 530	5 490	4 730	3 940	3 800	3 930	3 860	3 780
Oil	132	197	132	119	114	108	90	68
Natural Gas	1 070	1 450	914	793	736	740	736	490
Venting	1 980	3 160	3 090	2 520	2 380	2 510	2 510	2 680
Flaring	358	691	594	510	566	569	525	542
d. CO_2 Transport and Storage	-	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES AND PRODUCT USE	**3 320**	**4 640**	**3 660**	**4 050**	**3 790**	**4 070**	**3 880**	**3 690**
a. Mineral Products	**880**	**1 500**	**1 200**	**1 100**	**970**	**1 100**	**1 000**	**900**
Cement Production	656	1 260	1 010	964	x	x	x	x
Lime Production	170	189	165	108	x	x	x	x
Mineral Products Use	53	51	23	22	20	19	18	16
b. Chemical Industry[b]	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**1 670**	**1 220**	**477**	**867**	**793**	**771**	**754**	**725**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	1 670	1 220	476	867	793	771	754	725
SF_6 Used in Magnesium Smelters and Casters	-	1	0.65	0.84	0.01	0.01	0.01	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**0.12**	**620**	**1 400**	**1 500**	**1 500**	**1 600**	**1 600**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use[b]	**690**	**1 200**	**490**	**560**	**490**	**570**	**460**	**420**
f. Other Product Manufacture and Use	**77**	**97**	**66**	**68**	**84**	**83**	**86**	**89**
AGRICULTURE	**1 900**	**2 500**	**2 000**	**2 100**	**2 100**	**2 200**	**2 200**	**2 200**
a. Enteric Fermentation	**1 400**	**1 800**	**1 400**	**1 400**	**1 400**	**1 500**	**1 500**	**1 500**
b. Manure Management	**310**	**440**	**400**	**410**	**410**	**420**	**420**	**430**
c. Agricultural Soils	**220**	**220**	**230**	**240**	**240**	**270**	**260**	**300**
Direct Sources	130	130	150	150	150	170	170	190
Indirect Sources	80	90	90	90	90	100	100	100
d. Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**25**	**24**	**23**	**26**	**28**	**33**	**33**	**43**
WASTE	**4 100**	**4 800**	**3 800**	**3 600**	**3 600**	**3 600**	**3 600**	**3 500**
a. Solid Waste Disposal (Landfills)	**2 000**	**3 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**
b. Biological Treatment of Solid Waste	**1**	**40**	**50**	**50**	**60**	**70**	**80**	**80**
c. Wastewater Treatment and Discharge	**200**	**200**	**300**	**300**	**300**	**300**	**300**	**300**
d. Incineration and Open Burning of Waste	**5**	-	-	-	-	-	-	-
e. Industrial Wood Waste Landfills	**2 000**	**2 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–21 **2020 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			25		298			22 800	17 200	
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	**49 700**	**340**	**8 500**	**6**	**1 800**	**1 600**	**160**	**18**	**-**	**61 700**
ENERGY	**47 800**	**140**	**3 600**	**3**	**900**	**-**	**-**	**-**	**-**	**52 300**
a. Stationary Combustion Sources	**19 700**	**20**	**500**	**0.80**	**200**	**-**	**-**	**-**	**-**	**20 400**
Public Electricity and Heat Production	414	0.12	3	0.03	10	-	-	-	-	427
Petroleum Refining Industries	381	0.01	0.20	0.00	0.70	-	-	-	-	382
Oil and Gas Extraction	6 500	10	400	0.20	50	-	-	-	-	6 910
Mining	633	0.01	0.30	0.01	4	-	-	-	-	637
Manufacturing Industries	3 920	0.63	16	0.33	100	-	-	-	-	4 040
Construction	100	0.00	0.05	0.00	0.59	-	-	-	-	101
Commercial and Institutional	2 980	0.06	1	0.07	20	-	-	-	-	3 010
Residential	4 150	4	100	0.10	40	-	-	-	-	4 290
Agriculture and Forestry	589	0.01	0.30	0.01	3	-	-	-	-	593
b. Transport[b]	**26 400**	**5**	**130**	**2**	**710**	**-**	**-**	**-**	**-**	**27 300**
Aviation	908	0.04	0.90	0.03	8	-	-	-	-	917
Road Transportation	17 100	1	30	1	400	-	-	-	-	17 500
Light-Duty Gasoline Vehicles	3 060	0.20	6	0.25	74	-	-	-	-	3 140
Light-Duty Gasoline Trucks	5 000	0.40	10	0.53	160	-	-	-	-	5 160
Heavy-Duty Gasoline Vehicles	1 910	0.08	2	0.16	48	-	-	-	-	1 960
Motorcycles	25	0.01	0.20	0.00	0.14	-	-	-	-	25
Light-Duty Diesel Vehicles	91	0.00	0.05	0.01	2	-	-	-	-	93
Light-Duty Diesel Trucks	145	0.00	0.10	0.01	4	-	-	-	-	149
Heavy-Duty Diesel Vehicles	6 850	0.30	7	0.39	120	-	-	-	-	6 970
Propane and Natural Gas Vehicles	3	0.00	0.03	0.00	0.02	-	-	-	-	3
Railways	1 870	0.10	3	0.70	200	-	-	-	-	2 090
Marine	1 390	0.14	3	0.04	10	-	-	-	-	1 410
Other Transportation	5 160	4	93	0.20	70	-	-	-	-	5 320
Off-Road Agriculture and Forestry	822	0.06	1	0.05	20	-	-	-	-	839
Off-Road Commercial and Institutional	313	0.48	12	0.01	3	-	-	-	-	328
Off-Road Manufacturing, Mining and Construction	1 990	0.27	7	0.10	30	-	-	-	-	2 030
Off-Road Residential	142	0.31	8	0.00	1	-	-	-	-	151
Off-Road Other Transportation	623	1	34	0.02	6	-	-	-	-	663
Pipeline Transport	1 270	1	30	0.03	10	-	-	-	-	1 310
c. Fugitive Sources	**1 700**	**119**	**2 980**	**0.00**	**1**	**-**	**-**	**-**	**-**	**4 700**
Coal Mining	-	40	900	-	-	-	-	-	-	900
Oil and Natural Gas	1 700	82	2 060	0.00	1	-	-	-	-	3 780
Oil	0.12	3	67	0.00	1	-	-	-	-	68
Natural Gas	0.67	20	490	-	-	-	-	-	-	490
Venting	1 200	57	1 430	-	-	-	-	-	-	2 680
Flaring	474	3	68	0.00	0.30	-	-	-	-	542
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**1 890**	**-**	**-**	**0.24**	**73**	**1 600**	**159**	**18**	**-**	**3 690**
a. Mineral Products	**900**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**900**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	16	-	-	-	-	-	-	-	-	16
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**571**	**-**	**-**	**-**	**-**	**-**	**154**	**0.01**	**-**	**725**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	571	-	-	-	-	-	154	-	-	725
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0.01	-	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 600**	**2**	**4**	**-**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use[c]	**420**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**420**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.24**	**73**	**-**	**2**	**14**	**-**	**89**
AGRICULTURE	**43**	**67**	**1 700**	**2**	**540**	**-**	**-**	**-**	**-**	**2 200**
a. Enteric Fermentation	**-**	**59**	**1 500**	**-**	**-**	**-**	**-**	**-**	**-**	**1 500**
b. Manure Management	**-**	**8**	**190**	**0.80**	**200**	**-**	**-**	**-**	**-**	**430**
c. Agricultural Soils	**-**	**-**	**-**	**1**	**300**	**-**	**-**	**-**	**-**	**300**
Direct Sources	-	-	-	0.63	190	-	-	-	-	190
Indirect Sources	-	-	-	0.40	100	-	-	-	-	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**43**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**43**
WASTE	**-**	**130**	**3 300**	**0.70**	**200**	**-**	**-**	**-**	**-**	**3 500**
a. Solid Waste Disposal (Landfills)	**-**	**80**	**2 000**	**-**	**-**	**-**	**-**	**-**	**-**	**2 000**
b. Biological Treatment of Solid Waste	**-**	**2**	**40**	**0.10**	**40**	**-**	**-**	**-**	**-**	**80**
c. Wastewater Treatment and Discharge	**-**	**4**	**100**	**0.60**	**200**	**-**	**-**	**-**	**-**	**300**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**50**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**552**	**569**	**530**	**528**	**564**	**645**	**692**	**601**
ENERGY	**527**	**529**	**483**	**480**	**513**	**590**	**635**	**542**
a. Stationary Combustion Sources	**218**	**193**	**68**	**66**	**68**	**86**	**107**	**105**
Public Electricity and Heat Production	90	22	18	19	24	33	48	54
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.31	67	-	-	-	-	-	-
Mining	8	8	4	4	x	x	14	8
Manufacturing Industries	6	-	14	15	16	16	17	16
Construction	4	2	0.62	1.00	x	x	1	1
Commercial and Institutional	77	41	25	22	17	23	19	19
Residential	31	45	5	5	6	6	7	8
Agriculture and Forestry	1	8	-	-	-	0.83	-	-
b. Transport[a]	**309**	**326**	**416**	**414**	**446**	**504**	**528**	**436**
Aviation	35	36	42	43	48	54	54	27
Road Transportation	220	256	343	346	375	422	443	360
Light-Duty Gasoline Vehicles	73	36	31	35	34	38	43	34
Light-Duty Gasoline Trucks	32	80	81	91	92	103	120	105
Heavy-Duty Gasoline Vehicles	15	25	37	43	45	54	58	48
Motorcycles	0.26	0.24	0.41	0.42	0.38	0.40	0.43	0.54
Light-Duty Diesel Vehicles	2	0.92	1	0.99	1	1	1	0.95
Light-Duty Diesel Trucks	0.28	7	6	5	6	6	6	6
Heavy-Duty Diesel Vehicles	96	107	186	171	196	220	214	165
Propane and Natural Gas Vehicles	1	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	2	4	4	2	0.58	0.46	3	5
Other Transportation	52	31	26	23	23	28	28	45
Off-Road Agriculture and Forestry	0.48	0.31	0.25	1	0.28	0.34	0.32	0.63
Off-Road Commercial and Institutional	3	3	3	1	0.67	0.84	0.96	1
Off-Road Manufacturing, Mining and Construction	28	18	15	13	13	16	15	28
Off-Road Residential	0.69	x	x	x	x	x	2	3
Off-Road Other Transportation	20	8	7	7	7	9	9	12
Pipeline Transport	-	x	x	x	x	x	-	-
c. Fugitive Sources	**0.02**	**10**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.02	10	0.03	0.03	0.03	0.03	0.03	0.03
Oil	-	-	-	-	-	-	-	-
Natural Gas	0.02	2	0.03	0.03	0.03	0.03	0.03	0.03
Venting	-	6	-	-	-	-	-	-
Flaring	-	1	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**8**	**16**	**17**	**18**	**21**	**22**	**22**
a. Mineral Products	**0.11**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.11	-	-	-	-	-	-	-
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**7**	**15**	**16**	**17**	**19**	**19**	**19**
e. Non-Energy Products from Fuels and Solvent Use[b]	**2**	**0.57**	**0.66**	**0.49**	**0.52**	**0.72**	**1**	**2**
f. Other Product Manufacture and Use	**0.17**	**0.37**	**0.36**	**0.53**	**1**	**1**	**2**	**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	**23**	**32**	**31**	**32**	**33**	**34**	**35**	**37**
a. Solid Waste Disposal (Landfills)	**20**	**30**	**20**	**30**	**30**	**30**	**30**	**30**
b. Biological Treatment of Solid Waste	**0.01**	**0.10**	**0.30**	**0.30**	**0.20**	**0.40**	**0.40**	**0.40**
c. Wastewater Treatment and Discharge	**4**	**5**	**6**	**6**	**6**	**6**	**7**	**7**
d. Incineration and Open Burning of Waste	**-**	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–23 **2020 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			25		298			22 800	17 200	
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	**535**	**2**	**37**	**0.03**	**9**	**19**	**0.02**	**0.91**	**-**	**601**
ENERGY	**533**	**0.07**	**2**	**0.02**	**7**	**-**	**-**	**-**	**-**	**542**
a. Stationary Combustion Sources	**104**	**0.01**	**0.20**	**0.00**	**0.80**	**-**	**-**	**-**	**-**	**105**
Public Electricity and Heat Production	53	0.01	0.16	0.00	0.20	-	-	-	-	54
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	8	0.00	0.00	0.00	0.10	-	-	-	-	8
Manufacturing Industries	16	0.00	0.00	0.00	0.05	-	-	-	-	16
Construction	1	0.00	0.00	0.00	0.02	-	-	-	-	1
Commercial and Institutional	19	0.00	0.01	0.00	0.30	-	-	-	-	19
Residential	8	0.00	0.07	0.00	0.10	-	-	-	-	8
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**429**	**0.06**	**1**	**0.02**	**6**	**-**	**-**	**-**	**-**	**436**
Aviation	26	0.00	0.03	0.00	0.20	-	-	-	-	27
Road Transportation	354	0.02	0.50	0.02	5	-	-	-	-	360
Light-Duty Gasoline Vehicles	33	0.00	0.06	0.00	0.32	-	-	-	-	34
Light-Duty Gasoline Trucks	104	0.01	0.20	0.00	0.98	-	-	-	-	105
Heavy-Duty Gasoline Vehicles	47	0.00	0.04	0.00	1	-	-	-	-	48
Motorcycles	0.54	0.00	0.01	0.00	0.00	-	-	-	-	0.54
Light-Duty Diesel Vehicles	0.92	0.00	0.00	0.00	0.02	-	-	-	-	0.95
Light-Duty Diesel Trucks	6	0.00	0.00	0.00	0.15	-	-	-	-	6
Heavy-Duty Diesel Vehicles	162	0.01	0.20	0.01	3	-	-	-	-	165
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	5	0.00	0.01	0.00	0.04	-	-	-	-	5
Other Transportation	43	0.03	0.86	0.00	0.60	-	-	-	-	45
Off-Road Agriculture and Forestry	0.62	0.00	0.00	0.00	0.01	-	-	-	-	0.63
Off-Road Commercial and Institutional	1	0.00	0.04	0.00	0.01	-	-	-	-	1
Off-Road Manufacturing, Mining and Construction	27	0.00	0.07	0.00	0.40	-	-	-	-	28
Off-Road Residential	3	0.01	0.13	0.00	0.02	-	-	-	-	3
Off-Road Other Transportation	12	0.03	0.62	0.00	0.10	-	-	-	-	12
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**-**	**-**	**0.03**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.00	0.03	-	-	-	-	-	-	0.03
Oil	-	-	-	-	-	-	-	-	-	-
Natural Gas	-	0.00	0.03	-	-	-	-	-	-	0.03
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.00**	**0.59**	**19**	**0.02**	**0.91**	**-**	**22**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	-	-	-	-	-
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**19**	**0.02**	**-**	**-**	**19**
e. Non-Energy Products from Fuels and Solvent Use[c]	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.59**	**-**	**-**	**0.91**	**-**	**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**	**36**	**0.00**	**0.90**	**-**	**-**	**-**	**-**	**37**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.20**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.40**
c. Wastewater Treatment and Discharge	**-**	**0.20**	**6**	**0.00**	**0.70**	**-**	**-**	**-**	**-**	**7**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1999	2005	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**1 260**	**1 730**	**1 570**	**1 500**	**1 580**	**1 600**	**1 580**	**1 400**
ENERGY	**1 210**	**1 670**	**1 510**	**1 430**	**1 510**	**1 530**	**1 510**	**1 330**
a. Stationary Combustion Sources	**598**	**720**	**614**	**565**	**548**	**568**	**582**	**549**
Public Electricity and Heat Production	88	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	128	214	1	5	13	11	41	43
Mining	104	164	205	220	198	215	192	153
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	0.83	x	x	x	x	x	x	x
Commercial and Institutional	192	141	193	204	226	217	232	241
Residential	85	102	95	66	48	57	57	50
Agriculture and Forestry	0.02	2	-	-	-	-	-	-
b. Transport[a]	**602**	**928**	**879**	**851**	**960**	**961**	**916**	**771**
Aviation	131	182	144	132	136	153	147	103
Road Transportation	277	554	555	579	672	688	658	493
Light-Duty Gasoline Vehicles	41	20	14	16	15	14	15	11
Light-Duty Gasoline Trucks	26	69	69	77	78	72	80	68
Heavy-Duty Gasoline Vehicles	16	15	20	24	25	24	25	22
Motorcycles	0.16	0.20	0.29	0.30	0.28	0.24	0.23	0.22
Light-Duty Diesel Vehicles	3	2	2	2	3	3	3	2
Light-Duty Diesel Trucks	0.74	20	13	13	16	16	16	13
Heavy-Duty Diesel Vehicles	191	428	437	448	536	559	519	376
Propane and Natural Gas Vehicles	0.80	-	-	-	-	-	-	-
Railways	2	4	0.67	0.52	0.57	0.41	0.26	0.24
Marine	22	32	9	7	6	4	10	14
Other Transportation	170	156	170	132	145	116	101	162
Off-Road Agriculture and Forestry	0.65	0.64	0.51	0.47	0.71	0.56	0.50	0.83
Off-Road Commercial and Institutional	11	11	10	2	0.85	0.73	0.72	1
Off-Road Manufacturing, Mining and Construction	130	127	143	114	125	99	85	138
Off-Road Residential	2	3	x	3	3	2	2	3
Off-Road Other Transportation	21	12	13	13	16	13	12	18
Pipeline Transport	4	3	0.77	0.27	0.27	0.27	0.27	0.54
c. Fugitive Sources	**15**	**18**	**15**	**16**	**5**	**6**	**14**	**11**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	15	18	15	16	5	6	14	11
Oil	4	4	2	2	0.27	0.54	2	1
Natural Gas	5	5	4	5	3	4	5	5
Venting	1	2	0.74	0.69	0.03	0.13	0.57	0.41
Flaring	4	7	8	8	0.83	1	7	5
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**10**	**21**	**27**	**27**	**26**	**28**	**29**	**29**
a. Mineral Products	**0.01**	**0.15**	**0.04**	**0.04**	**0.02**	**0.02**	**0.02**	**0.02**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.15	0.04	0.04	0.02	0.02	0.02	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**5**	**12**	**21**	**21**	**22**	**25**	**26**	**26**
e. Non-Energy Products from Fuels and Solvent Use[b]	**4**	**8**	**6**	**5**	**3**	**2**	**3**	**2**
f. Other Product Manufacture and Use	**0.52**	**0.51**	**0.42**	**0.48**	**0.59**	**0.62**	**0.62**	**0.70**
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	**38**	**39**	**36**	**37**	**38**	**39**	**40**	**41**
a. Solid Waste Disposal (Landfills)	**30**	**40**	**30**	**30**	**30**	**40**	**40**	**40**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.03**	**0.04**	**0.06**	**0.06**	**0.09**	**0.07**
c. Wastewater Treatment and Discharge	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
d. Incineration and Open Burning of Waste	**0.19**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–25 **2020 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			25		298			22 800	17 200	
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	**1 310**	**2**	**52**	**0.05**	**16**	**26**	**0.02**	**0.05**	**-**	**1 400**
ENERGY	**1 300**	**0.48**	**12**	**0.05**	**10**	**-**	**-**	**-**	**-**	**1 330**
a. Stationary Combustion Sources	**542**	**0.20**	**4**	**0.01**	**3**	**-**	**-**	**-**	**-**	**549**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	40	0.10	3	0.00	0.30	-	-	-	-	43
Mining	153	0.00	0.10	0.00	0.80	-	-	-	-	153
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	240	0.00	0.10	0.01	2	-	-	-	-	241
Residential	48	0.05	1	0.00	0.50	-	-	-	-	50
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**758**	**0.06**	**2**	**0.04**	**11**	**-**	**-**	**-**	**-**	**771**
Aviation	102	0.01	0.30	0.00	1	-	-	-	-	103
Road Transportation	484	0.02	0.60	0.03	8	-	-	-	-	493
Light-Duty Gasoline Vehicles	11	0.00	0.02	0.00	0.10	-	-	-	-	11
Light-Duty Gasoline Trucks	68	0.01	0.10	0.00	0.63	-	-	-	-	68
Heavy-Duty Gasoline Vehicles	21	0.00	0.02	0.00	0.54	-	-	-	-	22
Motorcycles	0.22	0.00	0.00	0.00	0.00	-	-	-	-	0.22
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.05	-	-	-	-	2
Light-Duty Diesel Trucks	13	0.00	0.01	0.00	0.32	-	-	-	-	13
Heavy-Duty Diesel Vehicles	369	0.02	0.40	0.02	6	-	-	-	-	376
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	0.22	0.00	0.00	0.00	0.02	-	-	-	-	0.24
Marine	13	0.00	0.03	0.00	0.10	-	-	-	-	14
Other Transportation	159	0.03	0.68	0.01	2	-	-	-	-	162
Off-Road Agriculture and Forestry	0.81	0.00	0.00	0.00	0.02	-	-	-	-	0.83
Off-Road Commercial and Institutional	0.98	0.00	0.02	0.00	0.01	-	-	-	-	1
Off-Road Manufacturing, Mining and Construction	136	0.01	0.13	0.01	2	-	-	-	-	138
Off-Road Residential	3	0.00	0.08	0.00	0.03	-	-	-	-	3
Off-Road Other Transportation	17	0.02	0.44	0.00	0.20	-	-	-	-	18
Pipeline Transport	0.54	0.00	0.00	0.00	0.00	-	-	-	-	0.54
c. Fugitive Sources	**5**	**0.26**	**6**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**11**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	5	0.26	6	0.00	0.00	-	-	-	-	11
Oil	0.00	0.05	1	-	-	-	-	-	-	1
Natural Gas	0.00	0.18	5	-	-	-	-	-	-	5
Venting	0.00	0.02	0.41	-	-	-	-	-	-	0.41
Flaring	5	0.01	0.21	0.00	0.00	-	-	-	-	5
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.00**	**0.64**	**26**	**0.02**	**0.05**	**-**	**29**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
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]	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.64**	**-**	**-**	**0.05**	**-**	**0.70**
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	**0.00**	**2**	**40**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**41**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.03**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**0.07**
c. Wastewater Treatment and Discharge	**-**	**0.10**	**3**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**3**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	2015	2016	2017	2018	2019	2020
	kt CO_2 eq							
TOTAL	**415**	**584**	**647**	**742**	**747**	**742**	**728**	**603**
ENERGY	**388**	**551**	**606**	**699**	**702**	**692**	**676**	**549**
a. Stationary Combustion Sources	**104**	**128**	**113**	**135**	**137**	**164**	**162**	**149**
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[a]	**284**	**424**	**493**	**564**	**565**	**529**	**515**	**400**
Aviation	112	141	143	129	147	171	169	137
Road Transportation	19	94	170	236	243	207	191	113
Light-Duty Gasoline Vehicles	3	2	2	2	2	2	2	1
Light-Duty Gasoline Trucks	5	18	28	36	36	31	32	28
Heavy-Duty Gasoline Vehicles	3	4	8	11	12	11	11	9
Motorcycles	0.01	0.02	0.04	0.05	0.05	0.04	0.04	0.04
Light-Duty Diesel Vehicles	0.07	0.03	0.11	0.14	0.13	0.09	0.09	0.05
Light-Duty Diesel Trucks	-	1	3	4	4	3	3	2
Heavy-Duty Diesel Vehicles	8	69	129	183	190	160	144	72
Propane and Natural Gas Vehicles	0.86	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	137	127	113	124	120	115	124	100
Other Transportation	16	62	67	74	55	35	30	51
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	2	7	7	1	0.89	0.61	0.56	0.81
Off-Road Manufacturing, Mining and Construction	10	45	44	54	36	22	19	34
Off-Road Residential	0.62	3	4	3	2	2	2	2
Off-Road Other Transportation	4	8	12	15	16	11	9	14
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	**3**	**7**	**14**	**15**	**16**	**18**	**20**	**20**
a. Mineral Products	**0.01**	**0.15**	**0.04**	**0.04**	**0.02**	**0.02**	**0.02**	**0.02**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.15	0.04	0.04	0.02	0.02	0.02	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2**	**6**	**13**	**14**	**15**	**17**	**19**	**19**
e. Non-Energy Products from Fuels and Solvent Use[b]	**0.37**	**0.45**	**0.50**	**0.56**	**0.58**	**0.75**	**0.56**	**0.58**
f. Other Product Manufacture and Use	**0.34**	**0.36**	**0.35**	**0.40**	**0.49**	**0.54**	**0.53**	**0.55**
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	**24**	**26**	**27**	**28**	**30**	**31**	**32**	**33**
a. Solid Waste Disposal (Landfills)	**20**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
c. Wastewater Treatment and Discharge	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
d. Incineration and Open Burning of Waste	**-**	**0.06**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2020) 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. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

Table A11–27 **2020 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			25		298			22 800	17 200	
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	**544**	**1**	**34**	**0.02**	**6**	**19**	**0.02**	**-**	**-**	**603**
ENERGY	**543**	**0.05**	**1**	**0.02**	**5**	**-**	**-**	**-**	**-**	**549**
a. Stationary Combustion Sources	**149**	**0.00**	**0.10**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**149**
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]	**395**	**0.04**	**1**	**0.02**	**4**	**-**	**-**	**-**	**-**	**400**
Aviation	136	0.00	0.05	0.00	1	-	-	-	-	137
Road Transportation	111	0.01	0.10	0.01	2	-	-	-	-	113
Light-Duty Gasoline Vehicles	1	0.00	0.00	0.00	0.01	-	-	-	-	1
Light-Duty Gasoline Trucks	28	0.00	0.05	0.00	0.26	-	-	-	-	28
Heavy-Duty Gasoline Vehicles	9	0.00	0.01	0.00	0.23	-	-	-	-	9
Motorcycles	0.04	0.00	0.00	0.00	0.00	-	-	-	-	0.04
Light-Duty Diesel Vehicles	0.05	0.00	0.00	0.00	0.00	-	-	-	-	0.05
Light-Duty Diesel Trucks	2	0.00	0.00	0.00	0.05	-	-	-	-	2
Heavy-Duty Diesel Vehicles	71	0.00	0.07	0.00	1	-	-	-	-	72
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	99	0.01	0.23	0.00	0.80	-	-	-	-	100
Other Transportation	49	0.03	0.62	0.00	0.70	-	-	-	-	51
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	0.78	0.00	0.02	0.00	0.01	-	-	-	-	0.81
Off-Road Manufacturing, Mining and Construction	33	0.00	0.04	0.00	0.50	-	-	-	-	34
Off-Road Residential	2	0.00	0.08	0.00	0.02	-	-	-	-	2
Off-Road Other Transportation	13	0.02	0.49	0.00	0.10	-	-	-	-	14
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	**0.60**	**-**	**-**	**0.00**	**0.55**	**19**	**0.02**	**-**	**-**	**20**
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	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**19**	**0.02**	**-**	**-**	**19**
e. Non-Energy Products from Fuels and Solvent Use[c]	**0.58**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.58**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.55**	**-**	**-**	**-**	**-**	**0.55**
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	**0.08**	**1**	**33**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**33**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
c. Wastewater Treatment and Discharge	**-**	**0.06**	**1**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**2**
d. Incineration and Open Burning of Waste	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.08**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2020) 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. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

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.

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	**1 790**	**1 760**	**1 570**	**1 880**	**2 040**	**2 100**	**2 120**	**1 930**	**1 760**
ENERGY	**1 740**	**1 700**	**1 520**	**1 800**	**1 890**	**1 960**	**2 060**	**1 870**	**1 690**
a. Stationary Combustion Sources	**915**	**986**	**848**	**946**	**1 010**	**1 150**	**1 020**	**970**	**728**
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	276	195	111	136	135	139	149	130	125
Mining	36	42	18	36	109	212	150	158	133
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	474	405	371	207
Residential	156	188	192	230	190	118	196	181	90
Agriculture and Forestry	2	9	12	2	2	0.01	-	0.01	0.02
b. Transport[a]	**724**	**610**	**585**	**758**	**814**	**748**	**975**	**889**	**951**
Aviation	257	228	232	265	265	243	266	257	242
Road Transportation	173	130	116	170	183	155	236	227	273
Light-Duty Gasoline Vehicles	49	43	44	60	60	50	58	59	46
Light-Duty Gasoline Trucks	23	20	21	28	29	26	31	33	27
Heavy-Duty Gasoline Vehicles	11	10	10	14	15	12	16	18	16
Motorcycles	0.18	0.14	0.13	0.16	0.16	0.12	0.14	0.13	0.09
Light-Duty Diesel Vehicles	2	1	0.79	1	1	1	2	2	3
Light-Duty Diesel Trucks	0.08	0.07	0.07	0.14	0.18	0.18	0.40	0.39	0.66
Heavy-Duty Diesel Vehicles	86	54	39	65	75	64	127	114	178
Propane and Natural Gas Vehicles	0.80	0.79	2	1	3	2	1	1	1
Railways	1	0.49	0.70	0.72	0.82	0.71	0.87	0.79	1
Marine	113	123	133	143	153	164	163	162	160
Other Transportation	180	129	104	179	211	186	309	243	274
Off-Road Agriculture and Forestry	0.38	0.26	0.20	0.37	0.45	0.40	0.70	0.56	0.75
Off-Road Commercial and Institutional	12	9	7	12	15	13	23	18	23
Off-Road Manufacturing, Mining and Construction	128	90	69	126	151	135	234	180	207
Off-Road Residential	3	2	1	3	3	3	5	4	5
Off-Road Other Transportation	37	28	26	38	40	34	47	40	39
Pipeline Transport	-	-	-	-	2	0.13	0.09	0.04	-
c. Fugitive Sources	**97**	**100**	**89**	**94**	**65**	**65**	**61**	**12**	**10**
Coal Mining	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	97	103	89	94	65	65	61	12	10
Oil	5	5	5	5	5	5	4	4	4
Natural Gas	0.92	0.98	0.97	1	0.90	0.92	0.88	0.85	0.82
Venting	2	2	2	2	3	3	2	2	2
Flaring	89	95	81	86	57	57	53	6	4
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**5**	**13**	**4**	**27**	**107**	**88**	**4**	**5**	**7**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**0.03**	**0.03**	**0.03**	**0.00**
Cement Production	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	0.03	0.03	0.03	0.00
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**3**	**5**
e. Non-Energy Products from Fuels and Solvent Use[b]	**5**	**13**	**4**	**27**	**110**	**86**	**2**	**0.78**	**1**
f. Other Product Manufacture and Use	**0.37**	**0.36**	**0.33**	**0.32**	**0.36**	**0.42**	**0.47**	**0.48**	**0.68**
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	**44**	**46**	**48**	**50**	**52**	**54**	**56**	**58**	**60**
a. Solid Waste Disposal (Landfills)	**40**	**40**	**40**	**50**	**50**	**50**	**50**	**50**	**60**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
d. Incineration and Open Burning of Waste	**0.18**	**0.18**	**0.18**	**0.19**	**0.19**	**0.19**	**0.20**	**0.20**	**0.19**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

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

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

b. 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.

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.

x Indicates data has been suppressed to respect confidentiality.

PROVINCIAL AND TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2020

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 1990–2020. To account for the creation of Nunavut in 1999, a time series from 1999–2020 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 United Nations Framework Convention on Climate Change (UNFCCC) Reporting Guidelines 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.

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	– conventinoal 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 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
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites.
TRANSPORT	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels.
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 up to 3856 kilogram GVWR and motorcycles
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 above 3856 kilogram GVWR and 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).
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricty and steam production, and process emissions from:
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 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)
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 solid waste management sites (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
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	Stationary combustion, onsite transportation, electricty and steam production, and process emissions 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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**9.6**	**10.5**	**11.0**	**11.2**	**11.1**	**10.9**	**11.1**	**9.5**
Oil and Gas	**1.1**	**2.6**	**2.6**	**2.8**	**2.8**	**2.8**	**2.9**	**2.1**
Upstream Oil and Gas	0.0	1.6	1.5	1.7	1.8	1.9	1.8	1.8
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.0	1.6	1.5	1.7	1.8	1.9	1.8	1.8
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.0	1.6	1.5	1.7	1.8	1.9	1.8	1.8
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	1.0	1.2	1.0	1.0	1.0	0.3
Petroleum Refining	1.1	1.0	1.0	1.2	1.0	1.0	1.0	0.3
Natural Gas Distribution	-	-	-	-	-	-	-	-
Electricity	**1.6**	**0.8**	**1.3**	**1.5**	**1.5**	**1.1**	**1.1**	**1.0**
Transport	**3.0**	**3.7**	**4.3**	**4.3**	**4.2**	**4.3**	**4.3**	**3.9**
Passenger Transport	1.4	1.6	2.2	2.2	2.2	2.2	2.1	1.9
Cars, Light Trucks and Motorcycles	1.1	1.3	1.9	1.8	1.9	1.8	1.8	1.7
Bus, Rail and Aviation	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Freight Transport	1.3	1.9	1.9	1.9	1.8	1.9	2.1	1.8
Heavy Duty Trucks, Rail	0.5	0.9	1.3	1.3	1.2	1.3	1.3	1.1
Aviation and Marine	0.8	1.0	0.6	0.6	0.6	0.7	0.8	0.7
Other: Recreational, Commercial and Residential	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Heavy Industry	**1.8**	**1.6**	**0.8**	**0.5**	**0.6**	**0.7**	**0.9**	**0.7**
Mining	1.3	1.3	0.8	0.4	0.5	0.6	0.8	0.7
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	0.1	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	0.1	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**	**1.0**	**1.0**	**1.1**	**0.9**	**0.9**	**0.8**
Service Industry	0.3	0.4	0.7	0.7	0.6	0.4	0.5	0.4
Residential	0.7	0.4	0.3	0.4	0.5	0.5	0.5	0.4
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	**0.7**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
Solid Waste[a]	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6
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	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Light Manufacturing	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Construction	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2
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 A12–3 **GHG Emissions for Prince Edward Island by Canadian Economic Sector, Selected Years**

	1990	2005	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**1.8**	**1.9**	**1.6**	**1.6**	**1.6**	**1.6**	**1.7**	**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	**0.6**	**0.7**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.7**
Passenger Transport	**0.4**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**
Cars, Light Trucks and Motorcycles	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.4
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**	**0.3**	**0.3**	**0.2**	**0.3**	**0.3**	**0.2**
Heavy Duty Trucks, Rail	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Aviation and Marine	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0
Other: Recreational, Commercial and Residential	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**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**	**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**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
On Farm Fuel Use	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
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**	**0.0**	**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	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**
Light Manufacturing	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
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 A12–4 **GHG Emissions for Nova Scotia by Canadian Economic Sector, Selected Years**

	1990	2005	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**19.5**	**23.0**	**16.6**	**15.4**	**16.0**	**16.5**	**16.1**	**14.6**
Oil and Gas	**0.7**	**1.5**	**0.6**	**0.5**	**0.3**	**0.2**	**0.0**	**0.0**
Upstream Oil and Gas	**0.0**	**0.4**	**0.6**	**0.5**	**0.3**	**0.2**	**0.0**	**0.0**
Natural Gas Production and Processing	0.0	0.4	0.6	0.5	0.3	0.2	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**	**1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.7	1.1	-	-	-	-	-	-
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**6.9**	**10.8**	**7.0**	**6.4**	**6.7**	**7.0**	**6.7**	**6.3**
Transport	**4.5**	**5.4**	**4.9**	**4.9**	**5.1**	**5.3**	**5.2**	**4.4**
Passenger Transport	**2.6**	**2.9**	**2.9**	**3.0**	**3.1**	**3.1**	**3.1**	**2.5**
Cars, Light Trucks and Motorcycles	2.3	2.6	2.6	2.7	2.8	2.8	2.8	2.4
Bus, Rail and Aviation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Freight Transport	**1.4**	**2.2**	**1.7**	**1.6**	**1.8**	**1.9**	**1.9**	**1.6**
Heavy Duty Trucks, Rail	0.9	1.5	1.3	1.3	1.4	1.4	1.4	1.2
Aviation and Marine	0.6	0.7	0.4	0.3	0.4	0.5	0.5	0.4
Other: Recreational, Commercial and Residential	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Industry	**1.0**	**0.8**	**0.5**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**
Mining	**0.1**	**0.2**	**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	**0.4**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**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**	**0.3**	**0.3**	**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**	**0.0**	**0.0**	**0.0**	**0.1**
Buildings	**3.0**	**2.7**	**2.2**	**1.9**	**2.0**	**2.0**	**2.2**	**2.1**
Service Industry	**0.8**	**1.4**	**0.8**	**0.7**	**0.8**	**0.7**	**0.8**	**0.8**
Residential	**2.1**	**1.3**	**1.4**	**1.2**	**1.2**	**1.3**	**1.3**	**1.2**
Agriculture	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
On Farm Fuel Use	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Crop Production	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
Animal Production	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Waste	**0.9**	**0.7**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste[a]	**0.8**	**0.7**	**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	**1.6**	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.2**	**0.0**
Light Manufacturing, Construction and Forest Resources	**0.4**	**0.4**	**0.3**	**0.3**	**0.4**	**0.5**	**0.5**	**0.4**
Light Manufacturing	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Construction	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
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 A12–5 **GHG Emissions for New Brunswick by Canadian Economic Sector, Selected Years**

	1990	2005	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**16.2**	**19.8**	**14.0**	**14.8**	**13.8**	**13.6**	**13.1**	**12.4**
Oil and Gas	**1.2**	**2.7**	**2.8**	**3.1**	**3.3**	**2.8**	**3.2**	**3.4**
Upstream Oil and Gas	**0.0**	**0.0**	**0.0**	**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	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**	**2.7**	**2.8**	**3.0**	**3.2**	**2.8**	**3.1**	**3.3**
Petroleum Refining	1.2	2.7	2.8	3.0	3.2	2.8	3.1	3.3
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**6.0**	**7.8**	**3.8**	**4.2**	**3.5**	**3.7**	**3.2**	**2.9**
Transport	**3.8**	**4.6**	**3.8**	**4.1**	**3.7**	**3.7**	**3.6**	**3.2**
Passenger Transport	**1.7**	**2.3**	**2.2**	**2.4**	**2.2**	**2.2**	**2.1**	**1.8**
Cars, Light Trucks and Motorcycles	1.5	2.1	2.0	2.3	2.0	2.0	2.0	1.7
Bus, Rail and Aviation	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	**1.1**	**1.9**	**1.4**	**1.4**	**1.3**	**1.3**	**1.2**	**1.2**
Heavy Duty Trucks, Rail	0.9	1.6	1.2	1.3	1.1	1.1	1.0	1.0
Aviation and Marine	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
Other: Recreational, Commercial and Residential	**1.0**	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Industry	**1.8**	**1.2**	**0.7**	**0.8**	**0.8**	**0.8**	**0.6**	**0.5**
Mining	**0.2**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Smelting and Refining (Non-Ferrous Metals)	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.0**	**0.0**
Pulp and Paper	**1.3**	**0.7**	**0.4**	**0.4**	**0.3**	**0.4**	**0.4**	**0.3**
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**	**0.0**	**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	**1.7**	**1.4**	**1.4**	**1.3**	**1.1**	**1.1**	**1.1**	**1.0**
Service Industry	**0.6**	**0.7**	**0.6**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**
Residential	**1.1**	**0.8**	**0.8**	**0.7**	**0.7**	**0.6**	**0.6**	**0.5**
Agriculture	**0.5**	**0.6**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**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**	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Animal Production	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Waste	**0.8**	**0.9**	**0.6**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**
Solid Waste[a]	**0.8**	**0.9**	**0.6**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**
Wastewater	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**-**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**	**-**
Coal Production	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction and Forest Resources	**0.4**	**0.5**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**
Light Manufacturing	**0.2**	**0.4**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Construction	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Forest Resources	**0.1**	**0.1**	**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

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

	1990	2005	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**84.5**	**86.3**	**78.5**	**78.1**	**80.3**	**81.8**	**83.6**	**76.2**
Oil and Gas	**3.9**	**4.4**	**2.6**	**2.2**	**1.9**	**2.4**	**2.3**	**2.3**
Upstream Oil and Gas	**0.2**	**0.3**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
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	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.1
Downstream Oil and Gas	**3.7**	**4.0**	**2.3**	**2.1**	**1.8**	**2.3**	**2.2**	**2.2**
Petroleum Refining	3.6	4.0	2.2	2.1	1.8	2.3	2.2	2.1
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	**1.5**	**0.6**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
Transport	**24.3**	**30.8**	**30.9**	**31.5**	**33.1**	**33.3**	**34.1**	**29.4**
Passenger Transport	**15.6**	**19.3**	**18.5**	**18.9**	**19.6**	**19.6**	**20.0**	**16.4**
Cars, Light Trucks and Motorcycles	14.6	18.2	17.4	17.7	18.3	18.2	18.6	15.4
Bus, Rail and Aviation	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.0
Freight Transport	**4.9**	**9.7**	**10.7**	**10.9**	**11.5**	**11.7**	**12.0**	**11.0**
Heavy Duty Trucks, Rail	4.0	8.6	9.8	10.0	10.5	10.6	10.8	9.8
Aviation and Marine	0.9	1.1	0.9	0.9	1.0	1.1	1.2	1.2
Other: Recreational, Commercial and Residential	**3.7**	**1.8**	**1.7**	**1.8**	**2.0**	**2.1**	**2.1**	**2.0**
Heavy Industry	**25.0**	**19.5**	**16.6**	**15.3**	**16.5**	**16.7**	**17.4**	**16.0**
Mining	**2.1**	**1.5**	**1.6**	**1.6**	**1.7**	**2.4**	**2.5**	**2.2**
Smelting and Refining (Non-Ferrous Metals)	**12.9**	**9.8**	**7.4**	**7.3**	**7.4**	**6.6**	**6.8**	**7.4**
Pulp and Paper	**4.5**	**2.8**	**1.3**	**1.4**	**1.5**	**1.6**	**1.6**	**1.5**
Iron and Steel	**1.2**	**0.9**	**1.2**	**1.1**	**1.2**	**1.3**	**1.1**	**0.3**
Cement	**2.5**	**2.5**	**2.3**	**2.2**	**2.7**	**2.7**	**3.5**	**2.7**
Lime and Gypsum	**0.5**	**0.9**	**0.7**	**0.6**	**0.8**	**0.7**	**0.7**	**0.5**
Chemicals and Fertilizers	**1.2**	**1.2**	**2.0**	**1.1**	**1.2**	**1.3**	**1.3**	**1.3**
Buildings	**11.7**	**12.3**	**10.0**	**10.2**	**10.2**	**10.2**	**10.5**	**9.3**
Service Industry	**4.6**	**6.4**	**6.3**	**6.3**	**6.6**	**6.4**	**6.6**	**5.9**
Residential	**7.1**	**5.9**	**3.8**	**3.8**	**3.5**	**3.8**	**3.9**	**3.4**
Agriculture	**7.6**	**8.3**	**8.8**	**8.8**	**8.3**	**9.0**	**8.8**	**9.0**
On Farm Fuel Use	**1.1**	**0.9**	**1.0**	**0.9**	**0.9**	**0.9**	**0.9**	**0.8**
Crop Production	**1.5**	**1.7**	**2.8**	**2.7**	**2.2**	**2.9**	**2.6**	**2.9**
Animal Production	**5.0**	**5.6**	**5.1**	**5.2**	**5.2**	**5.2**	**5.3**	**5.3**
Waste	**5.2**	**6.3**	**5.3**	**5.8**	**5.8**	**5.9**	**6.0**	**6.1**
Solid Waste[a]	**4.7**	**5.8**	**4.9**	**5.4**	**5.4**	**5.4**	**5.6**	**5.6**
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	**5.3**	**4.1**	**4.0**	**4.0**	**4.2**	**4.1**	**4.3**	**3.9**
Light Manufacturing	**3.7**	**2.9**	**2.7**	**2.7**	**2.6**	**2.6**	**2.8**	**2.5**
Construction	**1.4**	**1.0**	**1.0**	**1.1**	**1.3**	**1.2**	**1.2**	**1.1**
Forest Resources	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**

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.

0.0 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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**180.0**	**204.4**	**163.6**	**162.4**	**158.9**	**167.3**	**165.5**	**149.6**
Oil and Gas	**10.3**	**11.7**	**9.6**	**9.2**	**7.4**	**7.6**	**8.0**	**7.2**
Upstream Oil and Gas	**3.3**	**3.9**	**2.3**	**2.1**	**1.6**	**1.8**	**1.7**	**1.5**
Natural Gas Production and Processing	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.1
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	3.5	2.1	1.9	1.5	1.6	1.5	1.3
Downstream Oil and Gas	**7.0**	**7.8**	**7.3**	**7.1**	**5.7**	**5.8**	**6.2**	**5.7**
Petroleum Refining	6.5	7.2	6.8	6.6	5.2	5.3	5.7	5.2
Natural Gas Distribution	0.4	0.6	0.5	0.6	0.5	0.5	0.5	0.5
Electricity	**26.0**	**33.9**	**5.4**	**4.8**	**2.2**	**3.5**	**3.4**	**3.2**
Transport	**41.4**	**57.1**	**55.1**	**55.1**	**56.1**	**57.8**	**58.3**	**47.8**
Passenger Transport	**26.4**	**35.8**	**33.8**	**34.4**	**34.4**	**35.6**	**36.3**	**28.2**
Cars, Light Trucks and Motorcycles	24.1	33.3	31.1	31.7	31.6	32.6	33.3	26.3
Bus, Rail and Aviation	2.3	2.5	2.7	2.7	2.8	3.0	3.0	1.8
Freight Transport	**8.0**	**17.4**	**18.0**	**17.4**	**18.1**	**18.7**	**18.5**	**16.2**
Heavy Duty Trucks, Rail	7.3	16.7	17.5	16.8	17.5	18.0	17.8	15.7
Aviation and Marine	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.5
Other: Recreational, Commercial and Residential	**7.0**	**3.9**	**3.2**	**3.3**	**3.5**	**3.6**	**3.6**	**3.4**
Heavy Industry	**43.3**	**35.1**	**29.4**	**30.6**	**28.7**	**28.7**	**28.0**	**25.4**
Mining	**1.0**	**0.9**	**1.2**	**1.3**	**1.3**	**1.2**	**1.2**	**1.4**
Smelting and Refining (Non-Ferrous Metals)	**1.5**	**1.9**	**0.7**	**0.9**	**1.0**	**1.0**	**1.1**	**0.8**
Pulp and Paper	**3.2**	**2.0**	**1.6**	**1.6**	**1.5**	**1.6**	**1.7**	**1.6**
Iron and Steel	**15.0**	**15.0**	**13.0**	**13.7**	**13.3**	**14.0**	**13.2**	**11.3**
Cement	**4.6**	**6.4**	**4.2**	**4.0**	**4.4**	**4.2**	**4.2**	**4.3**
Lime and Gypsum	**1.8**	**1.7**	**1.2**	**1.2**	**1.3**	**1.2**	**1.1**	**1.0**
Chemicals and Fertilizers	**16.2**	**7.1**	**7.6**	**7.9**	**5.8**	**5.5**	**5.3**	**5.0**
Buildings	**27.1**	**35.4**	**36.5**	**35.6**	**36.8**	**41.3**	**39.2**	**37.7**
Service Industry	**9.8**	**15.3**	**16.3**	**17.1**	**17.6**	**19.0**	**20.2**	**20.3**
Residential	**17.3**	**20.2**	**20.3**	**18.6**	**19.2**	**22.3**	**19.0**	**17.4**
Agriculture	**11.5**	**11.6**	**11.3**	**11.5**	**11.3**	**11.4**	**12.0**	**12.5**
On Farm Fuel Use	**2.1**	**2.3**	**2.5**	**2.5**	**2.3**	**2.5**	**2.8**	**2.5**
Crop Production	**2.4**	**2.2**	**2.8**	**3.0**	**3.0**	**2.9**	**3.1**	**3.9**
Animal Production	**7.0**	**7.1**	**6.0**	**6.0**	**6.0**	**6.0**	**6.1**	**6.1**
Waste	**8.1**	**8.6**	**7.3**	**7.1**	**7.5**	**7.6**	**7.6**	**7.6**
Solid Waste[a]	**7.5**	**7.6**	**6.3**	**6.0**	**6.4**	**6.6**	**6.6**	**6.5**
Wastewater	**0.6**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**1.0**	**1.0**
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	**12.4**	**11.0**	**9.0**	**8.5**	**9.0**	**9.3**	**9.1**	**8.3**
Light Manufacturing	**9.8**	**7.9**	**6.4**	**6.2**	**6.4**	**6.5**	**6.2**	**5.7**
Construction	**2.5**	**2.9**	**2.5**	**2.2**	**2.5**	**2.7**	**2.6**	**2.3**
Forest Resources	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.3**

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

	1990	2005	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**18.3**	**20.5**	**21.1**	**21.3**	**21.8**	**22.6**	**22.3**	**21.7**
Oil and Gas	**1.5**	**1.0**	**1.2**	**1.1**	**1.0**	**1.1**	**1.1**	**0.9**
Upstream Oil and Gas	**1.5**	**1.0**	**1.2**	**1.1**	**1.0**	**1.1**	**1.1**	**0.9**
Natural Gas Production and Processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.3	0.3	0.8	0.8	0.8	0.8	0.8	0.6
Conventional Light Oil Production	0.3	0.3	0.8	0.8	0.8	0.8	0.8	0.6
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	1.2	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**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**
Transport	**5.0**	**5.7**	**6.8**	**6.9**	**7.2**	**7.7**	**7.5**	**6.8**
Passenger Transport	**2.9**	**3.3**	**3.8**	**3.8**	**3.8**	**4.1**	**4.1**	**3.4**
Cars, Light Trucks and Motorcycles	2.5	2.8	3.3	3.4	3.3	3.5	3.5	3.1
Bus, Rail and Aviation	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4
Freight Transport	**1.4**	**2.1**	**2.7**	**2.8**	**3.1**	**3.2**	**3.1**	**3.0**
Heavy Duty Trucks, Rail	1.3	2.0	2.6	2.7	3.0	3.1	3.0	2.9
Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Other: Recreational, Commercial and Residential	**0.6**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**	**0.4**
Heavy Industry	**1.3**	**1.6**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.2**
Mining	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**
Smelting and Refining (Non-Ferrous Metals)	**0.3**	**0.2**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.2**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.1**	**0.0**
Iron and Steel	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**
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**	**1.0**	**0.8**	**0.9**	**0.9**	**0.8**
Buildings	**3.1**	**2.6**	**2.6**	**2.6**	**2.8**	**3.1**	**3.2**	**3.0**
Service Industry	**1.4**	**1.6**	**1.6**	**1.5**	**1.7**	**1.8**	**1.9**	**1.8**
Residential	**1.6**	**1.1**	**1.0**	**1.1**	**1.2**	**1.3**	**1.3**	**1.2**
Agriculture	**5.2**	**7.2**	**6.6**	**6.7**	**6.9**	**7.0**	**6.9**	**7.3**
On Farm Fuel Use	**1.1**	**1.3**	**0.9**	**0.9**	**1.0**	**1.0**	**1.0**	**1.0**
Crop Production	**1.7**	**1.6**	**2.5**	**2.6**	**2.7**	**2.7**	**2.8**	**3.3**
Animal Production	**2.4**	**4.2**	**3.2**	**3.2**	**3.3**	**3.3**	**3.2**	**3.1**
Waste	**1.0**	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.3**	**1.4**
Solid Waste[a]	**0.9**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.2**	**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**	**0.0**
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction and Forest Resources	**0.6**	**0.8**	**1.0**	**1.1**	**1.2**	**0.9**	**1.0**	**1.0**
Light Manufacturing	**0.4**	**0.5**	**0.8**	**0.8**	**0.9**	**0.6**	**0.7**	**0.7**
Construction	**0.2**	**0.3**	**0.2**	**0.3**	**0.3**	**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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**45.1**	**71.3**	**79.1**	**76.8**	**79.4**	**80.4**	**78.0**	**65.9**
Oil and Gas	**13.7**	**29.0**	**30.0**	**27.9**	**28.2**	**27.8**	**26.5**	**17.3**
Upstream Oil and Gas	**12.6**	**27.9**	**28.4**	**26.3**	**26.6**	**26.3**	**25.0**	**15.9**
Natural Gas Production and Processing	2.6	4.5	3.4	3.3	3.2	3.2	3.0	0.9
Conventional Oil Production	7.5	18.5	20.3	19.0	19.5	18.9	17.9	11.3
Conventional Light Oil Production	4.2	6.8	11.4	11.5	12.5	13.0	12.5	7.5
Conventional Heavy Oil Production	3.4	11.7	8.9	7.5	7.0	6.0	5.4	3.7
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	0.0	2.6	2.2	2.3	2.1	2.3	2.3	2.1
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	0.0	2.6	2.2	2.3	2.1	2.3	2.3	2.1
Oil, Natural Gas and CO_2 Transmission	2.4	2.3	2.5	1.7	1.7	1.9	1.8	1.6
Downstream Oil and Gas	**1.2**	**1.1**	**1.5**	**1.6**	**1.6**	**1.5**	**1.5**	**1.4**
Petroleum Refining	0.7	0.9	1.3	1.3	1.3	1.2	1.3	1.2
Natural Gas Distribution	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Electricity	**11.1**	**14.3**	**14.8**	**14.7**	**15.3**	**14.9**	**14.8**	**12.6**
Transport	**5.5**	**6.5**	**10.9**	**10.8**	**11.2**	**11.3**	**11.1**	**10.1**
Passenger Transport	**3.0**	**3.4**	**5.0**	**5.2**	**5.1**	**5.0**	**5.0**	**4.2**
Cars, Light Trucks and Motorcycles	2.8	3.2	4.7	4.9	4.8	4.7	4.7	4.0
Bus, Rail and Aviation	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2
Freight Transport	**1.8**	**2.7**	**5.3**	**5.2**	**5.6**	**5.9**	**5.7**	**5.5**
Heavy Duty Trucks, Rail	1.8	2.7	5.3	5.2	5.6	5.9	5.7	5.5
Aviation and Marine	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	**0.6**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Heavy Industry	**1.6**	**2.3**	**3.5**	**3.4**	**3.8**	**4.7**	**3.8**	**4.0**
Mining	**1.0**	**1.3**	**2.7**	**2.5**	**2.9**	**3.5**	**2.7**	**2.9**
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**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**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**	**0.6**	**0.6**	**0.6**	**0.9**	**0.9**	**0.8**
Buildings	**3.1**	**3.3**	**3.2**	**3.4**	**3.6**	**4.0**	**4.2**	**3.9**
Service Industry	**1.0**	**1.7**	**1.4**	**1.6**	**1.8**	**1.9**	**2.0**	**1.9**
Residential	**2.1**	**1.6**	**1.8**	**1.7**	**1.9**	**2.1**	**2.2**	**2.0**
Agriculture	**8.4**	**14.1**	**14.6**	**14.7**	**15.3**	**15.7**	**15.6**	**16.1**
On Farm Fuel Use	**2.4**	**3.5**	**4.0**	**3.9**	**4.3**	**4.6**	**4.5**	**4.9**
Crop Production	**1.9**	**3.0**	**4.9**	**5.0**	**5.1**	**5.3**	**5.3**	**5.4**
Animal Production	**4.1**	**7.6**	**5.7**	**5.8**	**5.9**	**5.8**	**5.7**	**5.8**
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	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Light Manufacturing, Construction and Forest Resources	**0.6**	**0.4**	**0.8**	**0.7**	**0.7**	**0.7**	**0.6**	**0.5**
Light Manufacturing	**0.5**	**0.2**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.4**
Construction	**0.1**	**0.2**	**0.3**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**
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 A12–10 **GHG Emissions for Alberta by Canadian Economic Sector, Selected Years**

	1990	2005	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**165.6**	**237.1**	**284.3**	**268.2**	**275.8**	**276.5**	**278.8**	**256.5**
Oil and Gas	**62.0**	**105.3**	**141.6**	**134.0**	**138.1**	**146.6**	**146.8**	**132.8**
Upstream Oil and Gas	**58.4**	**100.7**	**136.6**	**128.9**	**132.8**	**141.3**	**141.4**	**128.0**
Natural Gas Production and Processing	23.9	50.5	45.7	42.3	39.5	42.0	41.7	32.8
Conventional Oil Production	15.5	13.8	16.7	14.6	13.8	14.6	13.8	11.2
Conventional Light Oil Production	9.8	11.1	12.6	11.1	10.5	11.0	10.5	8.5
Conventional Heavy Oil Production	5.7	2.7	4.2	3.4	3.3	3.6	3.3	2.7
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	15.1	32.4	70.7	67.7	74.8	79.7	80.5	78.8
Mining and Extraction	2.2	5.6	11.1	11.3	12.9	14.8	15.4	14.9
In-situ	4.5	12.2	38.1	37.8	41.5	43.6	42.9	41.2
Upgrading	8.4	14.6	21.4	18.7	20.4	21.2	22.2	22.6
Oil, Natural Gas and CO_2 Transmission	3.9	3.9	3.4	4.3	4.6	5.1	5.4	5.2
Downstream Oil and Gas	**3.6**	**4.7**	**5.0**	**5.2**	**5.3**	**5.3**	**5.4**	**4.9**
Petroleum Refining	3.2	4.4	4.8	5.0	5.1	5.1	5.2	4.7
Natural Gas Distribution	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Electricity	**39.8**	**47.7**	**46.4**	**41.6**	**42.5**	**31.4**	**31.1**	**29.3**
Transport	**15.8**	**23.2**	**30.7**	**29.8**	**31.5**	**32.4**	**33.0**	**28.1**
Passenger Transport	**9.1**	**10.5**	**12.0**	**12.5**	**12.8**	**13.1**	**13.5**	**10.6**
Cars, Light Trucks and Motorcycles	8.0	9.2	10.4	10.9	11.1	11.3	11.7	9.5
Bus, Rail and Aviation	1.0	1.3	1.7	1.6	1.6	1.8	1.8	1.1
Freight Transport	**4.6**	**11.5**	**17.6**	**16.3**	**17.8**	**18.3**	**18.5**	**16.6**
Heavy Duty Trucks, Rail	4.4	11.3	17.4	16.2	17.6	18.1	18.3	16.5
Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Other: Recreational, Commercial and Residential	**2.1**	**1.2**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Heavy Industry	**12.6**	**17.6**	**18.8**	**17.3**	**16.9**	**17.3**	**18.5**	**17.7**
Mining	**0.2**	**0.3**	**0.5**	**0.4**	**0.3**	**0.2**	**0.3**	**0.5**
Smelting and Refining (Non-Ferrous Metals)	**0.4**	**0.6**	**1.1**	**0.8**	**0.8**	**0.8**	**1.4**	**0.8**
Pulp and Paper	**0.5**	**0.8**	**1.0**	**1.0**	**1.2**	**1.8**	**1.9**	**1.5**
Iron and Steel	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Cement	**1.2**	**1.8**	**1.5**	**1.5**	**1.7**	**1.8**	**1.8**	**1.5**
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**	**14.5**	**13.3**	**12.7**	**12.3**	**12.8**	**12.9**
Buildings	**12.0**	**16.0**	**18.8**	**17.8**	**20.1**	**21.4**	**21.6**	**20.7**
Service Industry	**5.3**	**8.5**	**10.4**	**10.6**	**11.3**	**12.3**	**12.5**	**11.8**
Residential	**6.7**	**7.5**	**8.4**	**7.2**	**8.7**	**9.2**	**9.1**	**8.9**
Agriculture	**14.9**	**21.0**	**19.4**	**19.0**	**18.5**	**18.9**	**19.2**	**19.4**
On Farm Fuel Use	**2.9**	**3.5**	**3.1**	**2.7**	**2.9**	**3.2**	**3.3**	**3.3**
Crop Production	**2.4**	**2.8**	**4.6**	**4.4**	**3.8**	**4.1**	**4.4**	**4.9**
Animal Production	**9.6**	**14.7**	**11.7**	**11.9**	**11.8**	**11.6**	**11.5**	**11.2**
Waste	**2.4**	**3.7**	**5.1**	**5.0**	**5.1**	**5.2**	**5.2**	**5.3**
Solid Waste[a]	**2.1**	**3.5**	**4.3**	**4.5**	**4.5**	**4.6**	**4.7**	**4.8**
Wastewater	**0.2**	**0.2**	**0.7**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Coal Production	**0.6**	**0.5**	**0.6**	**0.6**	**0.4**	**0.4**	**0.3**	**0.3**
Light Manufacturing, Construction and Forest Resources	**5.6**	**2.2**	**3.0**	**3.1**	**2.8**	**2.8**	**3.1**	**2.8**
Light Manufacturing	**4.8**	**1.3**	**2.3**	**2.4**	**2.0**	**1.9**	**2.2**	**1.9**
Construction	**0.7**	**0.7**	**0.6**	**0.6**	**0.7**	**0.7**	**0.8**	**0.7**
Forest Resources	**0.1**	**0.2**	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**

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.

0.0 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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**51.7**	**63.6**	**60.0**	**62.4**	**63.4**	**65.8**	**65.0**	**61.7**
Oil and Gas	**7.9**	**12.7**	**13.8**	**13.6**	**13.6**	**13.5**	**12.7**	**12.8**
Upstream Oil and Gas	**6.4**	**12.1**	**13.1**	**12.8**	**12.9**	**12.9**	**12.0**	**12.2**
Natural Gas Production and Processing	4.2	9.9	11.0	10.5	10.6	10.7	10.0	10.2
Conventional Oil Production	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.4
Conventional Light Oil Production	0.7	0.7	0.6	0.6	0.6	0.6	0.5	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	1.5	1.6	1.6	1.5	1.6	1.5
Downstream Oil and Gas	**1.5**	**0.6**	**0.7**	**0.8**	**0.7**	**0.6**	**0.6**	**0.6**
Petroleum Refining	1.3	0.5	0.6	0.7	0.6	0.5	0.5	0.5
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**	**0.4**	**0.4**	**0.5**	**0.8**	**0.3**
Transport	**15.8**	**21.0**	**22.6**	**23.7**	**24.2**	**25.6**	**25.7**	**23.4**
Passenger Transport	**7.9**	**10.2**	**10.2**	**11.1**	**11.3**	**11.6**	**11.4**	**9.7**
Cars, Light Trucks and Motorcycles	6.7	8.8	8.9	9.8	9.8	10.0	9.8	8.7
Bus, Rail and Aviation	1.2	1.4	1.3	1.4	1.5	1.6	1.6	1.0
Freight Transport	**5.6**	**9.4**	**11.2**	**11.5**	**11.9**	**12.9**	**13.2**	**12.6**
Heavy Duty Trucks, Rail	4.8	8.3	9.9	10.0	10.5	11.4	11.5	11.0
Aviation and Marine	0.9	1.1	1.4	1.5	1.4	1.5	1.6	1.6
Other: Recreational, Commercial and Residential	**2.3**	**1.4**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**
Heavy Industry	**8.7**	**7.1**	**5.7**	**6.2**	**6.3**	**6.5**	**6.4**	**5.5**
Mining	**0.5**	**0.3**	**0.3**	**0.3**	**0.4**	**0.5**	**0.7**	**0.7**
Smelting and Refining (Non-Ferrous Metals)	**2.0**	**1.7**	**0.9**	**1.3**	**1.2**	**1.1**	**1.2**	**1.1**
Pulp and Paper	**4.0**	**1.8**	**1.9**	**2.0**	**2.1**	**2.2**	**2.5**	**2.1**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**1.0**	**2.0**	**2.0**	**2.1**	**2.1**	**2.2**	**1.6**	**1.1**
Lime and Gypsum	**0.2**	**0.3**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**0.9**	**0.9**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**
Buildings	**7.5**	**8.3**	**7.3**	**7.8**	**8.3**	**8.2**	**8.6**	**8.7**
Service Industry	**3.1**	**3.8**	**3.4**	**3.8**	**3.9**	**3.9**	**4.1**	**4.1**
Residential	**4.5**	**4.5**	**3.9**	**4.0**	**4.5**	**4.3**	**4.5**	**4.5**
Agriculture	**2.5**	**2.8**	**2.6**	**2.8**	**2.8**	**3.0**	**3.0**	**3.0**
On Farm Fuel Use	**0.6**	**0.3**	**0.6**	**0.7**	**0.7**	**0.8**	**0.8**	**0.8**
Crop Production	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Animal Production	**1.8**	**2.3**	**1.9**	**1.9**	**1.9**	**2.0**	**2.0**	**2.0**
Waste	**4.1**	**4.8**	**3.8**	**3.6**	**3.6**	**3.6**	**3.6**	**3.5**
Solid Waste[a]	**3.9**	**4.6**	**3.5**	**3.4**	**3.3**	**3.3**	**3.3**	**3.2**
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**	**1.7**	**1.6**	**1.8**	**1.7**	**2.0**	**2.0**	**1.9**
Light Manufacturing, Construction and Forest Resources	**2.6**	**4.2**	**2.4**	**2.4**	**2.5**	**2.9**	**2.5**	**2.7**
Light Manufacturing	**1.4**	**3.1**	**1.5**	**1.4**	**1.4**	**1.6**	**1.3**	**1.5**
Construction	**0.6**	**0.5**	**0.4**	**0.6**	**0.6**	**0.7**	**0.6**	**0.6**
Forest Resources	**0.5**	**0.7**	**0.5**	**0.4**	**0.5**	**0.6**	**0.6**	**0.6**

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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**0.6**	**0.6**	**0.5**	**0.5**	**0.6**	**0.6**	**0.7**	**0.6**
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**	**0.0**	**0.0**	**0.0**	**0.1**
Transport	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.5**	**0.5**	**0.4**
Passenger Transport	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Cars, Light Trucks and Motorcycles	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Bus, Rail and Aviation	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Freight Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**
Heavy Duty Trucks, Rail	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2
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	**0.0**	**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**
Pulp and Paper	**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**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**0.0**
Lime and Gypsum	**0.0**	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Buildings	**0.1**	**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**	**-**	**-**
On Farm Fuel Use	**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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**1.3**	**1.7**	**1.6**	**1.5**	**1.6**	**1.6**	**1.6**	**1.4**
Oil and Gas	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**
Upstream Oil and Gas	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**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	0.0	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	0.1	0.1	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	0.0
Downstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**0.1**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
Transport	**0.5**	**0.8**	**0.7**	**0.7**	**0.8**	**0.9**	**0.8**	**0.6**
Passenger Transport	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**
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	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	**0.2**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.4**
Heavy Duty Trucks, Rail	0.2	0.4	0.5	0.5	0.6	0.6	0.5	0.4
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	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Mining	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Smelting and Refining (Non-Ferrous Metals)	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
Pulp and Paper	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
Iron and Steel	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
Cement	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
Lime and Gypsum	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Buildings	**0.3**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Service Industry	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**
Residential	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**
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	2015	2016	2017	2018	2019	2020
	Mt CO_2 eq							
GHG TOTAL	**0.4**	**0.6**	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**	**0.6**
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**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**
Passenger Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**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	0.1	0.1	0.1	0.2	0.2	0.1
Freight Transport	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**
Heavy Duty Trucks, Rail	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Aviation and Marine	0.2	0.2	0.1	0.1	0.1	0.1	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**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**
Mining	**0.1**	**0.0**	**0.0**	**0.1**	**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	-	-	-	-	-	-	-	-
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Buildings	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Service Industry	**0.0**	**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	-	-	-	-	-	-	-	-
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**	**1.8**
Oil and Gas	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**
Upstream Oil and Gas	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	**0.6**	**0.5**	**0.5**	**0.6**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**
Passenger Transport	**0.3**	**0.3**	**0.3**	**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	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
Heavy Duty Trucks, Rail	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
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	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**
Heavy Industry	**0.1**	**0.1**	**0.1**	**0.1**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**
Mining	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.3**	**0.3**
Smelting and Refining (Non-Ferrous Metals)	**0.0**	**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**	**0.0**
Iron and Steel	**0.0**	**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**	**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**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Solid Waste[a]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**
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**	**0.0**	**0.0**	**0.0**	**0.0**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**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 25-10-0017-01 (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 (2005–2020) 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 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]). 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	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**94 500**	**132 000**	**125 000**	**84 200**	**87 600**	**81 300**	**79 200**	**70 700**	**69 500**	**62 100**
Coal	80 500	109 000	98 200	60 700	62 700	57 600	57 700	44 700	42 800	34 700
Natural Gas	2 720	13 700	15 200	18 700	19 500	18 600	16 600	21 400	22 400	23 400
Other Fuels[c]	11 300	9 380	11 200	4 860	5 400	5 020	4 800	4 610	4 250	4 000
Other Emissions[d]	**–**	**27**	**52**	**73**	**87**	**80**	**80**	**78**	**80**	**68**
Overall Total[e, f, g]	**94 500**	**132 000**	**125 000**	**84 300**	**87 700**	**81 400**	**79 200**	**70 800**	**69 600**	**62 100**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**101 000**	**146 000**	**140 000**	**110 000**	**108 000**	**106 000**	**99 300**	**98 900**	**98 000**	**91 200**
Coal	82 200	106 000	93 900	61 600	57 800	57 900	55 900	47 000	44 500	35 900
Natural Gas	4 140	26 600	29 800	40 000	41 200	39 100	35 100	43 300	46 000	47 900
Other Fuels	14 800	13 400	16 700	8 640	8 560	9 120	8 290	8 630	7 460	7 350
Refined Petroleum Products	14 700	10 600	10 800	3 170	3 550	3 570	3 100	2 920	2 400	2 140
Biomass	14	1 830	1 780	2 030	1 980	2 250	2 170	2 250	1 890	2 110
Other	91	960	4 070	3 440	3 030	3 300	3 020	3 470	3 170	3 110
Nuclear	**68 800**	**68 700**	**86 800**	**101 000**	**96 000**	**95 700**	**95 600**	**95 000**	**95 500**	**92 600**
Hydro	**263 000**	**323 000**	**327 000**	**348 000**	**345 000**	**354 000**	**361 000**	**353 000**	**349 000**	**355 000**
Other Renewables[k]	**26**	**260**	**1 580**	**12 900**	**27 500**	**31 600**	**32 100**	**34 000**	**33 600**	**36 200**
Other Generation[l, m]	**–**	**–**	**32**	**2 240**	**140**	**180**	**200**	**210**	**170**	**130**
Overall Total[f]	**433 000**	**539 000**	**556 000**	**575 000**	**576 000**	**587 000**	**588 000**	**581 000**	**577 000**	**575 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	220	240	220	150	150	140	130	120	120	110
CH_4 intensity (g CH_4 / kWh)	0.004	0.009	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.002
Generation Intensity (g CO_2 eq / kWh)[f]	**220**	**250**	**220**	**150**	**150**	**140**	**130**	**120**	**120**	**110**
	Losses									
Unallocated Energy (GWh)[o, p]	31 000	42 000	37 000	29 000	13 000	3 000	17 000	19 000	1 000	3 000
SF_6 Emissions (kt CO_2 eq)[q]	200	200	160	130	190	200	140	160	120	160
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**240**	**270**	**240**	**150**	**160**	**140**	**140**	**130**	**120**	**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 and 25-10-0020-01 (2005–2020).

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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. The electric utility sector's share of emissions from electrical equipment from CRF 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	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**1 640**	**820**	**820**	**1 210**	**1 340**	**1 520**	**1 530**	**1 130**	**1 140**	**950**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	1 640	820	820	1 210	1 340	1 520	1 530	1 130	1 140	950
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 640**	**820**	**820**	**1 210**	**1 340**	**1 520**	**1 530**	**1 130**	**1 140**	**950**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**2 090**	**1 020**	**1 360**	**1 470**	**1 560**	**1 800**	**1 800**	**1 370**	**1 320**	**1 090**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 020	1 360	1 470	1 560	1 800	1 800	1 370	1 320	1 090
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**34 300**	**41 800**	**38 900**	**38 200**	**38 800**	**39 500**	**36 500**	**41 800**	**40 800**	**38 500**
Other Renewables[k]	**–**	**–**	**–**	**180**	**170**	**190**	**190**	**210**	**180**	**180**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**36 400**	**42 800**	**40 300**	**39 800**	**40 500**	**41 500**	**38 500**	**43 400**	**42 300**	**39 800**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	45	19	20	30	33	36	39	26	27	24
CH_4 intensity (g CH_4 / kWh)	0.0005	0.0002	0.0002	0.0004	0.0005	0.0006	0.0006	0.0004	0.0004	0.0003
N_2O intensity (g N_2O / kWh)	0.001	0.0004	0.0	0.001	0.001	0.001	0.001	0.0	0.001	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**45**	**19**	**20**	**30**	**33**	**37**	**40**	**26**	**27**	**24**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 300	810	1 200	1 100	780	670	940	1 100	1 800
SF_6 Emissions (kt CO_2 eq)[q]	0.94	0.92	0.50	1.3	3.4	3.8	1.7	2.2	1.8	3.3
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**46**	**20**	**21**	**31**	**34**	**38**	**40**	**27**	**28**	**25**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**100**	**53**	**4.8**	**4.3**	**14**	**4.2**	**8.6**	**2.8**	**1.1**	**0.3**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	100	53	4.8	4.3	14	4.2	8.6	2.8	1.1	0.3
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**100**	**53**	**4.8**	**4.3**	**14**	**4.2**	**8.6**	**2.8**	**1.1**	**0.3**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**81**	**48**	**6.3**	**8.3**	**9.8**	**9.8**	**5.6**	**3.0**	**0.93**	**0.25**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	81	48	6.3	8.3	9.8	9.8	5.6	3.0	0.93	0.25
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**–**	**–**	**40**	**610**	**610**	**590**	**600**	**640**	**650**	**660**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**81**	**48**	**46**	**620**	**620**	**600**	**610**	**640**	**650**	**660**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	1 300	1 100	100	7.0	22	7.0	14	4.0	2.0	0.0
CH_4 intensity (g CH_4 / kWh)	0.01	0.01	0.001	0.0001	0.0007	0.0002	0.0005	0.0003	0.0001	0.0
N_2O intensity (g N_2O / kWh)	0.03	0.02	0.002	0.0001	0.0004	0.0001	0.0002	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**1 300**	**1 100**	**100**	**7.0**	**23**	**7.0**	**14**	**4.0**	**2.0**	**0.0**
	Losses									
Unallocated Energy (GWh)[o, p]	unk	unk	unk	33	20	22	7.0	20	20	20
SF_6 Emissions (kt CO_2 eq)[q]	0.0	0.0	–	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
unk Indicates unknown as appropriate data were unavailable
* For years where unallocated energy data was not available, values were interpolated.
** Due to the high level of imports from New Brunswick, values for New Brunswick are more indicative of GHG consumption intensity.

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**6 900**	**9 600**	**10 700**	**7 210**	**6 990**	**6 400**	**6 680**	**7 000**	**6 730**	**6 340**
Coal	5 110	8 320	5 520	4 850	4 450	4 390	4 740	4 890	4 870	4 300
Natural Gas	–	–	x	760	690	650	730	790	780	990
Other Fuels[c]	1 790	1 280	x	1 610	1 860	1 360	1 210	1 320	1 080	1 050
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 900**	**9 600**	**10 700**	**7 210**	**6 990**	**6 400**	**6 680**	**7 000**	**6 730**	**6 340**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**8 440**	**10 500**	**11 100**	**8 560**	**8 220**	**7 820**	**7 700**	**7 890**	**7 410**	**7 410**
Coal	6 020	8 850	6 770	5 250	4 870	4 830	4 840	4 980	4 990	4 470
Natural Gas	–	–	180	1 470	1 300	1 240	1 440	1 420	1 360	1 860
Other Fuels	2 430	1 610	4 110	1 840	2 050	1 750	1 410	1 490	1 070	1 080
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**1 120**	**890**	**1 040**	**1 100**	**1 010**	**800**	**850**	**940**	**1 030**	**750**
Other Renewables[k]	**26**	**–**	**110**	**760**	**820**	**980**	**1 270**	**1 090**	**1 270**	**1 260**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**9 590**	**11 300**	**12 200**	**10 400**	**10 000**	**9 610**	**9 810**	**9 910**	**9 710**	**9 420**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	720	840	880	690	690	660	680	700	690	670
CH_4 intensity (g CH_4 / kWh)	0.007	0.009	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
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**	**850**	**880**	**690**	**700**	**670**	**680**	**710**	**690**	**670**
	Losses									
Unallocated Energy (GWh)[o, p]	580	830	770	580	570	530	550	420	540	160
SF_6 Emissions (kt CO_2 eq)[q]	23	23	29	33	33	28	40	25	6.0	4.0
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**770**	**920**	**940**	**740**	**740**	**710**	**730**	**740**	**730**	**680**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations
* For years where unallocated energy data was not available, values were interpolated.

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**6 020**	**8 970**	**8 050**	**4 100**	**4 180**	**4 530**	**3 830**	**4 210**	**3 790**	**3 470**
Coal	1 180	3 130	2 910	1 660	1 560	2 020	1 850	2 070	1 750	1 140
Natural Gas	–	–	x	1 040	1 030	1 010	590	660	650	1 020
Other Fuels[c]	4 840	5 840	x	1 390	1 590	1 500	1 390	1 480	1 390	1 320
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 020**	**8 970**	**8 050**	**4 100**	**4 180**	**4 530**	**3 830**	**4 210**	**3 790**	**3 470**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**7 630**	**11 000**	**12 100**	**6 980**	**5 630**	**6 100**	**4 390**	**4 780**	**3 920**	**3 600**
Coal	1 270	3 820	2 920	2 560	1 650	2 160	2 090	2 330	1 820	1 170
Natural Gas	–	–	1 970	2 570	2 320	2 360	1 300	980	940	1 370
Other Fuels	6 360	7 210	7 210	1 850	1 650	1 580	1 000	1 480	1 150	1 060
Nuclear	**5 340**	**3 960**	**4 380**	**5 010**	**4 280**	**4 540**	**5 120**	**4 870**	**5 020**	**4 790**
Hydro	**3 460**	**3 220**	**3 820**	**2 960**	**2 620**	**3 260**	**2 600**	**2 530**	**2 990**	**2 760**
Other Renewables[k]	**–**	**–**	**–**	**790**	**790**	**770**	**780**	**820**	**890**	**860**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**16 400**	**18 200**	**20 300**	**15 700**	**13 300**	**14 700**	**12 900**	**13 000**	**12 800**	**12 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	360	490	390	260	310	310	300	320	290	290
CH_4 intensity (g CH_4 / kWh)	0.004	0.005	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03
N_2O intensity (g N_2O / kWh)	0.007	0.009	0.007	0.004	0.005	0.005	0.004	0.005	0.004	0.004
Generation Intensity (g CO_2 eq / kWh)[f]	**370**	**490**	**400**	**260**	**310**	**310**	**300**	**320**	**300**	**290**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 300	1 060	590	500	590	220	460	630	570
SF_6 Emissions (kt CO_2 eq)[q]	0.71	0.70	–	0.58	0.83	0.59	1.5	1.4	0.7	1.0
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**390**	**530**	**420**	**270**	**330**	**320**	**300**	**340**	**310**	**300**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations
* For years where unallocated energy data was not available, values were interpolated.

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**1 490**	**570**	**610**	**240**	**210**	**230**	**240**	**240**	**240**	**290**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	110	190	270	13	0.0	0.80	0.80	2.0	1.2	0.6
Other Fuels[c]	1 380	370	350	230	210	230	240	240	240	290
Other Emissions[d]	**–**	**2.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 490**	**570**	**620**	**240**	**210**	**230**	**240**	**240**	**240**	**290**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**1 980**	**1 150**	**1 390**	**1 010**	**960**	**1 290**	**1 310**	**1 340**	**1 250**	**1 270**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	190	210	14	0.0	0.0	0.0	0.0	0.0	0.0
Other Fuels	1 980	960	1 170	1 000	960	1 290	1 310	1 340	1 250	1 270
Nuclear	**4 070**	**4 890**	**4 480**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**112 000**	**153 000**	**155 000**	**177 000**	**175 000**	**177 000**	**182 000**	**180 000**	**180 000**	**176 000**
Other Renewables[k]	**–**	**170**	**420**	**1 010**	**6 420**	**9 420**	**9 530**	**10 200**	**10 700**	**10 700**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**118 000**	**160 000**	**161 000**	**179 000**	**182 000**	**188 000**	**193 000**	**191 000**	**191 000**	**188 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	13	3.5	3.7	1.4	1.1	1.2	1.2	1.3	1.2	1.5
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0005	0.0010	0.0	0.0	0.0	0.0	0.0	0.0002	0.0
N_2O intensity (g N_2O / kWh)	0.0003	0.0002	0.0004	0.0	0.0	0.0	0.0	0.0	0.0001	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**13**	**3.6**	**3.8**	**1.4**	**1.1**	**1.2**	**1.2**	**1.3**	**1.2**	**1.5**
	Losses									
Unallocated Energy (GWh)[o, p]	7 280	12 500	9 060	13 500	2 570	8 550	11 900	8 320	2 110	1 900
SF_6 Emissions (kt CO_2 eq)[q]	37	36	30	17	74	81	22	58	38	69
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**14**	**4.1**	**4.3**	**1.6**	**1.6**	**1.8**	**1.4**	**1.6**	**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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**25 900**	**44 200**	**35 300**	**6 050**	**6 320**	**5 620**	**2 600**	**4 160**	**3 970**	**3 710**
Coal	24 700	38 800	29 000	95	–	–	–	–	–	–
Natural Gas	7.98	4 910	6 130	5 830	6 240	5 500	2 450	4 040	3 910	3 640
Other Fuels[c]	1 160	480	180	120	81	120	140	120	57	63
Other Emissions[d]	**–**	**0.77**	**1.4**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**25 900**	**44 200**	**35 300**	**6 050**	**6 320**	**5 620**	**2 600**	**4 160**	**3 970**	**3 710**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**29 200**	**52 200**	**40 900**	**15 600**	**15 900**	**13 600**	**6 800**	**10 600**	**10 100**	**9 400**
Coal	27 800	40 800	29 400	79	–	–	–	–	–	–
Natural Gas	3.2	10 200	10 000	14 700	15 300	12 700	5 900	9 780	9 370	8 620
Other Fuels	1 430	1 140	1 440	780	640	900	870	840	740	730
Nuclear	**59 400**	**59 800**	**78 000**	**96 200**	**91 800**	**91 100**	**90 400**	**90 200**	**90 500**	**87 800**
Hydro	**38 700**	**36 600**	**34 600**	**38 200**	**34 800**	**36 100**	**39 500**	**37 800**	**37 800**	**38 500**
Other Renewables[k]	**–**	**1.0**	**26**	**3 660**	**12 200**	**12 100**	**11 800**	**13 600**	**12 700**	**13 100**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**127 000**	**149 000**	**153 000**	**154 000**	**155 000**	**153 000**	**149 000**	**152 000**	**151 000**	**149 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	200	300	230	39	40	36	17	27	26	25
CH_4 intensity (g CH_4 / kWh)	0.002	0.011	0.013	0.010	0.010	0.009	0.004	0.007	0.007	0.006
N_2O intensity (g N_2O / kWh)	0.003	0.005	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**200**	**300**	**230**	**39**	**41**	**37**	**17**	**27**	**26**	**25**
	Losses									
Unallocated Energy (GWh)[o, p]	10 300	12 000	12 400	9 000	5 460	12 800	12 700	12 800	12 700	12 500
SF_6 Emissions (kt CO_2 eq)[q]	76	75	50	43	56	62	56	57	50	68
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**220**	**320**	**250**	**42**	**43**	**41**	**20**	**30**	**29**	**28**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations
* For years where unallocated energy data was not available, values were interpolated.

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**520**	**1 070**	**350**	**110**	**100**	**54**	**54**	**25**	**24**	**28**
Coal	x	x	x	77	71	33	30	5.6	0.0	0.0
Natural Gas	x	x	x	31	32	7.5	12	7.2	13	16
Other Fuels[c]	49	12	15	1.7	–	13	13	12	12	13
Other Emissions[d]	**–**	**4.8**	**8.8**	**16**	**21**	**15**	**16**	**16**	**16**	**13**
Overall Total[e, f, g]	**520**	**1 070**	**360**	**130**	**120**	**69**	**70**	**41**	**40**	**41**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**400**	**880**	**450**	**96**	**110**	**56**	**62**	**30**	**32**	**35**
Coal	380	870	420	69	63	28	29	5.3	0.0	0.0
Natural Gas	0.90	–	11	25	29	12	17	9.7	17	19
Other Fuels	22	12	15	1.6	14	16	15	15	15	16
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**19 800**	**31 500**	**36 400**	**34 500**	**34 800**	**36 600**	**36 000**	**30 700**	**32 900**	**36 200**
Other Renewables[k]	**–**	**–**	**53**	**910**	**900**	**970**	**930**	**870**	**880**	**960**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**20 200**	**32 400**	**36 900**	**35 500**	**35 800**	**37 600**	**37 000**	**31 600**	**33 900**	**37 200**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	26	33	9.6	3.5	3.4	1.8	1.9	1.3	1.2	1.1
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0004	0.0002	0.0003	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001
N_2O intensity (g N_2O / kWh)	0.001	0.001	0.0002	0.0001	0.0001	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**26**	**33**	**9.7**	**3.6**	**3.5**	**1.8**	**1.9**	**1.3**	**1.2**	**1.1**
	Losses									
Unallocated Energy (GWh)[o, p]	2 100	3 750	1 860	3 870	3 680	2 170	450	370	200	160
SF_6 Emissions (kt CO_2 eq)[q]	4.3	4.2	4.0	0.9	1.0	2.4	1.1	2.4	1.8	1.4
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**29**	**38**	**10**	**4.0**	**3.9**	**2.0**	**1.9**	**1.4**	**1.2**	**1.2**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**11 100**	**14 500**	**15 300**	**15 300**	**16 200**	**16 100**	**16 700**	**16 300**	**16 000**	**13 900**
Coal	x	x	x	12 600	12 600	12 200	12 500	11 700	11 400	8 700
Natural Gas	x	x	x	2 650	3 620	3 920	4 180	4 620	4 600	5 200
Other Fuels[c]	6.5	10	4.3	6.4	9.1	9.4	9.4	9.4	5.8	4.7
Other Emissions[d]	**–**	**10**	**18**	**35**	**39**	**42**	**41**	**41**	**41**	**35**
Overall Total[e, f, g]	**11 100**	**14 500**	**15 300**	**15 300**	**16 200**	**16 200**	**16 700**	**16 400**	**16 000**	**14 000**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**9 660**	**14 100**	**14 800**	**14 800**	**19 100**	**20 300**	**20 700**	**19 400**	**19 300**	**18 800**
Coal	9 340	11 400	12 200	10 200	12 100	12 000	12 000	10 300	10 000	7 900
Natural Gas	310	2 660	2 610	4 530	6 990	8 220	8 660	9 020	9 270	10 900
Other Fuels	8.8	13	12	9.4	0.41	12	9.0	0.42	0.20	0.28
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**4 210**	**3 050**	**4 570**	**4 710**	**3 430**	**3 280**	**3 850**	**3 590**	**3 670**	**4 420**
Other Renewables[k]	**–**	**–**	**92**	**620**	**620**	**750**	**740**	**690**	**710**	**740**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**13 900**	**17 100**	**19 500**	**20 100**	**23 100**	**24 300**	**25 200**	**23 800**	**23 800**	**24 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	800	840	780	760	700	660	660	680	670	570
CH_4 intensity (g CH_4 / kWh)	0.02	0.03	0.03	0.04	0.05	0.05	0.05	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	0.02	0.02	0.02	0.01
Generation Intensity (g CO_2 eq / kWh)[f]	**800**	**850**	**790**	**760**	**700**	**670**	**660**	**690**	**670**	**580**
	Losses									
Unallocated Energy (GWh)[o, p]	1 330	1 740	1 360	3 250	1 360	1 220	2 160	2 380	1 820	1 720
SF_6 Emissions (kt CO_2 eq)[q]	1.8	1.7	1.3	0.42	0.73	0.38	0.80	0.27	0.49	0.46
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**890**	**940**	**840**	**910**	**750**	**700**	**720**	**760**	**730**	**620**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**39 800**	**50 200**	**52 000**	**49 200**	**51 500**	**45 900**	**46 800**	**36 700**	**36 400**	**32 700**
Coal	38 000	44 200	46 800	41 400	44 100	39 000	38 600	26 000	24 800	20 500
Natural Gas	1 700	5 730	5 130	7 850	7 420	6 900	8 140	10 600	11 500	12 100
Other Fuels[c]	11	300	68	17	18	1.7	0.0	0.0	21	10
Other Emissions[d]	**–**	**5.7**	**10**	**14**	**19**	**17**	**16**	**15**	**16**	**13**
Overall Total[e, f, g]	**39 800**	**50 200**	**52 000**	**49 200**	**51 500**	**45 900**	**46 800**	**36 700**	**36 400**	**32 700**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**39 900**	**51 300**	**54 200**	**59 700**	**54 100**	**53 200**	**54 800**	**51 400**	**52 000**	**47 600**
Coal	37 300	40 700	42 200	43 400	39 100	38 900	37 000	29 400	27 700	22 400
Natural Gas	2 510	10 200	11 600	15 700	14 500	13 900	17 300	21 400	23 600	24 600
Other Fuels	22	440	420	550	520	450	580	650	670	640
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**2 060**	**1 760**	**2 240**	**1 820**	**1 980**	**1 970**	**2 060**	**1 990**	**2 040**	**2 150**
Other Renewables[k]	**–**	**89**	**840**	**3 520**	**4 090**	**4 590**	**4 630**	**4 140**	**3 970**	**5 960**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**41 900**	**53 200**	**57 300**	**65 200**	**60 300**	**59 900**	**61 700**	**57 700**	**58 000**	**55 800**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	940	940	900	750	850	760	750	630	620	580
CH_4 intensity (g CH_4 / kWh)	0.02	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.06
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO_2 eq / kWh)[f]	**950**	**940**	**910**	**760**	**850**	**760**	**760**	**640**	**630**	**590**
	Losses									
Unallocated Energy (GWh)[o, p]	3 380	4 100	4 870	5 050	2 340	4 660	3 140	4 470	4 500	4 320
SF_6 Emissions (kt CO_2 eq)[q]	1.6	1.6	0.43	3.1	3.2	2.7	1.4	2.4	3.9	2.8
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**1 030**	**1 020**	**990**	**820**	**890**	**830**	**800**	**690**	**680**	**640**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
x Indicates data not shown due to statistical limitations
* For years where unallocated energy data was not available, values were interpolated.

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**800**	**1 930**	**1 320**	**570**	**500**	**680**	**570**	**700**	**930**	**420**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	514	450	633	524	644	860	362
Other Fuels[c]	x	x	x	53	49	43	51	59	73	58
Other Emissions[d]	**–**	**2.4**	**4.6**	**7.4**	**7.2**	**6.5**	**6.5**	**6.9**	**7.4**	**6.7**
Overall Total[e, f, g]	**800**	**1 930**	**1 320**	**570**	**510**	**680**	**580**	**710**	**940**	**430**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**1 390**	**3 930**	**3 820**	**1 780**	**1 610**	**1 560**	**1 410**	**1 670**	**2 280**	**1 700**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 350	3 140	940	790	600	460	540	1 340	560
Other Fuels	79	580	690	850	820	960	950	1 130	950	1 140
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**46 400**	**50 800**	**50 300**	**49 000**	**52 400**	**54 500**	**57 100**	**52 900**	**48 000**	**55 000**
Other Renewables[k]	**–**	**–**	**–**	**850**	**870**	**1 220**	**1 590**	**1 690**	**1 650**	**1 760**
Other Generation[l, m]	**–**	**–**	**–**	**2 240**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Overall Total[f]	**47 800**	**54 700**	**54 100**	**53 900**	**54 800**	**57 300**	**60 100**	**56 300**	**52 000**	**58 400**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	17	35	24	10	8.9	12	9.4	12	18	7.1
CH_4 intensity (g CH_4 / kWh)	0.004	0.009	0.007	0.003	0.003	0.003	0.003	0.003	0.005	0.002
N_2O intensity (g N_2O / kWh)	0.0004	0.001	0.0016	0.0008	0.0007	0.0008	0.0007	0.0007	0.0008	0.0006
Generation Intensity (g CO_2 eq / kWh)[f]	**17**	**35**	**24**	**11**	**9.2**	**12**	**9.7**	**13**	**18**	**7.3**
	Losses									
Unallocated Energy (GWh)[o, p]	2 210	2 300	2 120	3 940	2 110	2 210	2 320	2 050	1 520	2 240
SF_6 Emissions (kt CO_2 eq)[q]	57	56	48	26	20	15	19	12	14	14
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**19**	**38**	**26**	**12**	**10**	**13**	**10**	**13**	**19**	**7.8**

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 and 25-10-0020-01 (2005–2020).

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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding

x Indicates data not shown due to statistical limitations

* For years where unallocated energy data was not available, values were interpolated.

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**90**	**21**	**22**	**16**	**18**	**19**	**24**	**33**	**48**	**54**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	0.79	1.8	3.8	12	30	22
Other Fuels[c]	90	21	22	16	17	17	20	21	18	32
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**90**	**21**	**22**	**16**	**18**	**19**	**24**	**33**	**48**	**54**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**62**	**37**	**22**	**23**	**26**	**27**	**37**	**59**	**92**	**91**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	1.3	3.3	9.9	30	66	48
Other Fuels	62	37	22	23	24	24	27	29	26	44
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**420**	**260**	**320**	**410**	**420**	**420**	**450**	**420**	**380**	**440**
Other Renewables[k]	**–**	**0.39**	**0.89**	**0.33**	**0.65**	**0.51**	**0.03**	**0.0**	**0.0**	**0.0**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**480**	**300**	**340**	**430**	**450**	**450**	**480**	**480**	**470**	**530**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	190	71	64	38	41	43	49	69	100	100
CH_4 intensity (g CH_4 / kWh)	0.005	0.002	0.002	0.001	0.002	0.002	0.003	0.007	0.017	0.012
N_2O intensity (g N_2O / kWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**190**	**71**	**64**	**38**	**41**	**43**	**49**	**69**	**100**	**100**
	Losses									
Unallocated Energy (GWh)[o, p]	47	24	45	17	54	45	55	56	44	42
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**210**	**78**	**74**	**39**	**46**	**48**	**56**	**80**	**120**	**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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**160**	**100**	**91**	**83**	**120**	**69**	**62**	**67**	**60**	**62**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	4.8	6.3	7.9	7.9	4.0	3.0	4.0
Other Fuels[c]	x	x	x	78	110	61	54	63	57	58
Other Emissions[d]	**0.0**	**1.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**160**	**110**	**96**	**83**	**120**	**69**	**62**	**67**	**60**	**62**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**230**	**200**	**78**	**110**	**160**	**150**	**140**	**110**	**83**	**86**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	16	23	7.5	11	16	16	6.6	7.6	11
Other Fuels	230	180	54	100	150	130	130	100	75	75
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**230**	**250**	**260**	**230**	**160**	**240**	**250**	**250**	**270**	**260**
Other Renewables[k]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**450**	**440**	**340**	**340**	**320**	**390**	**390**	**360**	**350**	**350**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	340	240	280	240	360	170	160	190	170	180
CH_4 intensity (g CH_4 / kWh)	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**350**	**240**	**280**	**240**	**360**	**180**	**160**	**190**	**170**	**180**
	Losses									
Unallocated Energy (GWh)[o, p]	21	21	19	58	8.6	34	20	6.1	7.3	5.5
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**360**	**250**	**300**	**290**	**370**	**190**	**170**	**190**	**170**	**180**

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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding

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

	1990	2000	2005	2014	2015	2016	2017	2018	2019	2020[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**	**	**x**	**120**	**110**	**130**	**140**	**160**	**160**	**150**
Coal	**	**	–	–	–	–	–	–	–	–
Natural Gas	**	**	x	–	–	–	–	–	–	–
Other Fuels[c]	**	**	x	120	110	130	140	160	160	150
Other Emissions[d]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**	**	**x**	**120**	**110**	**130**	**140**	**160**	**160**	**150**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**	**	**140**	**160**	**160**	**190**	**190**	**190**	**190**	**200**
Coal	**	**	–	–	–	–	–	–	–	–
Natural Gas	**	**	–	–	–	–	–	–	–	–
Other Fuels	**	**	140	160	160	190	190	190	190	200
Nuclear	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**	**	**140**	**160**	**160**	**190**	**190**	**190**	**190**	**200**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	**	**	x	740	720	710	720	840	840	760
CH_4 intensity (g CH_4 / kWh)	**	**	x	0.0	0.0	0.0	0.0	0.0	0.0	0.0
N_2O intensity (g N_2O / kWh)	**	**	x	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**	**	**x**	**750**	**720**	**710**	**720**	**840**	**850**	**770**
	Losses									
Unallocated Energy (GWh)[o, p]	**	**	6.8	5.3	5.3	5.9	8.9	10	5.2	8.5
SF_6 Emissions (kt CO_2 eq)[q]	**	**	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**	**	**880**	**770**	**750**	**740**	**760**	**890**	**870**	**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 and 25-10-0020-01 (2005–2020).
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 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, 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 (2005–2020) or Cat. No. 57-202-XIB (1990–2004).
p. Includes transmission line losses, metering differences and other losses.
q. The electric utility sector's share of emissions from electrical equipment from CRF 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 value was truncated due to rounding
* For years where unallocated energy data was not available, values were interpolated.
** Data is only available aggregated with Northwest Territories. Please refer to Table A13–13 for values.

REFERENCES

Annex 8, Rounding Protocol

ICF Consulting. 2004. *Quantitative Assessment of Uncertainty in Canada's National GHG Inventory Estimates for 2001.* Unpublished report. Contract No. K-2362-3-0060. Submitted to Environment Canada.

ICF Consulting 2005. *Quantitative Assessment of Uncertainty in Canada's National GHG Inventory Estimates for 2001—Supplementary Analysis*. Unpublished report. Contract No. K2362-04-0121. Submitted to Environment Canada.

[IPCC] Intergovernmental Panel on Climate Change. 2001. *Climate Change 2001: The Scientific Basis*. Contribution of Working Group 1 to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge (UK): Cambridge University Press.

[IPCC] Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories.* Prepared by the National Greenhouse Gas Inventories Programme. Eggleston HS, Buendia L, Miwa K, Ngara T, Tanabe K, editors. Kanagawa (JP): Institute for Global Environmental Studies. Available online at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.

[IPCC/OECD/IEA] Intergovernmental Panel on Climate Change, Organisation for Economic Co-operation and Development, and International Energy Agency. 1997. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available online at: https://www.ipcc-nggip.iges.or.jp/.

Annex 10, Canada's Greenhouse Gas Emission Tables by Canadian Economic Sector, 1990–2020

[CEEDC] Canadian Energy and Emissions Data Centre. no date. Database on Energy, Production and Intensity Indicators for Canadian Industry. NAICS 2122 Metal Ore Mining and NAICS 2123 Non-metallic Mineral Mining and Quarrying. [cited 2020 Nov 17]. Available online at: https://cieedacdb.rem.sfu.ca/naics-database-download/.

Cheminfo Services Inc. and Clearstone Engineering Ltd. 2014. *Compilation of a National Inventory of Greenhouse Gas and Fugitive VOC Emissions by the Canadian Coal Mining Industry*. Final report submitted to the Energy Group, Pollutant Inventories and Reporting Division, Environment Canada.

Environment Canada. 2014. *Technical Report on Canada's Upstream Oil and Gas Industry.* Vols. 1 – 4. Prepared for Environment Canada. Calgary (AB): Clearstone Engineering Ltd.

[ECCC] Environment and Climate Change Canada. 2021. *Oil Sands Combustion Model*. Prepared by S. Smyth, Pollutant Inventories and Reporting Division, Environment and Climate Change Canada. Gatineau (QC).

Statistics Canada. 2003– . *Report on Energy Supply and Demand in Canada.* Catalogue No. 57-003-X. Available online at: https://www150.statcan.gc.ca/n1/en/catalogue/57-003-X.

Statistics Canada. 2021. Table 25-10-0017-01 Electric Power generation, annual fuel consumed by electric utility thermal plants. Available online at: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510001701.

Annex 13, Electricity in Canada: Summary and Intensity Tables

Statistics Canada. No date (a). *Report on Energy Supply and Demand in Canada* (annual). Catalogue No. 57-003-X. Available online at: https://www150.statcan.gc.ca/n1/en/catalogue/57-003-X.

Statistics Canada. No date (b). *Electric Power Generation, Transmission and Distribution* (annual). Catalogue No. 57-202-X. Available online at: https://www150.statcan.gc.ca/n1/en/catalogue/57-202-X.

Statistics Canada. No date (c). Table 25-10-0019-01 Electricity from fuels, annual generation by electric utility thermal plants. [released 2021 November 15, accessed 2022 February 8]. Available online at: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510001901.

Statistics Canada. No date (d). Table 25-10-0020-01 Electric power, annual generation by class of producer. [released 2021 November 15, accessed 2022 February 8]. Available online at: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510002001.

Statistics Canada. No date (e). Table 25-10-0021-01 Electric power, electric utilities and industry, annual supply and disposition [released 2021 November 15, accessed 2022 February 8]. Available online at: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510002101.

Statistics Canada. No date (f). Table 25-10-0017-01 Electric power generation, annual fuel consumed by electric utility thermal plants [released 2021 November 15, accessed 2022 February 8]. Available online at: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510001701.