



**NATIONAL INVENTORY REPORT**  
**1990-2015:**  
**GREENHOUSE GAS SOURCES**  
**AND SINKS IN CANADA**

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

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# LIST OF COMMON ACRONYMS, ABBREVIATIONS AND UNITS

## Acronyms and Abbreviations

CAC	Criteria Air Contaminant
CANSIM	Statistics Canada's key socioeconomic database
CEPA 1999	<i>Canadian Environmental Protection Act, 1999</i>
CESI	Canadian Environmental Sustainability Indicators
CFC	chlorofluorocarbon
CFS	Canadian Forest Service
ECCC	Environment and Climate Change Canada
EF	emission factor
GDP	gross domestic product
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
HFC	hydrofluorocarbon
HWP	harvested wood products
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
LULUCF	Land Use, Land-use Change and Forestry
N/A	not available
MSW	municipal solid waste
NIR	National Inventory Report
NMVOG	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
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change

## Chemical Formulas

Al	aluminium
Al <sub>2</sub> O <sub>3</sub>	alumina

CaC <sub>2</sub>	calcium carbide
CaCO <sub>3</sub>	calcium carbonate; limestone
CaMg(CO <sub>3</sub> ) <sub>2</sub>	dolomite (also CaCO <sub>3</sub> ·MgCO <sub>3</sub> )
CaO	lime; quicklime; calcined limestone
CF <sub>4</sub>	carbon tetrafluoride
C <sub>2</sub> F <sub>6</sub>	carbon hexafluoride
CH <sub>3</sub> OH	methanol
CH <sub>4</sub>	methane
C <sub>2</sub> H <sub>6</sub>	ethane
C <sub>3</sub> H <sub>8</sub>	propane
C <sub>4</sub> H <sub>10</sub>	butane
C <sub>2</sub> H <sub>4</sub>	ethylene
C <sub>6</sub> H <sub>6</sub>	benzene
CHCl <sub>3</sub>	chloroform
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
H <sub>2</sub>	hydrogen
H <sub>2</sub> O	water
H <sub>2</sub> S	hydrogen sulphide
HCFC	hydrochlorofluorocarbon
HCl	hydrochloric acid
HF	hydrogen fluoride
HNO <sub>3</sub>	nitric acid
K <sub>2</sub> CO <sub>3</sub>	potassium carbonate
Mg	magnesium
MgCO <sub>3</sub>	magnesite; magnesium carbonate
MgO	magnesia; dolomitic lime
N	nitrogen
N <sub>2</sub>	nitrogen gas
Na <sub>2</sub> CO <sub>3</sub>	sodium carbonate; soda ash
Na <sub>3</sub> AlF <sub>6</sub>	cryolite
NF <sub>3</sub>	nitrogen trifluoride
NH <sub>3</sub>	ammonia
NH <sub>4</sub> <sup>+</sup>	ammonium
NH <sub>4</sub> NO <sub>3</sub>	ammonium nitrate
N <sub>2</sub> O	nitrous oxide
N <sub>2</sub> O-N	Nitrous oxide emissions represented in terms of nitrogen
NO	nitric oxide
NO <sub>2</sub>	nitrogen dioxide
NO <sub>3</sub> <sup>-</sup>	nitrate

NO <sub>x</sub>	nitrogen oxides
O <sub>2</sub>	oxygen
SF <sub>6</sub>	sulphur hexafluoride
SiC	silicon carbide
SO <sub>2</sub>	sulphur dioxide
SO <sub>x</sub>	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	megahectare
mm	millimetre
Mt	megatonne
MW	megawatt
PJ	petajoule
t	tonne
TWh	terrawatt-hour

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# Annex 8

## IPCC 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 & 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 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 2 decimal places) to which the estimates have been rounded:

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

This rounding protocol does not apply to estimates presented by Canadian Economic Sectors (Annexes 10 & 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 11), 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 in 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 GHG Summary Tables**

Greenhouse Gas Categories		Number of Significant Figures						
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
<b>TOTAL</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>
<b>ENERGY</b>	<b>3</b>	<b>2</b>	<b>1</b>					<b>3</b>
a.								
Stationary Combustion Sources	3	1	1					3
Public Electricity and Heat Production	2	2	2					3
Petroleum Refining Industries	2	1	1					2
Mining and Upstream Oil and Gas Production	3	2	1					3
Manufacturing Industries	3	2	2					3
Iron and Steel	3	2	1					3
Non Ferrous Metals	3	2	1					3
Chemical	3	2	1					3
Pulp and Paper	1	1	1					2
Cement	3	2	1					3
Other Manufacturing	3	2	1					3
Construction	3	2	1					3
Commercial & Institutional	3	2	1					3
Residential	3	1	1					3
Agriculture & Forestry	3	2	1					3
b.								
Transport	3	2	2					3
Domestic Aviation	3	1	1					2
Road Transportation	3	1	2					3
Light-Duty Gasoline Vehicles	3	2	2					3
Light-Duty Gasoline Trucks	3	2	2					3
Heavy-Duty Gasoline Vehicles	3	2	2					3
Motorcycles	3	2	2					3
Light-Duty Diesel Vehicles	3	1	1					3
Light-Duty Diesel Trucks	3	1	1					3
Heavy-Duty Diesel Vehicles	3	1	1					3
Propane & Natural Gas Vehicles	3	1	1					2
Railways	3	1	1					2
Domestic Navigation	3	1	1					2
Other Transportation	3	1	1					2
Off-road Agriculture & Forestry	3	1	1					2
Off-road Commercial & Institutional	3	1	1					2
Off-road Manufacturing, Mining & Construction	3	1	1					2
Off-road Residential	3	1	1					2
Off-road Other Transportation	3	1	1					2
Pipeline Transport	3	2	1					3
c.								
Fugitive Sources	2	2	1					2
Coal Mining		1						1
Oil and Natural Gas	2	2	1					2
Oil	2	2	1					2
Natural Gas	2	2						2
Venting	2	2						2
Flaring	2	2	1					2
d.								
CO <sub>2</sub> Transport and Storage	1							1
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>3</b>
a.								
Mineral Products	2							2
Cement Production	2							2
Lime Production	3							3
Mineral Product Use	2							2
b.								
Chemical Industry	3	2	2					3
Ammonia Production	3							3
Nitric Acid Production			2					2
Adipic Acid Production			2					2
Petrochemical and Carbon Black Production	2	2	2					2
c.								
Metal Production	3	1			3	3		3
Iron and Steel Production	3	1						3
Aluminium Production	3				3	3		3
SF <sub>6</sub> Used in Magnesium Smelters and Casters						3		3
d.								
Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub>				2	2	2	1	2
e.								
Non-Energy Products from Fuels and Solvent Use	2							2
f.								
Other Product Manufacture and Use	1		2		2	2		2
<b>AGRICULTURE</b>	<b>1</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>2</b>		<b>2</b>
a.								
Enteric Fermentation		2						2
b.								
Manure Management		2	1					2
c.								
Agriculture 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	1							1
<b>WASTE</b>	<b>2</b>	<b>2</b>	<b>2</b>					<b>2</b>
a.								
Solid Waste Disposal		2						2
b.								
Biological Treatment of Solid Waste		1	1					1
c.								
Wastewater Treatment and Discharge		2	1					2
d.								
Incineration and Open Burning of Waste	2	1	1					2
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>2</b>	<b>2</b>	<b>2</b>					<b>2</b>
a.								
Forest Land	2	2	2					2
b.								
Cropland	2	1	1					2
c.								
Grassland		1	1					1
d.								
Wetlands	1	1	1					1
e.								
Settlements	1	1	1					1
f.								
Harvested Wood Products	2							2



# Annex 9

## CANADA'S GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2015

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, Agriculture, Land Use, Land-use Change and Forestry, 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).<sup>1</sup>

This annex contains summary tables (Table A9-1 to Table A9-28) illustrating national 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 greenhouse gas emission tables are also available in electronic file format online at <http://www.open.canada.ca>.

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

**Table A9-1 GHG Source/Sink Category Description**

GHG Source/Sink Categories	
<b>ENERGY</b>	
a. Stationary Combustion Sources	Emissions from fuel consumed by utility electricity generation and steam production (for sale)
Public Electricity and Heat Production	Emissions from fuel consumed by petroleum refining industries
Petroleum Refining Industries	Emissions from fuel consumed by:
Mining and Upstream Oil and Gas Production	- Metal and non-metal mines, coal mines, stone quarries, and gravel pits - Oil and gas extraction industries - 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 & 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 & 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. Transportation	Emissions resulting from the:
Domestic Aviation	- Consumption of fossil fuels by aircrafts flying domestically with Canadian purchased fuel
Road Transportation	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from ethanol and biodiesel) by vehicles licensed to operate on roads
Railways	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from biodiesel) by Canadian railways
Domestic Navigation	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from ethanol and biodiesel) by Canadian registered marine vessels fuelled domestically
Others – Off-road	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from ethanol and biodiesel) by 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 <sub>2</sub> Transport and Storage	Intentional and unintentional releases of greenhouse gases from the transport and storage of carbon dioxide
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	
a. Mineral Products	Emissions resulting from the following process activities: - Cement production, lime production, and mineral product use (which includes glass production, other uses of soda ash, magnesite use, and 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 dichloride, ethylene, methanol and styrene
c. Metal Production	- Aluminium production, iron and steel production, magnesium production and casting
d. Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub>	- 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; use of SF <sub>6</sub> and NF <sub>3</sub> 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 <sub>2</sub> O as an anaesthetic and propellant; use of urea in selective catalytic reduction (SCR) equipped vehicles; use of SF <sub>6</sub> and PFCs in electrical equipment
<b>AGRICULTURE</b>	
a. Enteric Fermentation	Emissions resulting from the: - Eructation of CH <sub>4</sub> during the digestion of plant material by (mainly) ruminants
b. Manure Management	- Release of CH <sub>4</sub> and N <sub>2</sub> O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens - Indirect N <sub>2</sub> O emissions from volatilization and leaching of nitrogen from animal manure during storage
c. Agricultural Soils	- Direct N <sub>2</sub> O emissions from Synthetic fertilizer, manure on cropland, pasture range and paddock, crop residue, tillage, summerfallow, irrigation and cultivation of organic soils
Direct sources	- Indirect N <sub>2</sub> O emissions from volatilization and leaching of animal manure nitrogen, synthetic fertilizer nitrogen and crop residue nitrogen
Indirect Sources	- CH <sub>4</sub> and N <sub>2</sub> O emissions from crop residue burning
d. Field Burning of Agricultural Residues	- Direct emissions of CO <sub>2</sub> from the application of lime, urea and other fertilizers containing carbon
e. Liming, Urea Application and Other Carbon-containing Fertilizers	
<b>WASTE</b>	
a. Solid Waste Disposal	Emissions resulting from: - Municipal solid waste management sites (landfills) and dedicated wood waste landfills
b. Biological Treatment of Solid Waste	- Composting of municipal solid waste
c. Wastewater Treatment and Discharge	- Domestic and industrial wastewater treatment
d. Incineration and Open Burning of Waste	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	
a. Forest Land	Emissions and removals resulting from: - Managed forests and lands converted to forests; includes growth and anthropogenic disturbances related to forest management but excludes fire and most insect disturbances
b. Cropland	- Management practices on lands in annual crops, summerfallow and perennial crops (forage, specialty crops, orchards); 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 1990-2015 GHG Emissions by Sector**

Greenhouse Gas Categories	1990	2005	2010	2011	2012	2013	2014	2015
<b>TOTAL<sup>1</sup></b>	<b>611 000</b>	<b>738 000</b>	<b>701 000</b>	<b>707 000</b>	<b>716 000</b>	<b>729 000</b>	<b>727 000</b>	<b>722 000</b>
<b>ENERGY</b>	<b>483 000</b>	<b>595 000</b>	<b>571 000</b>	<b>575 000</b>	<b>578 000</b>	<b>592 000</b>	<b>594 000</b>	<b>587 000</b>
a. Stationary Combustion Sources	286 000	339 000	318 000	320 000	322 000	329 000	332 000	328 000
Public Electricity and Heat Production	94 300	122 000	101 000	94 100	91 300	87 600	84 700	83 700
Petroleum Refining Industries	17 000	20 000	19 000	19 000	20 000	19 000	18 000	17 000
Mining and Upstream Oil and Gas Production	41 100	67 800	80 800	82 200	91 100	99 100	102 000	105 000
Manufacturing Industries	56 200	48 100	41 200	44 100	43 700	44 900	45 000	43 100
Iron and Steel	4 950	5 550	4 980	5 290	5 510	5 590	6 040	5 240
Non Ferrous Metals	3 310	3 660	3 070	3 360	2 970	3 100	2 920	2 840
Chemical	8 260	8 330	9 920	11 100	11 000	11 600	12 400	12 700
Pulp and Paper	15 000	8 700	6 000	6 300	6 000	6 300	6 100	5 600
Cement	3 980	5 430	4 070	4 300	4 020	3 850	4 050	4 110
Other Manufacturing	21 200	16 400	13 200	13 800	14 200	14 400	13 500	12 600
Construction	1 880	1 460	1 520	1 370	1 390	1 290	1 300	1 290
Commercial and Institutional	25 800	32 300	28 400	30 300	28 400	29 500	31 600	30 500
Residential	46 500	45 600	42 700	45 800	42 300	43 800	45 600	43 000
Agriculture and Forestry	2 410	2 190	2 970	3 530	3 650	3 660	3 710	3 710
b. Transport <sup>2</sup>	148 000	195 000	199 000	200 000	200 000	204 000	202 000	202 000
Domestic Aviation	7 200	7 600	6 400	6 300	7 300	7 500	7 200	7 300
Road Transportation	92 000	134 000	142 000	143 000	144 000	147 000	144 000	144 000
Light-Duty Gasoline Vehicles	46 500	43 200	39 400	37 600	36 400	36 800	35 000	35 000
Light-Duty Gasoline Trucks	22 400	39 600	42 800	42 600	43 000	44 500	44 000	44 900
Heavy-Duty Gasoline Vehicles	6 830	12 100	12 900	12 400	13 200	13 700	13 700	13 900
Motorcycles	99	212	257	257	266	268	268	278
Light-Duty Diesel Vehicles	494	613	673	802	803	861	827	834
Light-Duty Diesel Trucks	162	324	405	464	454	512	530	561
Heavy-Duty Diesel Vehicles	14 200	37 300	45 000	48 500	49 500	50 800	49 600	48 600
Propane and Natural Gas Vehicles	1 400	410	57	59	44	27	24	18
Railways	6 900	6 600	6 600	7 500	7 600	7 300	7 500	7 400
Domestic Navigation	4 800	6 400	6 800	5 600	5 600	5 100	4 800	4 300
Other Transportation	37 000	41 000	38 000	38 000	36 000	37 000	38 000	39 000
Off-Road Agriculture & Forestry	10 000	13 000	12 000	13 000	12 000	12 000	12 000	11 000
Off-Road Commercial & Institutional	1 500	1 900	2 100	2 000	1 900	2 000	2 100	2 100
Off-Road Manufacturing, Mining & Construction	10 000	11 000	13 000	13 000	12 000	12 000	12 000	13 000
Off-Road Residential	230	650	600	690	670	640	650	660
Off-Road Other Transportation	8 600	4 300	4 500	3 500	3 500	3 400	3 600	3 800
Pipeline Transport	6 910	10 200	5 720	5 650	5 730	6 720	7 890	8 150
c. Fugitive Sources	49 000	61 000	54 000	55 000	57 000	59 000	60 000	57 000
Coal Mining	3 000	1 000	1 000	1 000	1 000	2 000	1 000	1 000
Oil and Natural Gas	46 000	59 000	53 000	54 000	56 000	57 000	58 000	56 000
Oil	5 000	6 400	6 000	6 200	6 800	7 200	7 500	7 600
Natural Gas	13 000	14 000	12 000	12 000	12 000	13 000	13 000	12 000
Venting	23 000	34 000	30 000	31 000	32 000	32 000	32 000	31 000
Flaring	4 600	5 300	4 700	4 900	5 100	5 400	5 500	5 100
d. CO <sub>2</sub> Transport and Storage	-	0	0	0	0	0	0	0
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>55 900</b>	<b>54 400</b>	<b>48 500</b>	<b>52 100</b>	<b>56 500</b>	<b>53 500</b>	<b>50 900</b>	<b>51 100</b>
a. Mineral Products	8 400	10 000	7 800	7 900	8 500	7 700	7 800	8 000
Cement Production	5 800	7 600	6 000	6 100	6 600	6 000	5 900	6 300
Lime Production	1 760	1 710	1 370	1 430	1 450	1 360	1 470	1 340
Mineral Product Use	910	910	410	450	440	380	380	430
b. Chemical Industry	17 300	9 470	5 470	6 090	6 410	6 400	5 990	6 510
Ammonia Production	2 770	2 710	2 490	2 880	3 000	2 950	2 540	2 850
Nitric Acid Production	970	1 200	1 100	1 100	1 100	990	1 000	1 100
Adipic Acid Production	10 000	2 500	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 300	3 000	1 900	2 100	2 300	2 500	2 400	2 500
c. Metal Production	23 800	20 200	16 200	17 100	16 900	14 800	15 000	14 200
Iron and Steel Production	10 500	10 300	9 170	10 100	10 200	8 040	8 930	7 990
Aluminium Production	10 300	8 680	6 870	6 810	6 470	6 530	5 830	6 020
SF <sub>6</sub> Used in Magnesium Smelters and Casters	2 960	1 230	183	183	248	213	229	221
d. Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	980	5 100	7 800	8 600	9 100	9 400	10 000	11 000
e. Non-Energy Products from Fuels and Solvent Use	5 000	8 800	11 000	12 000	15 000	15 000	12 000	11 000
f. Other Product Manufacture and Use	370	530	430	400	490	500	400	480
<b>AGRICULTURE</b>	<b>49 000</b>	<b>61 000</b>	<b>56 000</b>	<b>55 000</b>	<b>57 000</b>	<b>60 000</b>	<b>58 000</b>	<b>59 000</b>
a. Enteric Fermentation	23 000	31 000	26 000	25 000	25 000	25 000	25 000	25 000
b. Manure Management	7 500	9 800	8 500	8 400	8 400	8 400	8 500	8 500
c. Agriculture Soils	17 000	18 000	20 000	20 000	21 000	23 000	22 000	23 000
Direct Sources	14 000	15 000	17 000	16 000	18 000	19 000	18 000	19 000
Indirect Sources	3 000	3 000	4 000	3 000	4 000	4 000	4 000	4 000
d. Field Burning of Agricultural Residues	200	50	30	30	40	50	50	50
e. Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	1 000	2 000	2 000	2 000	3 000	2 000	3 000
<b>WASTE</b>	<b>24 000</b>	<b>28 000</b>	<b>25 000</b>	<b>25 000</b>	<b>24 000</b>	<b>24 000</b>	<b>25 000</b>	<b>25 000</b>
a. Solid Waste Disposal	22 000	25 000	22 000	22 000	22 000	22 000	22 000	22 000
b. Biological Treatment of Solid Waste	700	1 000	1 000	900	900	900	1 000	900
c. Wastewater Treatment and Discharge	870	1 000	1 000	1 000	1 000	1 100	1 100	1 100
d. Incineration and Open Burning of Waste	790	700	660	650	530	550	550	550
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-99 000</b>	<b>-37 000</b>	<b>-28 000</b>	<b>-26 000</b>	<b>-30 000</b>	<b>-29 000</b>	<b>-33 000</b>	<b>-34 000</b>
a. Forest Land	-250 000	-180 000	-160 000	-160 000	-160 000	-160 000	-170 000	-160 000
b. Cropland	8 900	-10 000	-12 000	-12 000	-12 000	-11 000	-11 000	-11 000
c. Grassland	600	900	300	600	2 000	700	700	700
d. Wetlands	5 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
e. Settlements	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
f. Harvested Wood Products	130 000	150 000	140 000	140 000	140 000	140 000	140 000	130 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.

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

 3. 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.

- Indicates no emissions

0 Indicates emissions truncated due to rounding

Estimates for the latest year (2015) 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 allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-3 2015 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential		25	25	25	298	298	25	25	22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>568 000</b>	<b>4 100</b>	<b>100 000</b>	<b>130</b>	<b>39 000</b>	<b>11 000</b>	<b>970</b>	<b>420</b>	<b>0</b>	<b>722 000</b>
<b>ENERGY</b>		<b>528 000</b>	<b>2 000</b>	<b>50 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>587 000</b>
a.	Stationary Combustion Sources	320 000	200	6 000	9	3 000	-	-	-	-	328 000
	Public Electricity and Heat Production	83 000	6	140	2	520	-	-	-	-	83 700
	Petroleum Refining Industries	17 000	0	8	0	30	-	-	-	-	17 000
	Mining and Upstream Oil and Gas Production	102 000	87	2 200	2	600	-	-	-	-	105 000
	Manufacturing Industries	42 500	2	59	2	540	-	-	-	-	43 100
	Iron and Steel	5 210	0	3	0	30	-	-	-	-	5 240
	Non Ferrous Metals	2 820	0	2	0	20	-	-	-	-	2 840
	Chemical	12 600	0	6	0	70	-	-	-	-	12 700
	Pulp and Paper	5 000	1	30	1	300	-	-	-	-	5 600
	Cement	4 090	0	5	0	20	-	-	-	-	4 110
	Other Manufacturing	12 500	1	16	1	100	-	-	-	-	12 600
	Construction	1 280	0	1	0	10	-	-	-	-	1 290
	Commercial and Institutional	30 300	1	14	1	200	-	-	-	-	30 500
	Residential	39 200	100	3 000	2	700	-	-	-	-	43 000
	Agriculture and Forestry	3 680	0	2	0	30	-	-	-	-	3 710
b.	Transport <sup>2</sup>	195 000	25	640	21	6 200	-	-	-	-	202 000
	Domestic Aviation	7 220	0	8	0	60	-	-	-	-	7 300
	Road Transportation	141 000	9	200	8	2 500	-	-	-	-	144 000
	Light-Duty Gasoline Vehicles	34 300	3	71	2	570	-	-	-	-	35 000
	Light-Duty Gasoline Trucks	44 100	4	91	2	720	-	-	-	-	44 900
	Heavy-Duty Gasoline Vehicles	13 600	0	12	1	350	-	-	-	-	13 900
	Motorcycles	274	0	3	0	2	-	-	-	-	278
	Light-Duty Diesel Vehicles	814	0	0	0	20	-	-	-	-	834
	Light-Duty Diesel Trucks	547	0	0	0	10	-	-	-	-	561
	Heavy-Duty Diesel Vehicles	47 700	2	50	3	800	-	-	-	-	48 600
	Propane and Natural Gas Vehicles	17	0	0	0	0	-	-	-	-	18
	Railways	6 640	0	9	3	800	-	-	-	-	7 400
	Domestic Navigation	4 300	0	10	0	30	-	-	-	-	4 300
	Other Transportation	35 900	20	400	9	3 000	-	-	-	-	39 000
	Off-Road Agriculture & Forestry	10 200	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Commercial & Institutional	1 900	2	40	1	100	-	-	-	-	2 100
	Off-Road Manufacturing, Mining & Construction	11 700	1	30	4	1 000	-	-	-	-	13 000
	Off-Road Residential	625	1	10	0	30	-	-	-	-	660
	Off-Road Other Transportation	3 580	3	90	0	100	-	-	-	-	3 800
	Pipeline Transport	7 890	8	200	0	60	-	-	-	-	8 150
c.	Fugitive Sources	13 000	1 800	44 000	0	40	-	-	-	-	57 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	13 000	1 700	43 000	0	40	-	-	-	-	56 000
	Oil	210	300	7 400	0	30	-	-	-	-	7 600
	Natural Gas	110	480	12 000	-	-	-	-	-	-	12 000
	Venting	7 700	930	23 000	-	-	-	-	-	-	31 000
	Flaring	4 600	18	450	0	7	-	-	-	-	5 100
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>37 200</b>	<b>3</b>	<b>75</b>	<b>5</b>	<b>1 380</b>	<b>11 000</b>	<b>970</b>	<b>420</b>	<b>-</b>	<b>51 100</b>
a.	Mineral Products	8 000	-	-	-	-	-	-	-	-	8 000
	Cement Production	6 300	-	-	-	-	-	-	-	-	6 300
	Lime Production	1 340	-	-	-	-	-	-	-	-	1 340
	Mineral Product Use	430	-	-	-	-	-	-	-	-	430
b.	Chemical Industry	5 310	3	73	4	1 100	-	-	-	-	6 510
	Ammonia Production	2 850	-	-	-	-	-	-	-	-	2 850
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
	Petrochemical and Carbon Black Production	2 500	3	73	0	12	-	-	-	-	2 500
c.	Metal Production	13 000	0	2	-	-	-	954	230	-	14 200
	Iron and Steel Production	7 990	0	2	-	-	-	-	-	-	7 990
	Aluminium Production	5 050	-	-	-	-	-	954	10	-	6 020
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	221	-	221
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	11 000	4	1	0	11 000
e.	Non-Energy Products from Fuels and Solvent Use	11 000	-	-	-	-	-	-	-	-	11 000
f.	Other Product Manufacture and Use	20	-	-	1	250	-	11	190	-	480
	<b>AGRICULTURE</b>	<b>3 000</b>	<b>1 200</b>	<b>29 000</b>	<b>92</b>	<b>27 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>59 000</b>
a.	Enteric Fermentation	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Manure Management	-	150	3 800	20	5 000	-	-	-	-	8 500
c.	Agriculture Soils	-	-	-	76	23 000	-	-	-	-	23 000
	Direct Sources	-	-	-	63	19 000	-	-	-	-	19 000
	Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d.	Field Burning of Agricultural Residues	-	2	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	3 000	-	-	-	-	-	-	-	-	3 000
	<b>WASTE</b>	<b>410</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	890	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	16	390	2	700	-	-	-	-	1 100
d.	Incineration and Open Burning of Waste	410	0	7	0	100	-	-	-	-	550
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-35 000</b>	<b>40</b>	<b>1 000</b>	<b>1</b>	<b>400</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-34 000</b>
a.	Forest Land	-160 000	10	260	0	130	-	-	-	-	-160 000
b.	Cropland	-11 000	3	80	0	50	-	-	-	-	-11 000
c.	Grassland	-	20	500	1	200	-	-	-	-	700
d.	Wetlands	3 000	1	30	0	20	-	-	-	-	3 000
e.	Settlements	3 000	4	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	130 000	-	-	-	-	-	-	-	-	130 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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 C<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
Estimates for the latest year (2015) 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 allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-4 2014 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
Global Warming Potential		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>a</sup>	PFCs <sup>a</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>573 000</b>	<b>4 200</b>	<b>100 000</b>	<b>130</b>	<b>38 000</b>	<b>10 000</b>	<b>1 100</b>	<b>360</b>	<b>0</b>	<b>727 000</b>
<b>ENERGY</b>		<b>532 000</b>	<b>2 100</b>	<b>53 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>594 000</b>
a.	Stationary Combustion Sources	324 000	200	6 000	9	3 000	-	-	-	-	332 000
	Public Electricity and Heat Production	84 000	6	140	2	520	-	-	-	-	84 700
	Petroleum Refining Industries	18 000	0	9	0	40	-	-	-	-	18 000
	Mining and Upstream Oil and Gas Production	99 500	92	2 300	2	600	-	-	-	-	102 000
	Manufacturing Industries	44 400	2	60	2	550	-	-	-	-	45 000
	Iron and Steel	6 000	0	4	0	40	-	-	-	-	6 040
	Non Ferrous Metals	2 900	0	2	0	20	-	-	-	-	2 920
	Chemical	12 300	0	6	0	60	-	-	-	-	12 400
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 100
	Cement	4 020	0	5	0	20	-	-	-	-	4 050
	Other Manufacturing	13 300	1	16	1	200	-	-	-	-	13 500
	Construction	1 290	0	1	0	10	-	-	-	-	1 300
	Commercial and Institutional	31 400	1	18	1	200	-	-	-	-	31 600
	Residential	41 700	100	3 000	2	700	-	-	-	-	45 600
	Agriculture and Forestry	3 680	0	2	0	30	-	-	-	-	3 710
b.	Transport <sup>2</sup>	195 000	25	630	20	6 100	-	-	-	-	202 000
	Domestic Aviation	7 160	0	7	0	60	-	-	-	-	7 200
	Road Transportation	141 000	9	200	8	2 500	-	-	-	-	144 000
	Light-Duty Gasoline Vehicles	34 400	3	72	2	570	-	-	-	-	35 000
	Light-Duty Gasoline Trucks	43 200	4	89	2	700	-	-	-	-	44 000
	Heavy-Duty Gasoline Vehicles	13 400	0	12	1	350	-	-	-	-	13 700
	Motorcycles	264	0	3	0	2	-	-	-	-	268
	Light-Duty Diesel Vehicles	807	0	0	0	20	-	-	-	-	827
	Light-Duty Diesel Trucks	517	0	0	0	10	-	-	-	-	530
	Heavy-Duty Diesel Vehicles	48 700	2	50	3	800	-	-	-	-	49 600
	Propane and Natural Gas Vehicles	24	0	0	0	0	-	-	-	-	24
	Railways	6 710	0	10	3	800	-	-	-	-	7 500
	Domestic Navigation	4 800	0	10	0	40	-	-	-	-	4 800
	Other Transportation	34 900	10	400	9	3 000	-	-	-	-	38 000
	Off-Road Agriculture & Forestry	10 400	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 910	2	40	0	100	-	-	-	-	2 100
	Off-Road Manufacturing, Mining & Construction	11 000	1	30	4	1 000	-	-	-	-	12 000
	Off-Road Residential	614	1	10	0	20	-	-	-	-	650
	Off-Road Other Transportation	3 420	3	80	0	100	-	-	-	-	3 600
	Pipeline Transport	7 640	8	190	0	60	-	-	-	-	7 890
c.	Fugitive Sources	13 000	1 900	46 000	0	40	-	-	-	-	60 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	13 000	1 800	45 000	0	40	-	-	-	-	58 000
	Oil	210	290	7 200	0	30	-	-	-	-	7 500
	Natural Gas	110	510	13 000	-	-	-	-	-	-	13 000
	Venting	7 800	990	25 000	-	-	-	-	-	-	32 000
	Flaring	5 000	20	510	0	8	-	-	-	-	5 500
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>38 000</b>	<b>3</b>	<b>83</b>	<b>4</b>	<b>1 280</b>	<b>10 000</b>	<b>1 100</b>	<b>360</b>	<b>-</b>	<b>50 900</b>
a.	Mineral Products	7 800	-	-	-	-	-	-	-	-	7 800
	Cement Production	5 900	-	-	-	-	-	-	-	-	5 900
	Lime Production	1 470	-	-	-	-	-	-	-	-	1 470
	Mineral Product Use	380	-	-	-	-	-	-	-	-	380
b.	Chemical Industry	4 880	3	81	4	1 000	-	-	-	-	5 990
	Ammonia Production	2 540	-	-	-	-	-	-	-	-	2 540
	Nitric Acid Production	-	-	-	3	1 000	-	-	-	-	1 000
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
	Petrochemical and Carbon Black Production	2 300	3	81	0	12	-	-	-	-	2 400
c.	Metal Production	13 700	0	2	-	-	-	1 070	236	-	15 000
	Iron and Steel Production	8 930	0	2	-	-	-	-	-	-	8 930
	Aluminium Production	4 750	-	-	-	-	-	1 070	7	-	5 830
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	229	-	229
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	10 000	4	1	0	10 000
e.	Non-Energy Products from Fuels and Solvent Use	12 000	-	-	-	-	-	-	-	-	12 000
f.	Other Product Manufacture and Use	20	-	-	1	240	-	12	130	-	400
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 200</b>	<b>29 000</b>	<b>90</b>	<b>27 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>58 000</b>
a.	Enteric Fermentation	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Manure Management	-	150	3 700	20	5 000	-	-	-	-	8 500
c.	Agriculture Soils	-	-	-	74	22 000	-	-	-	-	22 000
	Direct Sources	-	-	-	61	18 000	-	-	-	-	18 000
	Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d.	Field Burning of Agricultural Residues	-	1	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>410</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	880	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	16	390	2	700	-	-	-	-	1 100
d.	Incineration and Open Burning of Waste	410	0	6	0	100	-	-	-	-	550
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-34 000</b>	<b>40</b>	<b>990</b>	<b>1</b>	<b>400</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-33 000</b>
a.	Forest Land	-170 000	10	260	0	130	-	-	-	-	-170 000
b.	Cropland	-11 000	3	80	0	50	-	-	-	-	-11 000
c.	Grassland	-	20	500	1	200	-	-	-	-	700
d.	Wetlands	3 000	1	20	0	10	-	-	-	-	3 000
e.	Settlements	3 000	4	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-5 2013 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>574 000</b>	<b>4 100</b>	<b>100 000</b>	<b>130</b>	<b>40 000</b>	<b>9 400</b>	<b>1 600</b>	<b>440</b>	<b>0</b>	<b>729 000</b>
<b>ENERGY</b>		<b>531 000</b>	<b>2 100</b>	<b>52 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>592 000</b>
a.	Stationary Combustion Sources	320 000	200	6 000	9	3 000	-	-	-	-	329 000
	Public Electricity and Heat Production	87 000	6	150	2	530	-	-	-	-	87 600
	Petroleum Refining Industries	19 000	0	9	0	40	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	96 300	87	2 200	2	600	-	-	-	-	99 100
	Manufacturing Industries	44 200	2	61	2	550	-	-	-	-	44 900
	Iron and Steel	5 550	0	3	0	40	-	-	-	-	5 590
	Non Ferrous Metals	3 090	0	1	0	10	-	-	-	-	3 100
	Chemical	11 500	0	6	0	60	-	-	-	-	11 600
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 300
	Cement	3 830	0	5	0	20	-	-	-	-	3 850
	Other Manufacturing	14 300	1	16	1	200	-	-	-	-	14 400
	Construction	1 280	0	1	0	10	-	-	-	-	1 290
	Commercial and Institutional	29 300	1	14	1	200	-	-	-	-	29 500
	Residential	39 900	100	3 000	2	700	-	-	-	-	43 800
	Agriculture and Forestry	3 630	0	2	0	30	-	-	-	-	3 660
b.	Transport <sup>2</sup>	197 000	24	590	22	6 400	-	-	-	-	204 000
	Domestic Aviation	7 460	0	8	0	60	-	-	-	-	7 500
	Road Transportation	144 000	10	200	9	2 800	-	-	-	-	147 000
	Light-Duty Gasoline Vehicles	36 000	3	78	2	720	-	-	-	-	36 800
	Light-Duty Gasoline Trucks	43 500	4	93	3	870	-	-	-	-	44 500
	Heavy-Duty Gasoline Vehicles	13 400	1	13	1	340	-	-	-	-	13 700
	Motorcycles	264	0	3	0	2	-	-	-	-	268
	Light-Duty Diesel Vehicles	840	0	0	0	20	-	-	-	-	861
	Light-Duty Diesel Trucks	500	0	0	0	10	-	-	-	-	512
	Heavy-Duty Diesel Vehicles	49 900	2	50	3	800	-	-	-	-	50 800
	Propane and Natural Gas Vehicles	26	0	0	0	0	-	-	-	-	27
	Railways	6 540	0	9	3	800	-	-	-	-	7 300
	Domestic Navigation	5 050	1	10	0	40	-	-	-	-	5 100
	Other Transportation	33 800	10	300	9	3 000	-	-	-	-	37 000
	Off-Road Agriculture & Forestry	10 600	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 830	1	30	0	100	-	-	-	-	2 000
	Off-Road Manufacturing, Mining & Construction	11 000	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	604	1	10	0	20	-	-	-	-	640
	Off-Road Other Transportation	3 220	3	80	0	100	-	-	-	-	3 400
	Pipeline Transport	6 500	7	160	0	50	-	-	-	-	6 720
c.	Fugitive Sources	13 000	1 800	46 000	0	50	-	-	-	-	59 000
	Coal Mining	-	60	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	13 000	1 800	44 000	0	50	-	-	-	-	57 000
	Oil	210	280	6 900	0	30	-	-	-	-	7 200
	Natural Gas	72	510	13 000	-	-	-	-	-	-	13 000
	Venting	8 100	950	24 000	-	-	-	-	-	-	32 000
	Flaring	4 900	20	510	0	10	-	-	-	-	5 400
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>40 700</b>	<b>3</b>	<b>81</b>	<b>4</b>	<b>1 240</b>	<b>9 400</b>	<b>1 600</b>	<b>440</b>	<b>-</b>	<b>53 500</b>
a.	Mineral Products	7 700	-	-	-	-	-	-	-	-	7 700
	Cement Production	6 000	-	-	-	-	-	-	-	-	6 000
	Lime Production	1 360	-	-	-	-	-	-	-	-	1 360
	Mineral Product Use	380	-	-	-	-	-	-	-	-	380
b.	Chemical Industry	5 320	3	80	3	1 000	-	-	-	-	6 400
	Ammonia Production	2 950	-	-	-	-	-	-	-	-	2 950
	Nitric Acid Production	-	-	-	3	990	-	-	-	-	990
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
	Petrochemical and Carbon Black Production	2 400	3	80	0	12	-	-	-	-	2 500
c.	Metal Production	13 000	0	2	-	-	-	1 590	219	-	14 800
	Iron and Steel Production	8 040	0	2	-	-	-	-	-	-	8 040
	Aluminium Production	4 930	-	-	-	-	-	1 590	5	-	6 530
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	213	-	213
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	9 400	4	1	0	9 400
e.	Non-Energy Products from Fuels and Solvent Use	15 000	-	-	-	-	-	-	-	-	15 000
f.	Other Product Manufacture and Use	20	-	-	1	250	-	19	220	-	500
<b>AGRICULTURE</b>		<b>3 000</b>	<b>1 200</b>	<b>29 000</b>	<b>94</b>	<b>28 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60 000</b>
a.	Enteric Fermentation	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Manure Management	-	150	3 700	20	5 000	-	-	-	-	8 400
c.	Agriculture Soils	-	-	-	78	23 000	-	-	-	-	23 000
	Direct Sources	-	-	-	64	19 000	-	-	-	-	19 000
	Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d.	Field Burning of Agricultural Residues	-	2	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	3 000	-	-	-	-	-	-	-	-	3 000
<b>WASTE</b>		<b>410</b>	<b>910</b>	<b>23 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>24 000</b>
a.	Solid Waste Disposal	-	870	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	16	390	2	700	-	-	-	-	1 100
d.	Incineration and Open Burning of Waste	410	0	6	0	100	-	-	-	-	550
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>		<b>-31 000</b>	<b>42</b>	<b>1 000</b>	<b>1</b>	<b>430</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-29 000</b>
a.	Forest Land	-160 000	12	290	0	150	-	-	-	-	-160 000
b.	Cropland	-12 000	3	80	0	50	-	-	-	-	-11 000
c.	Grassland	-	20	500	1	200	-	-	-	-	700
d.	Wetlands	3 000	1	40	0	20	-	-	-	-	3 000
e.	Settlements	4 000	5	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-6 2012 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>565 000</b>	<b>4 100</b>	<b>100 000</b>	<b>130</b>	<b>38 000</b>	<b>9 100</b>	<b>1 800</b>	<b>440</b>	<b>0</b>	<b>716 000</b>
<b>ENERGY</b>		<b>519 000</b>	<b>2 000</b>	<b>50 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>578 000</b>
a.	Stationary Combustion Sources	313 000	200	6 000	9	3 000	-	-	-	-	322 000
	Public Electricity and Heat Production	91 000	7	180	2	570	-	-	-	-	91 300
	Petroleum Refining Industries	20 000	0	10	0	40	-	-	-	-	20 000
	Mining and Upstream Oil and Gas Production	88 600	80	2 000	2	600	-	-	-	-	91 100
	Manufacturing Industries	43 100	2	59	2	520	-	-	-	-	43 700
	Iron and Steel	5 470	0	3	0	40	-	-	-	-	5 510
	Non Ferrous Metals	2 960	0	1	0	10	-	-	-	-	2 970
	Chemical	10 900	0	5	0	60	-	-	-	-	11 000
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 000
	Cement	4 000	0	5	0	20	-	-	-	-	4 020
	Other Manufacturing	14 000	1	16	1	100	-	-	-	-	14 200
	Construction	1 380	0	1	0	10	-	-	-	-	1 390
	Commercial and Institutional	28 200	1	13	1	200	-	-	-	-	28 400
	Residential	38 400	100	3 000	2	700	-	-	-	-	42 300
	Agriculture and Forestry	3 620	0	2	0	30	-	-	-	-	3 650
b.	Transport <sup>2</sup>	193 000	23	570	22	6 600	-	-	-	-	200 000
	Domestic Aviation	7 200	0	9	0	60	-	-	-	-	7 300
	Road Transportation	140 000	9	200	10	3 000	-	-	-	-	144 000
	Light-Duty Gasoline Vehicles	35 600	3	78	3	810	-	-	-	-	36 400
	Light-Duty Gasoline Trucks	41 900	4	92	3	990	-	-	-	-	43 000
	Heavy-Duty Gasoline Vehicles	12 800	1	13	1	320	-	-	-	-	13 200
	Motorcycles	262	0	3	0	2	-	-	-	-	266
	Light-Duty Diesel Vehicles	784	0	0	0	20	-	-	-	-	803
	Light-Duty Diesel Trucks	443	0	0	0	10	-	-	-	-	454
	Heavy-Duty Diesel Vehicles	48 700	2	50	3	800	-	-	-	-	49 500
	Propane and Natural Gas Vehicles	43	0	1	0	0	-	-	-	-	44
	Railways	6 790	0	10	3	800	-	-	-	-	7 600
	Domestic Navigation	5 530	1	10	0	40	-	-	-	-	5 600
	Other Transportation	32 600	10	300	9	3 000	-	-	-	-	36 000
	Off-Road Agriculture & Forestry	10 500	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 720	1	30	0	100	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	10 800	1	30	4	1 000	-	-	-	-	12 000
	Off-Road Residential	629	1	10	0	20	-	-	-	-	670
	Off-Road Other Transportation	3 360	3	80	0	100	-	-	-	-	3 500
	Pipeline Transport	5 540	6	140	0	40	-	-	-	-	5 730
c.	Fugitive Sources	13 000	1 800	44 000	0	40	-	-	-	-	57 000
	Coal Mining	-	60	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	13 000	1 700	43 000	0	40	-	-	-	-	56 000
	Oil	220	260	6 600	0	30	-	-	-	-	6 800
	Natural Gas	72	490	12 000	-	-	-	-	-	-	12 000
	Venting	8 200	930	23 000	-	-	-	-	-	-	32 000
	Flaring	4 600	18	460	0	6	-	-	-	-	5 100
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>43 800</b>	<b>3</b>	<b>74</b>	<b>4</b>	<b>1 330</b>	<b>9 100</b>	<b>1 800</b>	<b>440</b>	<b>-</b>	<b>56 500</b>
a.	Mineral Products	8 500	-	-	-	-	-	-	-	-	8 500
	Cement Production	6 600	-	-	-	-	-	-	-	-	6 600
	Lime Production	1 450	-	-	-	-	-	-	-	-	1 450
	Mineral Product Use	440	-	-	-	-	-	-	-	-	440
b.	Chemical Industry	5 250	3	72	4	1 100	-	-	-	-	6 410
	Ammonia Production	3 000	-	-	-	-	-	-	-	-	3 000
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
	Petrochemical and Carbon Black Production	2 300	3	72	0	11	-	-	-	-	2 300
c.	Metal Production	14 900	0	2	-	-	-	1 760	253	-	16 900
	Iron and Steel Production	10 200	0	2	-	-	-	-	-	-	10 200
	Aluminium Production	4 710	-	-	-	-	-	1 760	5	-	6 470
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	248	-	248
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	9 100	4	1	0	9 100
e.	Non-Energy Products from Fuels and Solvent Use	15 000	-	-	-	-	-	-	-	-	15 000
f.	Other Product Manufacture and Use	10	-	-	1	250	-	36	190	-	490
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 200</b>	<b>29 000</b>	<b>87</b>	<b>26 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>57 000</b>
a.	Enteric Fermentation	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Manure Management	-	150	3 600	20	5 000	-	-	-	-	8 400
c.	Agriculture Soils	-	-	-	71	21 000	-	-	-	-	21 000
	Direct Sources	-	-	-	59	18 000	-	-	-	-	18 000
	Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d.	Field Burning of Agricultural Residues	-	1	30	0	9	-	-	-	-	40
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>400</b>	<b>910</b>	<b>23 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>24 000</b>
a.	Solid Waste Disposal	-	870	22 000	1	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	15	390	2	700	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	400	0	6	0	100	-	-	-	-	530
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-32 000</b>	<b>70</b>	<b>1 800</b>	<b>2</b>	<b>640</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-30 000</b>
a.	Forest Land	-160 000	13	330	1	150	-	-	-	-	-160 000
b.	Cropland	-12 000	3	80	0	50	-	-	-	-	-12 000
c.	Grassland	-	50	1 000	1	400	-	-	-	-	2 000
d.	Wetlands	3 000	2	40	0	20	-	-	-	-	3 000
e.	Settlements	4 000	5	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-7 2011 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential											
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>560 000</b>	<b>4 000</b>	<b>100 000</b>	<b>120</b>	<b>37 000</b>	<b>8 600</b>	<b>1 700</b>	<b>400</b>	<b>0</b>	<b>707 000</b>
<b>ENERGY</b>		<b>518 000</b>	<b>1 900</b>	<b>48 000</b>	<b>30</b>	<b>10 000</b>	-	-	-	-	<b>575 000</b>
a.	Stationary Combustion Sources	312 000	200	5 000	9	3 000	-	-	-	-	320 000
	Public Electricity and Heat Production	93 000	7	170	2	590	-	-	-	-	94 100
	Petroleum Refining Industries	18 000	0	10	0	40	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	79 900	75	1 900	2	500	-	-	-	-	82 200
	Manufacturing Industries	43 500	2	58	2	520	-	-	-	-	44 100
	Iron and Steel	5 260	0	3	0	30	-	-	-	-	5 290
	Non Ferrous Metals	3 340	0	2	0	10	-	-	-	-	3 360
	Chemical	11 100	0	5	0	60	-	-	-	-	11 100
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 300
	Cement	4 280	0	5	0	20	-	-	-	-	4 300
	Other Manufacturing	13 600	1	14	1	100	-	-	-	-	13 800
	Construction	1 350	0	1	0	10	-	-	-	-	1 370
	Commercial and Institutional	30 100	1	14	1	200	-	-	-	-	30 300
	Residential	41 900	100	3 000	2	700	-	-	-	-	45 800
	Agriculture and Forestry	3 500	0	2	0	30	-	-	-	-	3 530
b.	Transport <sup>2</sup>	192 000	23	580	24	7 100	-	-	-	-	200 000
	Domestic Aviation	6 250	0	8	0	50	-	-	-	-	6 300
	Road Transportation	139 000	10	200	11	3 300	-	-	-	-	143 000
	Light-Duty Gasoline Vehicles	36 600	3	82	3	970	-	-	-	-	37 600
	Light-Duty Gasoline Trucks	41 300	4	92	4	1 200	-	-	-	-	42 600
	Heavy-Duty Gasoline Vehicles	12 100	1	13	1	300	-	-	-	-	12 400
	Motorcycles	253	0	3	0	1	-	-	-	-	257
	Light-Duty Diesel Vehicles	782	0	0	0	20	-	-	-	-	802
	Light-Duty Diesel Trucks	452	0	0	0	10	-	-	-	-	464
	Heavy-Duty Diesel Vehicles	47 700	2	50	3	800	-	-	-	-	48 500
	Propane and Natural Gas Vehicles	58	0	1	0	0	-	-	-	-	59
	Railways	6 730	0	10	3	800	-	-	-	-	7 500
	Domestic Navigation	5 540	1	10	0	40	-	-	-	-	5 600
	Other Transportation	34 400	10	300	10	3 000	-	-	-	-	38 000
	Off-Road Agriculture & Forestry	11 200	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Commercial & Institutional	1 850	1	30	0	100	-	-	-	-	2 000
	Off-Road Manufacturing, Mining & Construction	11 900	1	30	4	1 000	-	-	-	-	13 000
	Off-Road Residential	646	1	10	0	30	-	-	-	-	690
	Off-Road Other Transportation	3 320	3	80	0	100	-	-	-	-	3 500
	Pipeline Transport	5 470	6	140	0	40	-	-	-	-	5 650
c.	Fugitive Sources	13 000	1 700	42 000	0	40	-	-	-	-	55 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	13 000	1 600	41 000	0	40	-	-	-	-	54 000
	Oil	210	240	5 900	0	30	-	-	-	-	6 200
	Natural Gas	70	480	12 000	-	-	-	-	-	-	12 000
	Venting	8 400	900	22 000	-	-	-	-	-	-	31 000
	Flaring	4 500	18	450	0	7	-	-	-	-	4 900
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>40 000</b>	<b>3</b>	<b>72</b>	<b>5</b>	<b>1 370</b>	<b>8 600</b>	<b>1 700</b>	<b>400</b>	<b>-</b>	<b>52 100</b>
a.	Mineral Products	7 900	-	-	-	-	-	-	-	-	7 900
	Cement Production	6 100	-	-	-	-	-	-	-	-	6 100
	Lime Production	1 430	-	-	-	-	-	-	-	-	1 430
	Mineral Product Use	450	-	-	-	-	-	-	-	-	450
b.	Chemical Industry	4 890	3	70	4	1 100	-	-	-	-	6 090
	Ammonia Production	2 880	-	-	-	-	-	-	-	-	2 880
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
	Petrochemical and Carbon Black Production	2 000	3	70	0	10	-	-	-	-	2 100
c.	Metal Production	15 100	0	2	-	-	-	1 670	256	-	17 100
	Iron and Steel Production	10 100	0	2	-	-	-	-	-	-	10 100
	Aluminium Production	5 070	-	-	-	-	-	1 670	73	-	6 810
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	183	-	183
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	8 600	5	2	0	8 600
e.	Non-Energy Products from Fuels and Solvent Use	12 000	-	-	-	-	-	-	-	-	12 000
f.	Other Product Manufacture and Use	8	-	-	1	240	-	15	140	-	400
<b>AGRICULTURE</b>		<b>2 000</b>	<b>1 200</b>	<b>29 000</b>	<b>82</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>55 000</b>
a.	Enteric Fermentation	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Manure Management	-	150	3 700	20	5 000	-	-	-	-	8 400
c.	Agriculture Soils	-	-	-	66	20 000	-	-	-	-	20 000
	Direct Sources	-	-	-	55	16 000	-	-	-	-	16 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	1	20	0	7	-	-	-	-	30
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
<b>WASTE</b>		<b>470</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	890	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	15	380	2	700	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	470	0	6	1	200	-	-	-	-	650
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>		<b>-27 000</b>	<b>39</b>	<b>980</b>	<b>1</b>	<b>400</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-26 000</b>
a.	Forest Land	-160 000	11	290	0	140	-	-	-	-	-160 000
b.	Cropland	-12 000	3	80	0	50	-	-	-	-	-12 000
c.	Grassland	-	20	500	1	100	-	-	-	-	600
d.	Wetlands	3 000	1	20	0	10	-	-	-	-	3 000
e.	Settlements	4 000	4	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-8 2010 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>a</sup>	PFCs <sup>a</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>554 000</b>	<b>4 000</b>	<b>100 000</b>	<b>130</b>	<b>37 000</b>	<b>7 800</b>	<b>1 900</b>	<b>440</b>	<b>0</b>	<b>701 000</b>
<b>ENERGY</b>		<b>514 000</b>	<b>1 900</b>	<b>47 000</b>	<b>30</b>	<b>10 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>571 000</b>
a.	Stationary Combustion Sources	310 000	200	5 000	9	3 000	-	-	-	-	318 000
	Public Electricity and Heat Production	100 000	6	150	2	610	-	-	-	-	101 000
	Petroleum Refining Industries	19 000	0	10	0	40	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	78 400	74	1 900	2	500	-	-	-	-	80 800
	Manufacturing Industries	40 600	2	59	2	520	-	-	-	-	41 200
	Iron and Steel	4 950	0	3	0	30	-	-	-	-	4 980
	Non Ferrous Metals	3 060	0	2	0	20	-	-	-	-	3 070
	Chemical	9 860	0	5	0	50	-	-	-	-	9 920
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 000
	Cement	4 050	0	5	0	10	-	-	-	-	4 070
	Other Manufacturing	13 000	1	15	1	100	-	-	-	-	13 200
	Construction	1 510	0	1	0	10	-	-	-	-	1 520
	Commercial and Institutional	28 200	1	13	1	200	-	-	-	-	28 400
	Residential	38 900	100	3 000	2	700	-	-	-	-	42 700
	Agriculture and Forestry	2 940	0	1	0	20	-	-	-	-	2 970
b.	Transport <sup>2</sup>	191 000	24	590	24	7 300	-	-	-	-	199 000
	Domestic Aviation	6 340	0	8	0	60	-	-	-	-	6 400
	Road Transportation	138 000	10	200	12	3 600	-	-	-	-	142 000
	Light-Duty Gasoline Vehicles	38 100	4	87	4	1 100	-	-	-	-	39 400
	Light-Duty Gasoline Trucks	41 300	4	95	5	1 400	-	-	-	-	42 800
	Heavy-Duty Gasoline Vehicles	12 600	1	14	1	300	-	-	-	-	12 900
	Motorcycles	253	0	3	0	1	-	-	-	-	257
	Light-Duty Diesel Vehicles	657	0	0	0	20	-	-	-	-	673
	Light-Duty Diesel Trucks	395	0	0	0	9	-	-	-	-	405
	Heavy-Duty Diesel Vehicles	44 300	2	50	2	700	-	-	-	-	45 000
	Propane and Natural Gas Vehicles	56	0	1	0	0	-	-	-	-	57
	Railways	5 880	0	8	2	700	-	-	-	-	6 600
	Domestic Navigation	6 700	1	20	0	50	-	-	-	-	6 800
	Other Transportation	34 900	10	300	10	3 000	-	-	-	-	38 000
	Off-Road Agriculture & Forestry	11 200	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 910	1	30	1	200	-	-	-	-	2 100
	Off-Road Manufacturing, Mining & Construction	11 500	1	30	4	1 000	-	-	-	-	13 000
	Off-Road Residential	571	1	10	0	20	-	-	-	-	600
	Off-Road Other Transportation	4 200	4	90	1	200	-	-	-	-	4 500
	Pipeline Transport	5 530	6	140	0	40	-	-	-	-	5 720
c.	Fugitive Sources	13 000	1 700	41 000	0	40	-	-	-	-	54 000
	Coal Mining	-	60	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	13 000	1 600	40 000	0	40	-	-	-	-	53 000
	Oil	220	230	5 800	0	30	-	-	-	-	6 000
	Natural Gas	68	490	12 000	-	-	-	-	-	-	12 000
	Venting	8 600	850	21 000	-	-	-	-	-	-	30 000
	Flaring	4 200	17	440	0	9	-	-	-	-	4 700
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>37 000</b>	<b>3</b>	<b>71</b>	<b>4</b>	<b>1 300</b>	<b>7 800</b>	<b>1 900</b>	<b>440</b>	<b>-</b>	<b>48 500</b>
a.	Mineral Products	7 800	-	-	-	-	-	-	-	-	7 800
	Cement Production	6 000	-	-	-	-	-	-	-	-	6 000
	Lime Production	1 370	-	-	-	-	-	-	-	-	1 370
	Mineral Product Use	410	-	-	-	-	-	-	-	-	410
b.	Chemical Industry	4 330	3	69	4	1 100	-	-	-	-	5 470
	Ammonia Production	2 490	-	-	-	-	-	-	-	-	2 490
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
	Petrochemical and Carbon Black Production	1 800	3	69	0	10	-	-	-	-	1 900
c.	Metal Production	14 100	0	2	-	-	-	1 850	256	-	16 200
	Iron and Steel Production	9 160	0	2	-	-	-	-	-	-	9 170
	Aluminum Production	4 950	-	-	-	-	-	1 850	73	-	6 870
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	183	-	183
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	7 800	5	2	0	7 800
e.	Non-Energy Products from Fuels and Solvent Use	11 000	-	-	-	-	-	-	-	-	11 000
f.	Other Product Manufacture and Use	3	-	-	1	230	-	7	180	-	430
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 200</b>	<b>29 000</b>	<b>84</b>	<b>25 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>56 000</b>
a.	Enteric Fermentation	-	1 000	26 000	-	-	-	-	-	-	26 000
b.	Manure Management	-	150	3 700	20	5 000	-	-	-	-	8 500
c.	Agriculture Soils	-	-	-	67	20 000	-	-	-	-	20 000
	Direct Sources	-	-	-	56	17 000	-	-	-	-	17 000
	Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d.	Field Burning of Agricultural Residues	-	1	30	0	8	-	-	-	-	30
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>480</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	890	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	15	380	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	480	0	6	1	200	-	-	-	-	660
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-29 000</b>	<b>31</b>	<b>770</b>	<b>1</b>	<b>330</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-28 000</b>
a.	Forest Land	-160 000	13	310	0	140	-	-	-	-	-160 000
b.	Cropland	-12 000	3	80	0	50	-	-	-	-	-12 000
c.	Grassland	-	10	200	0	80	-	-	-	-	300
d.	Wetlands	3 000	1	30	0	10	-	-	-	-	3 000
e.	Settlements	4 000	4	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9–9 2009 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
Global Warming Potential		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>539 000</b>	<b>4 100</b>	<b>100 000</b>	<b>130</b>	<b>37 000</b>	<b>6 800</b>	<b>2 500</b>	<b>370</b>	<b>0</b>	<b>689 000</b>
<b>ENERGY</b>		<b>503 000</b>	<b>1 900</b>	<b>47 000</b>	<b>30</b>	<b>10 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>560 000</b>
a.	Stationary Combustion Sources	307 000	200	5 000	8	2 000	-	-	-	-	315 000
	Public Electricity and Heat Production	98 000	5	130	2	620	-	-	-	-	99 100
	Petroleum Refining Industries	19 000	0	10	0	40	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	75 600	76	1 900	2	500	-	-	-	-	78 000
	Manufacturing Industries	39 400	2	57	2	500	-	-	-	-	39 900
	Iron and Steel	4 260	0	3	0	30	-	-	-	-	4 290
	Non Ferrous Metals	2 910	0	2	0	20	-	-	-	-	2 930
	Chemical	8 830	0	4	0	50	-	-	-	-	8 880
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 400
	Cement	4 460	0	5	0	20	-	-	-	-	4 480
	Other Manufacturing	12 800	1	14	0	100	-	-	-	-	12 900
	Construction	1 220	0	1	0	9	-	-	-	-	1 230
	Commercial and Institutional	29 600	1	14	1	200	-	-	-	-	29 800
	Residential	41 600	100	3 000	2	600	-	-	-	-	45 100
	Agriculture and Forestry	2 580	0	1	0	20	-	-	-	-	2 600
b.	Transport <sup>2</sup>	182 000	24	590	23	7 000	-	-	-	-	190 000
	Domestic Aviation	6 320	0	9	0	60	-	-	-	-	6 400
	Road Transportation	132 000	10	200	12	3 700	-	-	-	-	136 000
	Light-Duty Gasoline Vehicles	38 400	4	89	4	1 300	-	-	-	-	39 700
	Light-Duty Gasoline Trucks	39 700	4	93	5	1 500	-	-	-	-	41 300
	Heavy-Duty Gasoline Vehicles	12 300	1	14	1	280	-	-	-	-	12 600
	Motorcycles	244	0	3	0	1	-	-	-	-	248
	Light-Duty Diesel Vehicles	568	0	0	0	10	-	-	-	-	582
	Light-Duty Diesel Trucks	348	0	0	0	8	-	-	-	-	356
	Heavy-Duty Diesel Vehicles	40 200	2	40	2	600	-	-	-	-	40 900
	Propane and Natural Gas Vehicles	89	0	1	0	1	-	-	-	-	90
	Railways	4 550	0	6	2	500	-	-	-	-	5 100
	Domestic Navigation	6 430	1	10	0	50	-	-	-	-	6 500
	Other Transportation	33 100	10	300	9	3 000	-	-	-	-	36 000
	Off-Road Agriculture & Forestry	10 400	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 710	1	30	1	100	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	10 200	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Residential	564	1	10	0	20	-	-	-	-	600
	Off-Road Other Transportation	4 080	4	90	1	200	-	-	-	-	4 300
	Pipeline Transport	6 160	6	150	0	50	-	-	-	-	6 360
c.	Fugitive Sources	14 000	1 700	42 000	0	40	-	-	-	-	55 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	14 000	1 600	41 000	0	40	-	-	-	-	54 000
	Oil	210	230	5 700	0	30	-	-	-	-	5 900
	Natural Gas	67	510	13 000	-	-	-	-	-	-	13 000
	Venting	9 000	870	22 000	-	-	-	-	-	-	31 000
	Flaring	4 400	18	460	0	10	-	-	-	-	4 900
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>34 100</b>	<b>3</b>	<b>70</b>	<b>7</b>	<b>2 000</b>	<b>6 800</b>	<b>2 500</b>	<b>370</b>	<b>-</b>	<b>45 800</b>
a.	Mineral Products	7 200	-	-	-	-	-	-	-	-	7 200
	Cement Production	5 400	-	-	-	-	-	-	-	-	5 400
	Lime Production	1 190	-	-	-	-	-	-	-	-	1 190
	Mineral Product Use	610	-	-	-	-	-	-	-	-	610
b.	Chemical Industry	4 050	3	68	6	1 800	-	-	-	-	5 870
	Ammonia Production	2 400	-	-	-	-	-	-	-	-	2 400
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	2	640	-	-	-	-	640
	Petrochemical and Carbon Black Production	1 700	3	68	0	9	-	-	-	-	1 700
c.	Metal Production	13 200	0	2	-	-	-	2 500	198	-	15 900
	Iron and Steel Production	8 140	0	2	-	-	-	-	-	-	8 140
	Aluminium Production	5 030	-	-	-	-	-	2 500	13	-	7 540
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	184	-	184
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	6 800	6	1	0	6 800
e.	Non-Energy Products from Fuels and Solvent Use	9 600	-	-	-	-	-	-	-	-	9 600
f.	Other Product Manufacture and Use	0	-	-	1	250	-	5	180	-	430
<b>AGRICULTURE</b>		<b>2 000</b>	<b>1 200</b>	<b>31 000</b>	<b>83</b>	<b>25 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>57 000</b>
a.	Enteric Fermentation	-	1 100	27 000	-	-	-	-	-	-	27 000
b.	Manure Management	-	150	3 700	20	5 000	-	-	-	-	8 600
c.	Agriculture Soils	-	-	-	66	20 000	-	-	-	-	20 000
	Direct Sources	-	-	-	55	16 000	-	-	-	-	16 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	2	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
<b>WASTE</b>		<b>470</b>	<b>960</b>	<b>24 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26 000</b>
a.	Solid Waste Disposal	-	920	23 000	-	-	-	-	-	-	23 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	15	370	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	470	0	6	1	200	-	-	-	-	650
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>		<b>-47 000</b>	<b>32</b>	<b>790</b>	<b>1</b>	<b>330</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-46 000</b>
a.	Forest Land	-170 000	10	240	0	110	-	-	-	-	-170 000
b.	Cropland	-12 000	3	80	0	50	-	-	-	-	-12 000
c.	Grassland	-	10	300	0	100	-	-	-	-	400
d.	Wetlands	3 000	1	30	0	10	-	-	-	-	3 000
e.	Settlements	4 000	5	100	0	60	-	-	-	-	4 000
f.	Harvested Wood Products	120 000	-	-	-	-	-	-	-	-	120 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-10 2008 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential		Unit									
		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>572 000</b>	<b>4 300</b>	<b>110 000</b>	<b>140</b>	<b>41 000</b>	<b>6 100</b>	<b>2 600</b>	<b>640</b>	<b>0</b>	<b>729 000</b>
<b>ENERGY</b>		<b>531 000</b>	<b>2 000</b>	<b>50 000</b>	<b>30</b>	<b>10 000</b>	-	-	-	-	<b>591 000</b>
a.	Stationary Combustion Sources	327 000	200	5 000	9	3 000	-	-	-	-	335 000
	Public Electricity and Heat Production	110 000	6	140	2	700	-	-	-	-	113 000
	Petroleum Refining Industries	20 000	1	10	0	50	-	-	-	-	20 000
	Mining and Upstream Oil and Gas Production	73 900	81	2 000	2	500	-	-	-	-	76 400
	Manufacturing Industries	44 000	3	63	2	550	-	-	-	-	44 600
	Iron and Steel	5 730	0	4	0	40	-	-	-	-	5 770
	Non Ferrous Metals	3 810	0	2	0	20	-	-	-	-	3 830
	Chemical	8 750	0	4	0	50	-	-	-	-	8 800
	Pulp and Paper	6 000	1	30	1	300	-	-	-	-	6 300
	Cement	4 880	0	6	0	20	-	-	-	-	4 900
	Other Manufacturing	14 800	1	16	1	100	-	-	-	-	15 000
	Construction	1 380	0	1	0	10	-	-	-	-	1 390
	Commercial and Institutional	29 800	1	14	1	200	-	-	-	-	30 000
	Residential	43 500	100	3 000	2	700	-	-	-	-	47 100
	Agriculture and Forestry	2 650	0	1	0	20	-	-	-	-	2 680
b.	Transport <sup>2</sup>	189 000	25	640	26	7 700	-	-	-	-	197 000
	Domestic Aviation	7 270	0	9	0	60	-	-	-	-	7 300
	Road Transportation	133 000	10	200	13	4 000	-	-	-	-	137 000
	Light-Duty Gasoline Vehicles	38 600	4	92	5	1 400	-	-	-	-	40 100
	Light-Duty Gasoline Trucks	38 600	4	92	5	1 600	-	-	-	-	40 400
	Heavy-Duty Gasoline Vehicles	12 200	1	16	1	270	-	-	-	-	12 500
	Motorcycles	236	0	3	0	1	-	-	-	-	239
	Light-Duty Diesel Vehicles	613	0	0	0	10	-	-	-	-	628
	Light-Duty Diesel Trucks	338	0	0	0	8	-	-	-	-	346
	Heavy-Duty Diesel Vehicles	42 000	2	40	2	700	-	-	-	-	42 700
	Propane and Natural Gas Vehicles	172	0	2	0	1	-	-	-	-	180
	Railways	7 040	0	10	3	800	-	-	-	-	7 900
	Domestic Navigation	6 220	1	10	0	50	-	-	-	-	6 300
	Other Transportation	35 300	10	400	9	3 000	-	-	-	-	38 000
	Off-Road Agriculture & Forestry	10 700	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 800	1	30	1	100	-	-	-	-	2 000
	Off-Road Manufacturing, Mining & Construction	10 700	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	594	1	10	0	20	-	-	-	-	630
	Off-Road Other Transportation	4 230	4	90	1	200	-	-	-	-	4 500
	Pipeline Transport	7 280	7	180	0	60	-	-	-	-	7 520
c.	Fugitive Sources	15 000	1 800	44 000	0	40	-	-	-	-	59 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	15 000	1 700	43 000	0	40	-	-	-	-	57 000
	Oil	210	230	5 800	0	30	-	-	-	-	6 000
	Natural Gas	66	520	13 000	-	-	-	-	-	-	13 000
	Venting	9 800	930	23 000	-	-	-	-	-	-	33 000
	Flaring	4 700	22	540	0	6	-	-	-	-	5 200
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>39 400</b>	<b>3</b>	<b>82</b>	<b>13</b>	<b>3 890</b>	<b>6 100</b>	<b>2 600</b>	<b>640</b>	<b>-</b>	<b>52 700</b>
a.	Mineral Products	9 300	-	-	-	-	-	-	-	-	9 300
	Cement Production	7 000	-	-	-	-	-	-	-	-	7 000
	Lime Production	1 540	-	-	-	-	-	-	-	-	1 540
	Mineral Product Use	750	-	-	-	-	-	-	-	-	750
b.	Chemical Industry	4 790	3	80	12	3 600	-	-	-	-	8 420
	Ammonia Production	2 810	-	-	-	-	-	-	-	-	2 810
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	8	2 300	-	-	-	-	2 300
	Petrochemical and Carbon Black Production	2 000	3	80	0	10	-	-	-	-	2 100
c.	Metal Production	16 000	0	2	-	-	2 590	438	-	-	19 000
	Iron and Steel Production	10 800	0	2	-	-	-	-	-	-	10 800
	Aluminium Production	5 170	-	-	-	-	2 590	4	-	-	7 760
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	435	-	-	435
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	6 100	9	2	0	6 100
e.	Non-Energy Products from Fuels and Solvent Use	9 400	-	-	-	-	-	-	-	-	9 400
f.	Other Product Manufacture and Use	0	-	-	1	330	-	4	200	-	540
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>32 000</b>	<b>86</b>	<b>26 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60 000</b>
a.	Enteric Fermentation	-	1 100	29 000	-	-	-	-	-	-	29 000
b.	Manure Management	-	150	3 800	20	5 000	-	-	-	-	9 000
c.	Agriculture Soils	-	-	-	69	21 000	-	-	-	-	21 000
	Direct Sources	-	-	-	57	17 000	-	-	-	-	17 000
	Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d.	Field Burning of Agricultural Residues	-	2	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>490</b>	<b>970</b>	<b>24 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26 000</b>
a.	Solid Waste Disposal	-	930	23 000	-	-	-	-	-	-	23 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	15	370	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	490	0	6	1	200	-	-	-	-	680
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-34 000</b>	<b>36</b>	<b>900</b>	<b>1</b>	<b>380</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-32 000</b>
a.	Forest Land	-160 000	11	270	0	130	-	-	-	-	-160 000
b.	Cropland	-12 000	4	100	0	60	-	-	-	-	-12 000
c.	Grassland	-	10	400	0	100	-	-	-	-	500
d.	Wetlands	3 000	1	20	0	10	-	-	-	-	3 000
e.	Settlements	4 000	6	100	0	60	-	-	-	-	4 000
f.	Harvested Wood Products	130 000	-	-	-	-	-	-	-	-	130 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
- HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HFC production (HFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- 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.
  - Indicates no emissions
  - 0 Indicates emissions truncated due to rounding

National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-11 2007 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential		25			298		22,800		17,200		
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>590 000</b>	<b>4 400</b>	<b>110 000</b>	<b>130</b>	<b>39 000</b>	<b>6 000</b>	<b>2 500</b>	<b>730</b>	<b>0</b>	<b>750 000</b>
<b>ENERGY</b>		<b>547 000</b>	<b>2 000</b>	<b>51 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>609 000</b>
a.	Stationary Combustion Sources	343 000	200	5 000	9	3 000	-	-	-	-	351 000
	Public Electricity and Heat Production	120 000	5	140	2	730	-	-	-	-	121 000
	Petroleum Refining Industries	21 000	1	10	0	50	-	-	-	-	21 000
	Mining and Upstream Oil and Gas Production	77 300	88	2 200	2	500	-	-	-	-	80 000
	Manufacturing Industries	46 500	3	68	2	600	-	-	-	-	47 200
	Iron and Steel	5 950	0	4	0	40	-	-	-	-	6 000
	Non Ferrous Metals	3 830	0	2	0	20	-	-	-	-	3 850
	Chemical	8 670	0	4	0	40	-	-	-	-	8 720
	Pulp and Paper	7 000	1	30	1	300	-	-	-	-	7 800
	Cement	5 020	0	6	0	20	-	-	-	-	5 040
	Other Manufacturing	15 600	1	17	1	200	-	-	-	-	15 800
	Construction	1 400	0	1	0	10	-	-	-	-	1 410
	Commercial and Institutional	30 300	1	15	1	200	-	-	-	-	30 500
	Residential	44 200	100	3 000	2	600	-	-	-	-	47 800
	Agriculture and Forestry	2 670	0	1	0	20	-	-	-	-	2 690
b.	Transport <sup>2</sup>	189 000	27	670	27	8 100	-	-	-	-	198 000
	Domestic Aviation	7 680	0	9	0	70	-	-	-	-	7 800
	Road Transportation	132 000	10	300	15	4 400	-	-	-	-	137 000
	Light-Duty Gasoline Vehicles	39 600	4	98	6	1 600	-	-	-	-	41 300
	Light-Duty Gasoline Trucks	38 700	4	95	6	1 800	-	-	-	-	40 700
	Heavy-Duty Gasoline Vehicles	12 200	1	17	1	260	-	-	-	-	12 500
	Motorcycles	230	0	3	0	1	-	-	-	-	234
	Light-Duty Diesel Vehicles	662	0	0	0	20	-	-	-	-	678
	Light-Duty Diesel Trucks	306	0	0	0	7	-	-	-	-	314
	Heavy-Duty Diesel Vehicles	40 300	2	40	2	600	-	-	-	-	41 000
	Propane and Natural Gas Vehicles	251	0	3	0	1	-	-	-	-	260
	Railways	6 640	0	9	3	800	-	-	-	-	7 400
	Domestic Navigation	6 440	1	10	0	50	-	-	-	-	6 500
	Other Transportation	36 100	10	400	9	3 000	-	-	-	-	39 000
	Off-Road Agriculture & Forestry	11 000	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 760	1	30	1	100	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	10 400	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	616	1	10	0	20	-	-	-	-	650
	Off-Road Other Transportation	4 220	4	90	1	200	-	-	-	-	4 500
	Pipeline Transport	8 180	8	200	0	70	-	-	-	-	8 450
c.	Fugitive Sources	15 000	1 800	45 000	0	40	-	-	-	-	60 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	15 000	1 700	44 000	0	40	-	-	-	-	58 000
	Oil	220	250	6 100	0	30	-	-	-	-	6 400
	Natural Gas	63	530	13 000	-	-	-	-	-	-	13 000
	Venting	9 500	950	24 000	-	-	-	-	-	-	33 000
	Flaring	4 900	20	510	0	5	-	-	-	-	5 400
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>41 300</b>	<b>4</b>	<b>91</b>	<b>10</b>	<b>2 850</b>	<b>6 000</b>	<b>2 500</b>	<b>730</b>	<b>-</b>	<b>53 500</b>
a.	Mineral Products	10 000	-	-	-	-	-	-	-	-	10 000
	Cement Production	7 700	-	-	-	-	-	-	-	-	7 700
	Lime Production	1 590	-	-	-	-	-	-	-	-	1 590
	Mineral Product Use	810	-	-	-	-	-	-	-	-	810
b.	Chemical Industry	4 900	4	88	9	2 500	-	-	-	-	7 520
	Ammonia Production	2 570	-	-	4	1 100	-	-	-	-	2 570
	Nitric Acid Production	-	-	-	5	1 400	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	1 400
	Petrochemical and Carbon Black Production	2 300	4	88	0	12	-	-	-	-	2 400
c.	Metal Production	16 200	0	3	-	-	2 520	501	-	-	19 300
	Iron and Steel Production	11 100	0	3	-	-	-	-	-	-	11 100
	Aluminium Production	5 100	-	-	-	-	2 520	12	-	-	7 630
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	489	-	-	489
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	6 000	8	1	0	6 000
e.	Non-Energy Products from Fuels and Solvent Use	10 000	-	-	-	-	-	-	-	-	10 000
f.	Other Product Manufacture and Use	-	-	-	1	310	-	4	220	-	540
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>33 000</b>	<b>82</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60 000</b>
a.	Enteric Fermentation	-	1 200	29 000	-	-	-	-	-	-	29 000
b.	Manure Management	-	160	4 000	20	5 000	-	-	-	-	9 300
c.	Agriculture Soils	-	-	-	64	19 000	-	-	-	-	19 000
	Direct Sources	-	-	-	53	16 000	-	-	-	-	16 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	1	30	0	9	-	-	-	-	40
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>470</b>	<b>1 000</b>	<b>26 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>28 000</b>
a.	Solid Waste Disposal	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	16	400	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	470	0	6	1	200	-	-	-	-	640
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-39 000</b>	<b>36</b>	<b>890</b>	<b>0</b>	<b>390</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-37 000</b>
a.	Forest Land	-160 000	12	300	1	150	-	-	-	-	-160 000
b.	Cropland	-12 000	4	100	0	60	-	-	-	-	-11 000
c.	Grassland	-	10	300	0	100	-	-	-	-	400
d.	Wetlands	3 000	1	10	0	8	-	-	-	-	3 000
e.	Settlements	4 000	6	100	0	70	-	-	-	-	4 000
f.	Harvested Wood Products	130 000	-	-	-	-	-	-	-	-	130 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-12 2006 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>568 000</b>	<b>4 500</b>	<b>110 000</b>	<b>130</b>	<b>39 000</b>	<b>5 400</b>	<b>3 000</b>	<b>1 500</b>	<b>0</b>	<b>729 000</b>
<b>ENERGY</b>		<b>524 000</b>	<b>2 100</b>	<b>52 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>586 000</b>
a.	Stationary Combustion Sources	323 000	200	5 000	9	3 000	-	-	-	-	331 000
	Public Electricity and Heat Production	120 000	6	140	2	710	-	-	-	-	116 000
	Petroleum Refining Industries	20 000	1	10	0	50	-	-	-	-	20 000
	Mining and Upstream Oil and Gas Production	68 900	84	2 100	2	500	-	-	-	-	71 500
	Manufacturing Industries	45 600	3	69	2	610	-	-	-	-	46 300
	Iron and Steel	5 500	0	4	0	40	-	-	-	-	5 550
	Non Ferrous Metals	3 470	0	2	0	20	-	-	-	-	3 490
	Chemical	8 840	0	4	0	50	-	-	-	-	8 890
	Pulp and Paper	7 000	1	40	1	300	-	-	-	-	7 500
	Cement	5 720	0	6	0	20	-	-	-	-	5 740
	Other Manufacturing	14 900	1	17	1	200	-	-	-	-	15 100
	Construction	1 400	0	1	0	10	-	-	-	-	1 410
	Commercial and Institutional	29 200	1	14	1	200	-	-	-	-	29 400
	Residential	39 900	100	3 000	2	600	-	-	-	-	43 500
	Agriculture and Forestry	2 100	0	1	0	20	-	-	-	-	2 110
b.	Transport <sup>2</sup>	185 000	27	680	28	8 200	-	-	-	-	194 000
	Domestic Aviation	7 750	0	8	0	70	-	-	-	-	7 800
	Road Transportation	129 000	10	300	16	4 700	-	-	-	-	134 000
	Light-Duty Gasoline Vehicles	40 100	4	100	6	1 800	-	-	-	-	42 100
	Light-Duty Gasoline Trucks	37 900	4	94	7	2 000	-	-	-	-	40 000
	Heavy-Duty Gasoline Vehicles	12 000	1	18	1	250	-	-	-	-	12 300
	Motorcycles	220	0	3	0	1	-	-	-	-	224
	Light-Duty Diesel Vehicles	653	0	0	0	20	-	-	-	-	669
	Light-Duty Diesel Trucks	302	0	0	0	7	-	-	-	-	310
	Heavy-Duty Diesel Vehicles	37 800	2	40	2	600	-	-	-	-	38 400
	Propane and Natural Gas Vehicles	325	0	4	0	2	-	-	-	-	330
	Railways	6 200	0	9	2	700	-	-	-	-	6 900
	Domestic Navigation	5 830	1	10	0	50	-	-	-	-	5 900
	Other Transportation	36 200	20	400	9	3 000	-	-	-	-	39 000
	Off-Road Agriculture & Forestry	10 600	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 660	1	30	0	100	-	-	-	-	1 800
	Off-Road Manufacturing, Mining & Construction	9 840	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Residential	603	1	10	0	20	-	-	-	-	640
	Off-Road Other Transportation	4 070	3	80	1	200	-	-	-	-	4 300
	Pipeline Transport	9 390	9	230	0	70	-	-	-	-	9 700
c.	Fugitive Sources	16 000	1 800	46 000	0	40	-	-	-	-	61 000
	Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	16 000	1 800	44 000	0	40	-	-	-	-	60 000
	Oil	190	250	6 200	0	30	-	-	-	-	6 400
	Natural Gas	61	540	13 000	-	-	-	-	-	-	14 000
	Venting	9 900	970	24 000	-	-	-	-	-	-	34 000
	Flaring	5 500	23	580	0	5	-	-	-	-	6 100
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>42 200</b>	<b>4</b>	<b>91</b>	<b>9</b>	<b>2 680</b>	<b>5 400</b>	<b>3 000</b>	<b>1 500</b>	<b>-</b>	<b>54 800</b>
a.	Mineral Products	10 000	-	-	-	-	-	-	-	-	10 000
	Cement Production	7 700	-	-	-	-	-	-	-	-	7 700
	Lime Production	1 630	-	-	-	-	-	-	-	-	1 630
	Mineral Product Use	880	-	-	-	-	-	-	-	-	880
b.	Chemical Industry	5 620	4	88	8	2 400	-	-	-	-	8 070
	Ammonia Production	2 780	-	-	-	-	-	-	-	-	2 780
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Petrochemical and Carbon Black Production	2 800	4	88	0	13	-	-	-	-	2 900
c.	Metal Production	16 400	0	3	-	-	2 980	1 350	-	-	20 700
	Iron and Steel Production	11 300	0	3	-	-	-	-	-	-	11 300
	Aluminium Production	5 090	-	-	-	-	2 980	13	-	-	8 080
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	1 340	-	-	1 340
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	5 400	7	3	0	5 400
e.	Non-Energy Products from Fuels and Solvent Use	9 900	-	-	-	-	-	-	-	-	9 900
f.	Other Product Manufacture and Use	-	-	-	1	320	-	4	170	-	490
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 400</b>	<b>35 000</b>	<b>80</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60 000</b>
a.	Enteric Fermentation	-	1 200	30 000	-	-	-	-	-	-	30 000
b.	Manure Management	-	170	4 200	20	5 000	-	-	-	-	9 700
c.	Agriculture Soils	-	-	-	62	18 000	-	-	-	-	18 000
	Direct Sources	-	-	-	50	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	2	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>490</b>	<b>1 100</b>	<b>26 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>28 000</b>
a.	Solid Waste Disposal	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	16	400	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	490	0	6	1	200	-	-	-	-	670
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-36 000</b>	<b>59</b>	<b>1 500</b>	<b>2</b>	<b>570</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-34 000</b>
a.	Forest Land	-170 000	12	300	0	150	-	-	-	-	-170 000
b.	Cropland	-12 000	4	100	0	70	-	-	-	-	-11 000
c.	Grassland	-	40	900	1	300	-	-	-	-	1 000
d.	Wetlands	3 000	0	10	0	9	-	-	-	-	3 000
e.	Settlements	4 000	6	200	0	70	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-13 2005 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>574 000</b>	<b>4 500</b>	<b>110 000</b>	<b>140</b>	<b>41 000</b>	<b>5 100</b>	<b>3 800</b>	<b>1 400</b>	<b>0</b>	<b>738 000</b>
<b>ENERGY</b>		<b>532 000</b>	<b>2 100</b>	<b>52 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>595 000</b>
a.	Stationary Combustion Sources	331 000	200	5 000	9	3 000	-	-	-	-	339 000
	Public Electricity and Heat Production	120 000	6	140	3	750	-	-	-	-	122 000
	Petroleum Refining Industries	20 000	1	10	0	50	-	-	-	-	20 000
	Mining and Upstream Oil and Gas Production	65 200	84	2 100	2	500	-	-	-	-	67 800
	Manufacturing Industries	47 400	3	70	2	620	-	-	-	-	48 100
	Iron and Steel	5 510	0	4	0	40	-	-	-	-	5 550
	Non Ferrous Metals	3 640	0	2	0	20	-	-	-	-	3 660
	Chemical	8 290	0	4	0	40	-	-	-	-	8 330
	Pulp and Paper	8 000	2	40	1	400	-	-	-	-	8 700
	Cement	5 410	0	5	0	20	-	-	-	-	5 430
	Other Manufacturing	16 200	1	15	1	100	-	-	-	-	16 400
	Construction	1 440	0	1	0	10	-	-	-	-	1 460
	Commercial and Institutional	32 100	1	15	1	200	-	-	-	-	32 300
	Residential	41 900	100	3 000	2	600	-	-	-	-	45 600
	Agriculture and Forestry	2 170	0	1	0	20	-	-	-	-	2 190
b.	Transport <sup>2</sup>	186 000	28	700	29	8 800	-	-	-	-	195 000
	Domestic Aviation	7 570	0	8	0	70	-	-	-	-	7 600
	Road Transportation	128 000	10	300	17	5 100	-	-	-	-	134 000
	Light-Duty Gasoline Vehicles	41 000	4	110	7	2 100	-	-	-	-	43 200
	Light-Duty Gasoline Trucks	37 200	4	96	8	2 200	-	-	-	-	39 600
	Heavy-Duty Gasoline Vehicles	11 900	1	19	1	230	-	-	-	-	12 100
	Motorcycles	208	0	3	0	1	-	-	-	-	212
	Light-Duty Diesel Vehicles	598	0	0	0	10	-	-	-	-	613
	Light-Duty Diesel Trucks	317	0	0	0	7	-	-	-	-	324
	Heavy-Duty Diesel Vehicles	36 700	2	40	2	600	-	-	-	-	37 300
	Propane and Natural Gas Vehicles	404	0	4	0	2	-	-	-	-	410
	Railways	5 920	0	8	2	700	-	-	-	-	6 600
	Domestic Navigation	6 320	1	10	0	50	-	-	-	-	6 400
	Other Transportation	37 500	20	400	10	3 000	-	-	-	-	41 000
	Off-Road Agriculture & Forestry	11 400	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Commercial & Institutional	1 710	1	20	1	100	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	9 950	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Residential	613	1	10	0	20	-	-	-	-	650
	Off-Road Other Transportation	4 060	3	80	1	200	-	-	-	-	4 300
	Pipeline Transport	9 830	10	250	0	80	-	-	-	-	10 200
c.	Fugitive Sources	15 000	1 800	46 000	0	40	-	-	-	-	61 000
	Coal Mining	-	60	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	15 000	1 800	45 000	0	40	-	-	-	-	59 000
	Oil	170	250	6 200	0	30	-	-	-	-	6 400
	Natural Gas	57	550	14 000	-	-	-	-	-	-	14 000
	Venting	9 900	970	24 000	-	-	-	-	-	-	34 000
	Flaring	4 800	21	530	0	4	-	-	-	-	5 300
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>39 800</b>	<b>4</b>	<b>90</b>	<b>14</b>	<b>4 130</b>	<b>5 100</b>	<b>3 800</b>	<b>1 400</b>	<b>-</b>	<b>54 400</b>
a.	Mineral Products	10 000	-	-	-	-	-	-	-	-	10 000
	Cement Production	7 600	-	-	-	-	-	-	-	-	7 600
	Lime Production	1 710	-	-	-	-	-	-	-	-	1 710
	Mineral Product Use	910	-	-	-	-	-	-	-	-	910
b.	Chemical Industry	5 620	4	88	13	3 800	-	-	-	-	9 470
	Ammonia Production	2 710	-	-	-	-	-	-	-	-	2 710
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	9	2 500	-	-	-	-	2 500
	Petrochemical and Carbon Black Production	2 900	4	88	0	13	-	-	-	-	3 000
c.	Metal Production	15 100	0	2	-	-	3 830	1 250	-	-	20 200
	Iron and Steel Production	10 300	0	2	-	-	-	-	-	-	10 300
	Aluminium Production	4 840	-	-	-	-	3 830	17	-	-	8 680
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	1 230	-	-	1 230
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	5 100	7	4	0	5 100
e.	Non-Energy Products from Fuels and Solvent Use	8 800	-	-	-	-	-	-	-	-	8 800
f.	Other Product Manufacture and Use	-	-	-	1	360	-	3	160	-	530
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 400</b>	<b>36 000</b>	<b>80</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>61 000</b>
a.	Enteric Fermentation	-	1 300	31 000	-	-	-	-	-	-	31 000
b.	Manure Management	-	170	4 300	20	6 000	-	-	-	-	9 800
c.	Agriculture Soils	-	-	-	61	18 000	-	-	-	-	18 000
	Direct Sources	-	-	-	50	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	1	40	0	10	-	-	-	-	50
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>500</b>	<b>1 000</b>	<b>26 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>28 000</b>
a.	Solid Waste Disposal	-	1 000	25 000	-	-	-	-	-	-	25 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	16	390	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	500	0	6	1	200	-	-	-	-	700
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-39 000</b>	<b>51</b>	<b>1 300</b>	<b>2</b>	<b>520</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-37 000</b>
a.	Forest Land	-180 000	13	340	1	170	-	-	-	-	-180 000
b.	Cropland	-11 000	5	100	0	70	-	-	-	-	-10 000
c.	Grassland	-	30	700	1	200	-	-	-	-	900
d.	Wetlands	3 000	2	50	0	30	-	-	-	-	3 000
e.	Settlements	4 000	5	100	0	60	-	-	-	-	4 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-14 2004 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>a</sup>	PFCs <sup>a</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>584 000</b>	<b>4 600</b>	<b>110 000</b>	<b>140</b>	<b>42 000</b>	<b>4 600</b>	<b>3 500</b>	<b>2 300</b>	<b>0</b>	<b>751 000</b>
<b>ENERGY</b>		<b>539 000</b>	<b>2 200</b>	<b>54 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>605 000</b>
a.	Stationary Combustion Sources	342 000	200	6 000	9	3 000	-	-	-	-	350 000
	Public Electricity and Heat Production	120 000	6	140	3	750	-	-	-	-	123 000
	Petroleum Refining Industries	22 000	1	10	0	50	-	-	-	-	22 000
	Mining and Upstream Oil and Gas Production	67 300	98	2 400	2	500	-	-	-	-	70 200
	Manufacturing Industries	50 200	3	73	2	640	-	-	-	-	50 900
	Iron and Steel	5 780	0	4	0	40	-	-	-	-	5 830
	Non Ferrous Metals	3 520	0	2	0	20	-	-	-	-	3 540
	Chemical	8 920	0	5	0	50	-	-	-	-	8 970
	Pulp and Paper	10 000	2	40	1	400	-	-	-	-	10 000
	Cement	5 440	0	6	0	20	-	-	-	-	5 470
	Other Manufacturing	16 800	1	16	1	200	-	-	-	-	16 900
	Construction	1 410	0	1	0	9	-	-	-	-	1 420
	Commercial and Institutional	33 600	1	15	1	200	-	-	-	-	33 800
	Residential	42 700	100	3 000	2	700	-	-	-	-	46 600
	Agriculture and Forestry	2 200	0	1	0	20	-	-	-	-	2 210
b.	Transport <sup>2</sup>	181 000	27	680	31	9 200	-	-	-	-	191 000
	Domestic Aviation	7 460	0	7	0	70	-	-	-	-	7 500
	Road Transportation	124 000	10	300	18	5 400	-	-	-	-	129 000
	Light-Duty Gasoline Vehicles	41 000	5	110	8	2 300	-	-	-	-	43 400
	Light-Duty Gasoline Trucks	36 300	4	98	8	2 400	-	-	-	-	38 800
	Heavy-Duty Gasoline Vehicles	12 800	1	20	1	260	-	-	-	-	13 100
	Motorcycles	194	0	3	0	1	-	-	-	-	198
	Light-Duty Diesel Vehicles	751	0	0	0	20	-	-	-	-	769
	Light-Duty Diesel Trucks	410	0	0	0	10	-	-	-	-	420
	Heavy-Duty Diesel Vehicles	31 800	1	30	2	500	-	-	-	-	32 300
	Propane and Natural Gas Vehicles	463	0	5	0	3	-	-	-	-	470
	Railways	5 560	0	8	2	600	-	-	-	-	6 200
	Domestic Navigation	6 610	1	20	0	50	-	-	-	-	6 700
	Other Transportation	38 000	10	400	10	3 000	-	-	-	-	41 000
	Off-Road Agriculture & Forestry	11 300	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Commercial & Institutional	1 830	1	20	1	200	-	-	-	-	2 000
	Off-Road Manufacturing, Mining & Construction	11 100	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	626	1	10	0	20	-	-	-	-	660
	Off-Road Other Transportation	4 840	4	90	1	200	-	-	-	-	5 200
	Pipeline Transport	8 270	8	210	0	70	-	-	-	-	8 550
c.	Fugitive Sources	16 000	1 900	48 000	0	40	-	-	-	-	63 000
	Coal Mining	-	60	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	16 000	1 800	46 000	0	40	-	-	-	-	62 000
	Oil	180	260	6 600	0	30	-	-	-	-	6 800
	Natural Gas	51	540	14 000	-	-	-	-	-	-	14 000
	Venting	10 000	1 000	26 000	-	-	-	-	-	-	36 000
	Flaring	5 100	18	450	0	5	-	-	-	-	5 500
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>43 100</b>	<b>5</b>	<b>110</b>	<b>15</b>	<b>4 560</b>	<b>4 600</b>	<b>3 500</b>	<b>2 300</b>	<b>-</b>	<b>58 200</b>
a.	Mineral Products	10 000	-	-	-	-	-	-	-	-	10 000
	Cement Production	7 500	-	-	-	-	-	-	-	-	7 500
	Lime Production	1 780	-	-	-	-	-	-	-	-	1 780
	Mineral Product Use	880	-	-	-	-	-	-	-	-	880
b.	Chemical Industry	6 160	4	110	14	4 200	-	-	-	-	10 400
	Ammonia Production	2 930	-	-	-	-	-	-	-	-	2 930
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	10	3 000	-	-	-	-	3 000
	Petrochemical and Carbon Black Production	3 200	4	110	0	15	-	-	-	-	3 400
c.	Metal Production	14 900	0	2	-	-	-	3 510	2 120	-	20 500
	Iron and Steel Production	10 600	0	2	-	-	-	-	-	-	10 600
	Aluminium Production	4 220	-	-	-	-	-	3 510	30	-	7 770
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 090	-	2 090
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	4 600	8	3	0	4 600
e.	Non-Energy Products from Fuels and Solvent Use	12 000	-	-	-	-	-	-	-	-	12 000
f.	Other Product Manufacture and Use	-	-	-	1	390	-	2	220	-	610
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 400</b>	<b>35 000</b>	<b>81</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>61 000</b>
a.	Enteric Fermentation	-	1 200	31 000	-	-	-	-	-	-	31 000
b.	Manure Management	-	170	4 200	20	5 000	-	-	-	-	9 700
c.	Agriculture Soils	-	-	-	63	19 000	-	-	-	-	19 000
	Direct Sources	-	-	-	52	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	1	30	0	8	-	-	-	-	40
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>510</b>	<b>1 000</b>	<b>25 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>27 000</b>
a.	Solid Waste Disposal	-	980	25 000	-	-	-	-	-	-	25 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	15	380	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	510	0	6	1	200	-	-	-	-	710
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-42 000</b>	<b>52</b>	<b>1 300</b>	<b>2</b>	<b>520</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-40 000</b>
a.	Forest Land	-190 000	12	300	1	150	-	-	-	-	-190 000
b.	Cropland	-9 500	5	100	0	70	-	-	-	-	-9 300
c.	Grassland	-	30	700	1	200	-	-	-	-	900
d.	Wetlands	3 000	1	40	0	20	-	-	-	-	3 000
e.	Settlements	4 000	6	100	0	60	-	-	-	-	4 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-15 2003 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>585 000</b>	<b>4 600</b>	<b>110 000</b>	<b>130</b>	<b>40 000</b>	<b>4 000</b>	<b>3 500</b>	<b>2 700</b>	<b>0</b>	<b>749 000</b>
<b>ENERGY</b>		<b>542 000</b>	<b>2 200</b>	<b>55 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>609 000</b>
a.	Stationary Combustion Sources	349 000	300	6 000	9	3 000	-	-	-	-	358 000
	Public Electricity and Heat Production	130 000	5	140	3	770	-	-	-	-	130 000
	Petroleum Refining Industries	20 000	1	10	0	50	-	-	-	-	20 000
	Mining and Upstream Oil and Gas Production	69 200	110	2 700	2	500	-	-	-	-	72 400
	Manufacturing Industries	48 700	3	65	2	570	-	-	-	-	49 300
	Iron and Steel	5 490	0	4	0	40	-	-	-	-	5 530
	Non Ferrous Metals	3 510	0	2	0	20	-	-	-	-	3 530
	Chemical	8 110	0	4	0	40	-	-	-	-	8 150
	Pulp and Paper	10 000	1	40	1	300	-	-	-	-	10 000
	Cement	4 970	0	6	0	20	-	-	-	-	4 990
	Other Manufacturing	16 500	1	15	1	100	-	-	-	-	16 700
	Construction	1 340	0	1	0	9	-	-	-	-	1 350
	Commercial and Institutional	34 900	1	16	1	200	-	-	-	-	35 100
	Residential	44 200	100	3 000	2	700	-	-	-	-	48 300
	Agriculture and Forestry	2 280	0	1	0	20	-	-	-	-	2 300
b.	Transport <sup>2</sup>	176 000	28	690	32	9 500	-	-	-	-	187 000
	Domestic Aviation	6 960	0	8	0	60	-	-	-	-	7 000
	Road Transportation	120 000	10	300	19	5 800	-	-	-	-	126 000
	Light-Duty Gasoline Vehicles	41 100	5	120	9	2 600	-	-	-	-	43 800
	Light-Duty Gasoline Trucks	34 900	4	98	9	2 500	-	-	-	-	37 600
	Heavy-Duty Gasoline Vehicles	12 200	1	21	1	230	-	-	-	-	12 500
	Motorcycles	180	0	3	0	1	-	-	-	-	184
	Light-Duty Diesel Vehicles	701	0	0	0	20	-	-	-	-	718
	Light-Duty Diesel Trucks	380	0	0	0	9	-	-	-	-	390
	Heavy-Duty Diesel Vehicles	30 000	1	30	1	400	-	-	-	-	30 500
	Propane and Natural Gas Vehicles	464	0	5	0	3	-	-	-	-	470
	Railways	5 410	0	8	2	600	-	-	-	-	6 000
	Domestic Navigation	6 210	1	10	0	50	-	-	-	-	6 300
	Other Transportation	37 800	20	400	10	3 000	-	-	-	-	41 000
	Off-Road Agriculture & Forestry	11 100	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 750	1	20	1	100	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	10 700	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	583	1	10	0	20	-	-	-	-	620
	Off-Road Other Transportation	4 840	4	90	1	200	-	-	-	-	5 200
	Pipeline Transport	8 830	9	220	0	70	-	-	-	-	9 120
c.	Fugitive Sources	16 000	1 900	48 000	0	40	-	-	-	-	64 000
	Coal Mining	-	60	1 000	-	-	-	-	-	-	1 000
	Oil and Natural Gas	16 000	1 900	47 000	0	40	-	-	-	-	63 000
	Oil	170	260	6 500	0	30	-	-	-	-	6 700
	Natural Gas	51	550	14 000	-	-	-	-	-	-	14 000
	Venting	10 000	1 000	26 000	-	-	-	-	-	-	37 000
	Flaring	5 300	15	370	0	4	-	-	-	-	5 600
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>41 100</b>	<b>4</b>	<b>99</b>	<b>9</b>	<b>2 700</b>	<b>4 000</b>	<b>3 500</b>	<b>2 700</b>	<b>-</b>	<b>54 000</b>
a.	Mineral Products	9 700	-	-	-	-	-	-	-	-	9 700
	Cement Production	7 200	-	-	-	-	-	-	-	-	7 200
	Lime Production	1 650	-	-	-	-	-	-	-	-	1 650
	Mineral Product Use	790	-	-	-	-	-	-	-	-	790
b.	Chemical Industry	5 750	4	96	8	2 300	-	-	-	-	8 120
	Ammonia Production	2 630	-	-	-	-	-	-	-	-	2 630
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	4	1 000	-	-	-	-	1 000
	Petrochemical and Carbon Black Production	3 100	4	96	0	15	-	-	-	-	3 200
c.	Metal Production	15 100	0	2	-	-	3 480	2 440	-	-	21 000
	Iron and Steel Production	10 500	0	2	-	-	-	-	-	-	10 500
	Aluminium Production	4 580	-	-	-	-	3 480	67	-	-	8 130
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	2 370	-	-	2 370
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	4 000	6	3	0	4 000
e.	Non-Energy Products from Fuels and Solvent Use	11 000	-	-	-	-	-	-	-	-	11 000
f.	Other Product Manufacture and Use	-	-	-	1	430	-	210	-	-	640
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 400</b>	<b>34 000</b>	<b>79</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>59 000</b>
a.	Enteric Fermentation	-	1 200	30 000	-	-	-	-	-	-	30 000
b.	Manure Management	-	170	4 200	20	5 000	-	-	-	-	9 500
c.	Agriculture Soils	-	-	-	61	18 000	-	-	-	-	18 000
	Direct Sources	-	-	-	50	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	4	100	0	30	-	-	-	-	100
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>470</b>	<b>1 000</b>	<b>25 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>27 000</b>
a.	Solid Waste Disposal	-	960	24 000	-	-	-	-	-	-	24 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	15	380	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	470	0	5	1	200	-	-	-	-	650
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-71 000</b>	<b>61</b>	<b>1 500</b>	<b>2</b>	<b>580</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-69 000</b>
a.	Forest Land	-200 000	13	330	1	160	-	-	-	-	-200 000
b.	Cropland	-8 300	5	100	0	70	-	-	-	-	-8 100
c.	Grassland	-	40	900	1	300	-	-	-	-	1 000
d.	Wetlands	3 000	1	30	0	10	-	-	-	-	3 000
e.	Settlements	4 000	6	100	0	60	-	-	-	-	4 000
f.	Harvested Wood Products	130 000	-	-	-	-	-	-	-	-	130 000

**Notes:**

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-16 2002 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential											
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>567 000</b>	<b>4 600</b>	<b>110 000</b>	<b>130</b>	<b>38 000</b>	<b>3 600</b>	<b>3 500</b>	<b>3 000</b>	<b>0</b>	<b>730 000</b>
<b>ENERGY</b>		<b>526 000</b>	<b>2 300</b>	<b>57 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>595 000</b>
a.	Stationary Combustion Sources	339 000	300	7 000	9	3 000	-	-	-	-	349 000
	Public Electricity and Heat Production	120 000	5	120	2	700	-	-	-	-	125 000
	Petroleum Refining Industries	19 000	1	10	0	50	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	66 100	110	2 800	2	500	-	-	-	-	69 400
	Manufacturing Industries	50 700	3	68	2	610	-	-	-	-	51 400
	Iron and Steel	5 820	0	4	0	40	-	-	-	-	5 860
	Non Ferrous Metals	3 500	0	2	0	20	-	-	-	-	3 520
	Chemical	8 970	0	4	0	50	-	-	-	-	9 020
	Pulp and Paper	10 000	1	30	1	300	-	-	-	-	11 000
	Cement	4 950	0	6	0	20	-	-	-	-	4 980
	Other Manufacturing	16 800	1	20	1	200	-	-	-	-	17 000
	Construction	1 260	0	1	0	9	-	-	-	-	1 270
	Commercial and Institutional	33 700	1	15	1	200	-	-	-	-	33 900
	Residential	42 000	200	4 000	2	700	-	-	-	-	46 700
	Agriculture and Forestry	2 140	0	1	0	20	-	-	-	-	2 160
b.	Transport <sup>2</sup>	171 000	29	730	31	9 100	-	-	-	-	181 000
	Domestic Aviation	6 860	0	8	0	60	-	-	-	-	6 900
	Road Transportation	116 000	10	300	19	5 700	-	-	-	-	122 000
	Light-Duty Gasoline Vehicles	41 400	5	120	9	2 600	-	-	-	-	44 100
	Light-Duty Gasoline Trucks	33 700	4	95	8	2 400	-	-	-	-	36 300
	Heavy-Duty Gasoline Vehicles	11 900	1	22	1	210	-	-	-	-	12 100
	Motorcycles	165	0	2	0	1	-	-	-	-	169
	Light-Duty Diesel Vehicles	636	0	0	0	10	-	-	-	-	651
	Light-Duty Diesel Trucks	340	0	0	0	8	-	-	-	-	348
	Heavy-Duty Diesel Vehicles	27 600	1	30	1	400	-	-	-	-	28 100
	Propane and Natural Gas Vehicles	511	0	6	0	3	-	-	-	-	520
	Railways	5 350	0	8	2	600	-	-	-	-	6 000
	Domestic Navigation	5 360	1	10	0	40	-	-	-	-	5 400
	Other Transportation	37 600	20	400	9	3 000	-	-	-	-	41 000
	Off-Road Agriculture & Forestry	10 300	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Commercial & Institutional	1 550	1	20	0	100	-	-	-	-	1 700
	Off-Road Manufacturing, Mining & Construction	9 760	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Residential	527	0	10	0	20	-	-	-	-	560
	Off-Road Other Transportation	4 940	4	90	1	200	-	-	-	-	5 300
	Pipeline Transport	10 600	11	260	0	80	-	-	-	-	10 900
c.	Fugitive Sources	16 000	2 000	49 000	0	40	-	-	-	-	65 000
	Coal Mining	-	60	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	16 000	1 900	47 000	0	40	-	-	-	-	63 000
	Oil	180	250	6 300	0	30	-	-	-	-	6 500
	Natural Gas	49	550	14 000	-	-	-	-	-	-	14 000
	Venting	10 000	1 100	27 000	-	-	-	-	-	-	37 000
	Flaring	5 000	11	290	0	4	-	-	-	-	5 300
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>39 200</b>	<b>4</b>	<b>110</b>	<b>9</b>	<b>2 800</b>	<b>3 600</b>	<b>3 500</b>	<b>3 000</b>	<b>-</b>	<b>52 200</b>
a.	Mineral Products	9 600	-	-	-	-	-	-	-	-	9 600
	Cement Production	7 100	-	-	-	-	-	-	-	-	7 100
	Lime Production	1 670	-	-	-	-	-	-	-	-	1 670
	Mineral Product Use	820	-	-	-	-	-	-	-	-	820
b.	Chemical Industry	5 720	4	100	8	2 400	-	-	-	-	8 250
	Ammonia Production	2 630	-	-	-	-	-	-	-	-	2 630
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Petrochemical and Carbon Black Production	3 100	4	100	0	15	-	-	-	-	3 200
c.	Metal Production	15 000	0	2	-	-	3 440	2 880	-	-	21 300
	Iron and Steel Production	10 600	0	2	-	-	-	-	-	-	10 600
	Aluminium Production	4 420	-	-	-	-	3 440	77	-	-	7 930
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	2 800	-	-	2 800
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	3 600	23	3	0	3 600
e.	Non-Energy Products from Fuels and Solvent Use	8 900	-	-	-	-	-	-	-	-	8 900
f.	Other Product Manufacture and Use	-	-	-	1	370	-	2	140	-	510
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>34 000</b>	<b>73</b>	<b>22 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>57 000</b>
a.	Enteric Fermentation	-	1 200	29 000	-	-	-	-	-	-	29 000
b.	Manure Management	-	170	4 200	20	5 000	-	-	-	-	9 500
c.	Agriculture Soils	-	-	-	56	17 000	-	-	-	-	17 000
	Direct Sources	-	-	-	45	13 000	-	-	-	-	13 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	3	90	0	30	-	-	-	-	100
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>530</b>	<b>980</b>	<b>25 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26 000</b>
a.	Solid Waste Disposal	-	950	24 000	-	-	-	-	-	-	24 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	15	380	2	600	-	-	-	-	1 000
d.	Incineration and Open Burning of Waste	530	0	5	1	200	-	-	-	-	750
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-63 000</b>	<b>57</b>	<b>1 400</b>	<b>2</b>	<b>550</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-61 000</b>
a.	Forest Land	-210 000	12	300	1	150	-	-	-	-	-210 000
b.	Cropland	-6 900	5	100	0	80	-	-	-	-	-6 700
c.	Grassland	-	30	800	1	300	-	-	-	-	1 000
d.	Wetlands	3 000	0	10	0	7	-	-	-	-	3 000
e.	Settlements	4 000	5	100	0	60	-	-	-	-	4 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-17 2001 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
				25		298			22,800	17,200	
Global Warming Potential											
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>563 000</b>	<b>4 700</b>	<b>120 000</b>	<b>130</b>	<b>38 000</b>	<b>3 200</b>	<b>4 000</b>	<b>2 600</b>	<b>0</b>	<b>728 000</b>
<b>ENERGY</b>		<b>523 000</b>	<b>2 400</b>	<b>60 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>595 000</b>
a.	Stationary Combustion Sources	337 000	300	7 000	9	3 000	-	-	-	-	347 000
	Public Electricity and Heat Production	130 000	5	130	2	720	-	-	-	-	131 000
	Petroleum Refining Industries	18 000	1	10	0	60	-	-	-	-	18 000
	Mining and Upstream Oil and Gas Production	63 100	110	2 800	1	400	-	-	-	-	66 400
	Manufacturing Industries	51 000	3	64	2	580	-	-	-	-	51 700
	Iron and Steel	4 970	0	4	0	40	-	-	-	-	5 010
	Non Ferrous Metals	3 760	0	2	0	20	-	-	-	-	3 780
	Chemical	9 410	0	5	0	50	-	-	-	-	9 470
	Pulp and Paper	10 000	1	30	1	300	-	-	-	-	12 000
	Cement	4 580	0	4	0	20	-	-	-	-	4 600
	Other Manufacturing	17 000	1	18	1	200	-	-	-	-	17 200
	Construction	1 020	0	0	0	8	-	-	-	-	1 030
	Commercial and Institutional	32 200	1	16	1	200	-	-	-	-	32 400
	Residential	39 900	100	4 000	2	700	-	-	-	-	44 200
	Agriculture and Forestry	2 220	0	1	0	20	-	-	-	-	2 240
b.	Transport <sup>2</sup>	170 000	29	720	30	9 100	-	-	-	-	180 000
	Domestic Aviation	7 050	0	9	0	60	-	-	-	-	7 100
	Road Transportation	115 000	10	300	19	5 600	-	-	-	-	121 000
	Light-Duty Gasoline Vehicles	40 900	5	130	9	2 600	-	-	-	-	43 700
	Light-Duty Gasoline Trucks	32 500	4	92	8	2 300	-	-	-	-	34 900
	Heavy-Duty Gasoline Vehicles	11 800	1	23	1	200	-	-	-	-	12 000
	Motorcycles	147	0	2	0	1	-	-	-	-	151
	Light-Duty Diesel Vehicles	601	0	0	0	10	-	-	-	-	616
	Light-Duty Diesel Trucks	330	0	0	0	8	-	-	-	-	338
	Heavy-Duty Diesel Vehicles	27 900	1	30	1	400	-	-	-	-	28 300
	Propane and Natural Gas Vehicles	629	0	7	0	3	-	-	-	-	640
	Railways	5 820	0	8	2	700	-	-	-	-	6 500
	Domestic Navigation	5 340	1	10	0	40	-	-	-	-	5 400
	Other Transportation	37 200	20	400	9	3 000	-	-	-	-	40 000
	Off-Road Agriculture & Forestry	10 400	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 730	1	20	1	200	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	9 550	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Residential	481	0	9	0	20	-	-	-	-	510
	Off-Road Other Transportation	5 010	4	100	1	200	-	-	-	-	5 300
	Pipeline Transport	10 000	10	250	0	80	-	-	-	-	10 300
c.	Fugitive Sources	16 000	2 100	52 000	0	40	-	-	-	-	68 000
	Coal Mining	-	70	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	16 000	2 000	50 000	0	40	-	-	-	-	66 000
	Oil	170	260	6 600	0	30	-	-	-	-	6 800
	Natural Gas	51	620	16 000	-	-	-	-	-	-	16 000
	Venting	10 000	1 100	28 000	-	-	-	-	-	-	38 000
	Flaring	5 000	9	220	0	4	-	-	-	-	5 200
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>37 600</b>	<b>4</b>	<b>110</b>	<b>8</b>	<b>2 420</b>	<b>3 200</b>	<b>4 000</b>	<b>2 600</b>	<b>-</b>	<b>49 900</b>
a.	Mineral Products	9 400	-	-	-	-	-	-	-	-	9 400
	Cement Production	7 000	-	-	-	-	-	-	-	-	7 000
	Lime Production	1 640	-	-	-	-	-	-	-	-	1 640
	Mineral Product Use	770	-	-	-	-	-	-	-	-	770
b.	Chemical Industry	5 390	4	110	7	2 000	-	-	-	-	7 510
	Ammonia Production	2 600	-	-	-	-	-	-	-	-	2 600
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	3	770	-	-	-	-	770
	Petrochemical and Carbon Black Production	2 800	4	110	0	14	-	-	-	-	2 900
c.	Metal Production	15 000	0	2	-	-	-	4 010	2 290	-	21 400
	Iron and Steel Production	10 800	0	2	-	-	-	-	-	-	10 800
	Aluminium Production	4 200	-	-	-	-	-	4 010	42	-	8 260
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 250	-	2 250
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	3 200	35	3	0	3 200
e.	Non-Energy Products from Fuels and Solvent Use	7 800	-	-	-	-	-	-	-	-	7 800
f.	Other Product Manufacture and Use	-	-	-	1	400	-	2	260	-	660
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 300</b>	<b>33 000</b>	<b>76</b>	<b>23 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>57 000</b>
a.	Enteric Fermentation	-	1 200	29 000	-	-	-	-	-	-	29 000
b.	Manure Management	-	160	4 100	20	5 000	-	-	-	-	9 300
c.	Agriculture Soils	-	-	-	58	17 000	-	-	-	-	17 000
	Direct Sources	-	-	-	48	14 000	-	-	-	-	14 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	3	90	0	30	-	-	-	-	100
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>560</b>	<b>960</b>	<b>24 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26 000</b>
a.	Solid Waste Disposal	-	930	23 000	-	-	-	-	-	-	23 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	15	370	2	600	-	-	-	-	990
d.	Incineration and Open Burning of Waste	560	0	5	1	200	-	-	-	-	780
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-79 000</b>	<b>53</b>	<b>1 300</b>	<b>2</b>	<b>520</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-77 000</b>
a.	Forest Land	-220 000	12	310	1	150	-	-	-	-	-220 000
b.	Cropland	-5 600	5	100	0	80	-	-	-	-	-5 400
c.	Grassland	-	30	700	1	200	-	-	-	-	1 000
d.	Wetlands	3 000	0	9	0	6	-	-	-	-	3 000
e.	Settlements	3 000	5	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC-22 exclusively) only occurred in Canada from 1990-1992 and PFC emissions prior to 1995 are the result of by-product CF<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-18 2000 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>570 000</b>	<b>4 700</b>	<b>120 000</b>	<b>130</b>	<b>40 000</b>	<b>2 800</b>	<b>5 000</b>	<b>2 900</b>	<b>0</b>	<b>738 000</b>
<b>ENERGY</b>		<b>529 000</b>	<b>2 500</b>	<b>61 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>602 000</b>
a.	Stationary Combustion Sources	341 000	300	7 000	9	3 000	-	-	-	-	351 000
	Public Electricity and Heat Production	130 000	5	120	2	730	-	-	-	-	130 000
	Petroleum Refining Industries	17 000	0	10	0	60	-	-	-	-	17 000
	Mining and Upstream Oil and Gas Production	60 300	110	2 800	1	400	-	-	-	-	63 600
	Manufacturing Industries	55 300	3	66	2	600	-	-	-	-	56 000
	Iron and Steel	6 160	0	4	0	40	-	-	-	-	6 210
	Non Ferrous Metals	3 560	0	2	0	20	-	-	-	-	3 580
	Chemical	10 600	0	5	0	50	-	-	-	-	10 700
	Pulp and Paper	10 000	2	40	1	400	-	-	-	-	13 000
	Cement	4 630	0	4	0	20	-	-	-	-	4 650
	Other Manufacturing	18 100	0	12	0	100	-	-	-	-	18 200
	Construction	1 080	0	0	0	8	-	-	-	-	1 080
	Commercial and Institutional	32 800	1	15	1	200	-	-	-	-	33 000
	Residential	42 700	200	4 000	2	700	-	-	-	-	47 400
	Agriculture and Forestry	2 550	0	1	0	20	-	-	-	-	2 570
b.	Transport <sup>2</sup>	172 000	31	780	31	9 200	-	-	-	-	182 000
	Domestic Aviation	7 640	0	9	0	70	-	-	-	-	7 700
	Road Transportation	111 000	10	300	18	5 300	-	-	-	-	117 000
	Light-Duty Gasoline Vehicles	40 800	5	130	9	2 600	-	-	-	-	43 500
	Light-Duty Gasoline Trucks	31 500	4	92	7	2 200	-	-	-	-	33 800
	Heavy-Duty Gasoline Vehicles	10 900	1	25	1	160	-	-	-	-	11 100
	Motorcycles	128	0	2	0	1	-	-	-	-	131
	Light-Duty Diesel Vehicles	604	0	0	0	10	-	-	-	-	618
	Light-Duty Diesel Trucks	319	0	0	0	7	-	-	-	-	326
	Heavy-Duty Diesel Vehicles	26 600	1	30	1	300	-	-	-	-	27 000
	Propane and Natural Gas Vehicles	591	0	7	0	3	-	-	-	-	600
	Railways	5 880	0	8	2	700	-	-	-	-	6 600
	Domestic Navigation	4 890	1	10	0	40	-	-	-	-	4 900
	Other Transportation	41 900	20	500	10	3 000	-	-	-	-	45 000
	Off-Road Agriculture & Forestry	11 600	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Commercial & Institutional	1 730	1	20	1	200	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	11 000	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	433	0	7	0	20	-	-	-	-	460
	Off-Road Other Transportation	6 220	5	100	1	200	-	-	-	-	6 600
	Pipeline Transport	11 000	11	270	0	90	-	-	-	-	11 300
c.	Fugitive Sources	16 000	2 100	54 000	0	40	-	-	-	-	70 000
	Coal Mining	-	70	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	16 000	2 100	52 000	0	40	-	-	-	-	68 000
	Oil	130	250	6 300	0	30	-	-	-	-	6 500
	Natural Gas	54	700	17 000	-	-	-	-	-	-	18 000
	Venting	10 000	1 100	28 000	-	-	-	-	-	-	38 000
	Flaring	5 600	7	170	0	3	-	-	-	-	5 700
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>39 000</b>	<b>4</b>	<b>110</b>	<b>8</b>	<b>2 490</b>	<b>2 800</b>	<b>5 000</b>	<b>2 900</b>	<b>-</b>	<b>52 300</b>
a.	Mineral Products	10 000	-	-	-	-	-	-	-	-	10 000
	Cement Production	7 200	-	-	-	-	-	-	-	-	7 200
	Lime Production	1 870	-	-	-	-	-	-	-	-	1 870
	Mineral Product Use	910	-	-	-	-	-	-	-	-	910
b.	Chemical Industry	5 820	4	110	7	2 100	-	-	-	-	7 990
	Ammonia Production	2 960	-	-	-	-	-	-	-	-	2 960
	Nitric Acid Production	-	-	-	4	1 200	-	-	-	-	1 200
	Adipic Acid Production	-	-	-	3	870	-	-	-	-	870
	Petrochemical and Carbon Black Production	2 900	4	110	0	14	-	-	-	-	3 000
c.	Metal Production	15 700	0	3	-	-	-	4 950	2 700	-	23 400
	Iron and Steel Production	11 800	0	3	-	-	-	-	-	-	11 800
	Aluminium Production	3 900	-	-	-	-	-	4 950	45	-	8 890
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 660	-	2 660
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	2 800	36	3	0	2 800
e.	Non-Energy Products from Fuels and Solvent Use	7 500	-	-	-	-	-	-	-	-	7 500
f.	Other Product Manufacture and Use	-	-	-	2	430	-	2	200	-	630
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>32 000</b>	<b>80</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>58 000</b>
a.	Enteric Fermentation	-	1 100	28 000	-	-	-	-	-	-	28 000
b.	Manure Management	-	160	4 000	20	5 000	-	-	-	-	9 100
c.	Agriculture Soils	-	-	-	63	19 000	-	-	-	-	19 000
	Direct Sources	-	-	-	52	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	4	100	0	30	-	-	-	-	100
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>540</b>	<b>960</b>	<b>24 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26 000</b>
a.	Solid Waste Disposal	-	930	23 000	-	-	-	-	-	-	23 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	1 000
c.	Wastewater Treatment and Discharge	-	14	350	2	600	-	-	-	-	950
d.	Incineration and Open Burning of Waste	540	0	5	1	200	-	-	-	-	750
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-64 000</b>	<b>58</b>	<b>1 500</b>	<b>2</b>	<b>580</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-62 000</b>
a.	Forest Land	-220 000	16	410	1	200	-	-	-	-	-220 000
b.	Cropland	-4 500	5	100	0	80	-	-	-	-	-4 200
c.	Grassland	-	30	800	1	200	-	-	-	-	1 000
d.	Wetlands	3 000	0	9	0	6	-	-	-	-	3 000
e.	Settlements	3 000	5	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	160 000	-	-	-	-	-	-	-	-	160 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HFC production (HFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-19 1999 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>549 000</b>	<b>4 700</b>	<b>120 000</b>	<b>130</b>	<b>40 000</b>	<b>2 200</b>	<b>5 400</b>	<b>2 400</b>	<b>0</b>	<b>716 000</b>
<b>ENERGY</b>		<b>507 000</b>	<b>2 500</b>	<b>62 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>581 000</b>
a.	Stationary Combustion Sources	320 000	300	7 000	9	3 000	-	-	-	-	330 000
	Public Electricity and Heat Production	120 000	4	100	2	670	-	-	-	-	119 000
	Petroleum Refining Industries	17 000	0	10	0	50	-	-	-	-	17 000
	Mining and Upstream Oil and Gas Production	56 400	110	2 800	1	400	-	-	-	-	59 500
	Manufacturing Industries	55 200	3	65	2	600	-	-	-	-	55 900
	Iron and Steel	6 280	0	4	0	40	-	-	-	-	6 330
	Non Ferrous Metals	3 670	0	2	0	20	-	-	-	-	3 690
	Chemical	11 100	0	6	0	60	-	-	-	-	11 200
	Pulp and Paper	10 000	2	40	1	400	-	-	-	-	13 000
	Cement	4 450	0	4	0	20	-	-	-	-	4 470
	Other Manufacturing	17 500	0	12	0	100	-	-	-	-	17 600
	Construction	1 160	0	1	0	10	-	-	-	-	1 170
	Commercial and Institutional	28 900	1	13	1	200	-	-	-	-	29 100
	Residential	40 400	200	4 000	2	700	-	-	-	-	45 300
	Agriculture and Forestry	2 660	0	1	0	20	-	-	-	-	2 680
b.	Transport <sup>2</sup>	171 000	33	830	30	9 000	-	-	-	-	180 000
	Domestic Aviation	7 730	0	9	0	70	-	-	-	-	7 800
	Road Transportation	109 000	10	300	18	5 300	-	-	-	-	115 000
	Light-Duty Gasoline Vehicles	41 200	5	140	9	2 600	-	-	-	-	43 900
	Light-Duty Gasoline Trucks	30 800	4	90	7	2 200	-	-	-	-	33 100
	Heavy-Duty Gasoline Vehicles	10 700	1	26	1	150	-	-	-	-	10 900
	Motorcycles	115	0	2	0	1	-	-	-	-	118
	Light-Duty Diesel Vehicles	540	0	0	0	10	-	-	-	-	553
	Light-Duty Diesel Trucks	293	0	0	0	7	-	-	-	-	300
	Heavy-Duty Diesel Vehicles	25 000	1	30	1	300	-	-	-	-	25 300
	Propane and Natural Gas Vehicles	759	0	8	0	4	-	-	-	-	770
	Railways	5 690	0	8	2	700	-	-	-	-	6 400
	Domestic Navigation	4 720	0	10	0	40	-	-	-	-	4 800
	Other Transportation	43 100	20	500	10	3 000	-	-	-	-	47 000
	Off-Road Agriculture & Forestry	11 600	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Commercial & Institutional	1 700	1	20	1	200	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	10 400	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	412	0	6	0	20	-	-	-	-	440
	Off-Road Other Transportation	6 720	6	100	1	200	-	-	-	-	7 100
	Pipeline Transport	12 200	12	310	0	100	-	-	-	-	12 600
c.	Fugitive Sources	16 000	2 200	54 000	0	40	-	-	-	-	70 000
	Coal Mining	-	70	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	16 000	2 100	52 000	0	40	-	-	-	-	69 000
	Oil	130	250	6 200	0	30	-	-	-	-	6 400
	Natural Gas	53	780	19 000	-	-	-	-	-	-	19 000
	Venting	11 000	1 100	27 000	-	-	-	-	-	-	37 000
	Flaring	5 400	8	200	0	3	-	-	-	-	5 600
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>39 500</b>	<b>4</b>	<b>110</b>	<b>11</b>	<b>3 210</b>	<b>2 200</b>	<b>5 400</b>	<b>2 400</b>	<b>-</b>	<b>52 700</b>
a.	Mineral Products	9 800	-	-	-	-	-	-	-	-	9 800
	Cement Production	7 000	-	-	-	-	-	-	-	-	7 000
	Lime Production	1 920	-	-	-	-	-	-	-	-	1 920
	Mineral Product Use	790	-	-	-	-	-	-	-	-	790
b.	Chemical Industry	6 270	4	110	10	2 800	-	-	-	-	9 200
	Ammonia Production	3 000	-	-	-	-	-	-	-	-	3 000
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	6	1 700	-	-	-	-	1 700
	Petrochemical and Carbon Black Production	3 300	4	110	0	16	-	-	-	-	3 400
c.	Metal Production	15 600	0	3	-	-	-	5 340	2 220	-	23 200
	Iron and Steel Production	11 600	0	3	-	-	-	-	-	-	11 600
	Aluminium Production	3 950	-	-	-	-	-	5 340	51	-	9 340
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 160	-	2 160
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	2 200	27	3	0	2 200
e.	Non-Energy Products from Fuels and Solvent Use	7 800	-	-	-	-	-	-	-	-	7 800
f.	Other Product Manufacture and Use	-	-	-	1	390	-	2	190	-	590
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>32 000</b>	<b>80</b>	<b>24 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>57 000</b>
a.	Enteric Fermentation	-	1 100	28 000	-	-	-	-	-	-	28 000
b.	Manure Management	-	150	3 900	20	5 000	-	-	-	-	8 900
c.	Agriculture Soils	-	-	-	63	19 000	-	-	-	-	19 000
	Direct Sources	-	-	-	52	16 000	-	-	-	-	16 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	5	100	0	30	-	-	-	-	100
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>490</b>	<b>960</b>	<b>24 000</b>	<b>4</b>	<b>1 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26 000</b>
a.	Solid Waste Disposal	-	920	23 000	-	-	-	-	-	-	23 000
b.	Biological Treatment of Solid Waste	-	20	600	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	15	360	2	600	-	-	-	-	960
d.	Incineration and Open Burning of Waste	490	0	5	1	200	-	-	-	-	670
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-80 000</b>	<b>51</b>	<b>1 300</b>	<b>2</b>	<b>530</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-78 000</b>
a.	Forest Land	-230 000	15	370	1	180	-	-	-	-	-230 000
b.	Cropland	-3 200	6	100	0	80	-	-	-	-	-2 900
c.	Grassland	-	20	600	1	200	-	-	-	-	800
d.	Wetlands	3 000	2	50	0	30	-	-	-	-	3 000
e.	Settlements	3 000	5	100	0	50	-	-	-	-	3 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-20 1998 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>533 000</b>	<b>4 700</b>	<b>120 000</b>	<b>140</b>	<b>42 000</b>	<b>1 600</b>	<b>6 500</b>	<b>2 400</b>	<b>0</b>	<b>704 000</b>
<b>ENERGY</b>		<b>492 000</b>	<b>2 500</b>	<b>63 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>567 000</b>
a.	Stationary Combustion Sources	308 000	300	7 000	9	3 000	-	-	-	-	317 000
	Public Electricity and Heat Production	120 000	4	99	2	680	-	-	-	-	122 000
	Petroleum Refining Industries	18 000	0	10	0	50	-	-	-	-	18 000
	Mining and Upstream Oil and Gas Production	45 200	86	2 200	1	300	-	-	-	-	47 700
	Manufacturing Industries	54 100	3	63	2	580	-	-	-	-	54 800
	Iron and Steel	6 180	0	4	0	40	-	-	-	-	6 230
	Non Ferrous Metals	3 860	0	2	0	20	-	-	-	-	3 880
	Chemical	10 800	0	6	0	60	-	-	-	-	10 800
	Pulp and Paper	10 000	1	40	1	300	-	-	-	-	12 000
	Cement	4 170	0	4	0	20	-	-	-	-	4 190
	Other Manufacturing	17 400	0	12	0	100	-	-	-	-	17 500
	Construction	1 110	0	0	0	10	-	-	-	-	1 120
	Commercial and Institutional	27 300	1	13	1	200	-	-	-	-	27 500
	Residential	38 600	200	4 000	3	700	-	-	-	-	43 700
	Agriculture and Forestry	2 580	0	1	0	20	-	-	-	-	2 600
b.	Transport <sup>2</sup>	167 000	35	870	29	8 800	-	-	-	-	176 000
	Domestic Aviation	7 360	0	9	0	70	-	-	-	-	7 400
	Road Transportation	105 000	10	300	17	5 000	-	-	-	-	110 000
	Light-Duty Gasoline Vehicles	40 000	5	140	9	2 600	-	-	-	-	42 700
	Light-Duty Gasoline Trucks	29 100	3	85	7	2 100	-	-	-	-	31 300
	Heavy-Duty Gasoline Vehicles	10 500	1	29	0	130	-	-	-	-	10 700
	Motorcycles	115	0	2	0	1	-	-	-	-	118
	Light-Duty Diesel Vehicles	482	0	0	0	10	-	-	-	-	493
	Light-Duty Diesel Trucks	275	0	0	0	6	-	-	-	-	281
	Heavy-Duty Diesel Vehicles	23 200	1	30	1	300	-	-	-	-	23 500
	Propane and Natural Gas Vehicles	942	0	10	0	5	-	-	-	-	960
	Railways	5 380	0	8	2	600	-	-	-	-	6 000
	Domestic Navigation	4 890	1	10	0	40	-	-	-	-	4 900
	Other Transportation	44 200	20	500	10	3 000	-	-	-	-	48 000
	Off-Road Agriculture & Forestry	12 400	1	20	5	1 000	-	-	-	-	14 000
	Off-Road Commercial & Institutional	1 680	1	20	1	200	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	9 700	1	20	4	1 000	-	-	-	-	11 000
	Off-Road Residential	379	0	6	0	20	-	-	-	-	410
	Off-Road Other Transportation	7 950	7	200	1	300	-	-	-	-	8 400
	Pipeline Transport	12 100	12	300	0	100	-	-	-	-	12 500
c.	Fugitive Sources	18 000	2 200	55 000	0	40	-	-	-	-	73 000
	Coal Mining	-	80	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	18 000	2 100	53 000	0	40	-	-	-	-	71 000
	Oil	120	250	6 300	0	30	-	-	-	-	6 400
	Natural Gas	59	800	20 000	-	-	-	-	-	-	20 000
	Venting	10 000	1 100	27 000	-	-	-	-	-	-	37 000
	Flaring	7 100	9	230	0	5	-	-	-	-	7 400
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>38 300</b>	<b>4</b>	<b>97</b>	<b>21</b>	<b>6 270</b>	<b>1 600</b>	<b>6 500</b>	<b>2 400</b>	<b>-</b>	<b>55 100</b>
a.	Mineral Products	9 500	-	-	-	-	-	-	-	-	9 500
	Cement Production	6 800	-	-	-	-	-	-	-	-	6 800
	Lime Production	1 850	-	-	-	-	-	-	-	-	1 850
	Mineral Product Use	940	-	-	-	-	-	-	-	-	940
b.	Chemical Industry	6 470	4	94	20	5 900	-	-	-	-	12 400
	Ammonia Production	3 100	-	-	-	-	-	-	-	-	3 100
	Nitric Acid Production	-	-	-	3	1 000	-	-	-	-	1 000
	Adipic Acid Production	-	-	-	16	4 900	-	-	-	-	4 900
	Petrochemical and Carbon Black Production	3 400	4	94	0	16	-	-	-	-	3 500
c.	Metal Production	15 300	0	3	-	-	-	6 450	2 160	-	24 000
	Iron and Steel Production	11 400	0	3	-	-	-	-	-	-	11 400
	Aluminium Production	3 980	-	-	-	-	-	6 450	56	-	10 500
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 100	-	2 100
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	1 600	21	4	0	1 600
e.	Non-Energy Products from Fuels and Solvent Use	6 900	-	-	-	-	-	-	-	-	6 900
f.	Other Product Manufacture and Use	-	-	-	1	390	-	1	190	-	580
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>32 000</b>	<b>79</b>	<b>24 000</b>	-	-	-	-	<b>57 000</b>
a.	Enteric Fermentation	-	1 100	28 000	-	-	-	-	-	-	28 000
b.	Manure Management	-	150	3 800	20	5 000	-	-	-	-	8 700
c.	Agriculture Soils	-	-	-	62	19 000	-	-	-	-	19 000
	Direct Sources	-	-	-	52	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	6	200	0	50	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>540</b>	<b>940</b>	<b>24 000</b>	<b>4</b>	<b>1 200</b>	-	-	-	-	<b>25 000</b>
a.	Solid Waste Disposal	-	910	23 000	-	-	-	-	-	-	23 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	15	380	2	600	-	-	-	-	960
d.	Incineration and Open Burning of Waste	540	0	6	1	200	-	-	-	-	740
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-89 000</b>	<b>47</b>	<b>1 200</b>	<b>2</b>	<b>500</b>	-	-	-	-	<b>-87 000</b>
a.	Forest Land	-240 000	15	370	1	180	-	-	-	-	-240 000
b.	Cropland	-1 900	6	100	0	80	-	-	-	-	-1 600
c.	Grassland	-	20	500	1	200	-	-	-	-	700
d.	Wetlands	3 000	1	30	0	20	-	-	-	-	3 000
e.	Settlements	3 000	5	100	0	50	-	-	-	-	3 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9–21 1997 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential											
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>525 000</b>	<b>4 700</b>	<b>120 000</b>	<b>160</b>	<b>47 000</b>	<b>1 100</b>	<b>6 400</b>	<b>1 800</b>	<b>0</b>	<b>697 000</b>
<b>ENERGY</b>		<b>484 000</b>	<b>2 500</b>	<b>62 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>557 000</b>
a.	Stationary Combustion Sources	305 000	200	6 000	8	2 000	-	-	-	-	313 000
	Public Electricity and Heat Production	110 000	3	81	2	610	-	-	-	-	110 000
	Petroleum Refining Industries	19 000	1	10	0	60	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	42 200	73	1 800	1	300	-	-	-	-	44 300
	Manufacturing Industries	57 100	2	61	2	570	-	-	-	-	57 800
	Iron and Steel	6 110	0	4	0	40	-	-	-	-	6 160
	Non Ferrous Metals	3 870	0	2	0	20	-	-	-	-	3 890
	Chemical	10 200	0	5	0	50	-	-	-	-	10 200
	Pulp and Paper	10 000	1	40	1	300	-	-	-	-	13 000
	Cement	4 030	0	3	0	10	-	-	-	-	4 050
	Other Manufacturing	20 100	0	11	0	100	-	-	-	-	20 200
	Construction	1 240	0	1	0	10	-	-	-	-	1 250
	Commercial and Institutional	29 900	1	14	1	200	-	-	-	-	30 100
	Residential	43 700	200	4 000	2	700	-	-	-	-	48 600
	Agriculture and Forestry	2 900	0	1	0	20	-	-	-	-	2 920
b.	Transport <sup>2</sup>	163 000	35	880	30	8 900	-	-	-	-	173 000
	Domestic Aviation	7 070	0	8	0	60	-	-	-	-	7 100
	Road Transportation	98 600	10	300	16	4 800	-	-	-	-	104 000
	Light-Duty Gasoline Vehicles	40 800	6	140	9	2 600	-	-	-	-	43 500
	Light-Duty Gasoline Trucks	27 000	3	80	6	1 900	-	-	-	-	29 000
	Heavy-Duty Gasoline Vehicles	9 320	1	28	0	92	-	-	-	-	9 440
	Motorcycles	91	0	2	0	1	-	-	-	-	93
	Light-Duty Diesel Vehicles	451	0	0	0	10	-	-	-	-	462
	Light-Duty Diesel Trucks	255	0	0	0	6	-	-	-	-	261
	Heavy-Duty Diesel Vehicles	19 800	1	20	1	200	-	-	-	-	20 100
	Propane and Natural Gas Vehicles	908	0	10	0	5	-	-	-	-	920
	Railways	5 580	0	8	2	600	-	-	-	-	6 200
	Domestic Navigation	4 250	0	10	0	30	-	-	-	-	4 300
	Other Transportation	47 700	20	600	10	3 000	-	-	-	-	52 000
	Off-Road Agriculture & Forestry	13 100	1	20	5	2 000	-	-	-	-	15 000
	Off-Road Commercial & Institutional	1 810	1	20	1	200	-	-	-	-	2 000
	Off-Road Manufacturing, Mining & Construction	11 700	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Residential	351	0	5	0	20	-	-	-	-	380
	Off-Road Other Transportation	8 510	8	200	1	300	-	-	-	-	9 000
	Pipeline Transport	12 200	12	310	0	100	-	-	-	-	12 600
c.	Fugitive Sources	16 000	2 200	55 000	0	40	-	-	-	-	71 000
	Coal Mining	-	90	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	16 000	2 100	52 000	0	40	-	-	-	-	69 000
	Oil	120	260	6 500	0	30	-	-	-	-	6 600
	Natural Gas	47	740	18 000	-	-	-	-	-	-	18 000
	Venting	10 000	1 100	27 000	-	-	-	-	-	-	38 000
	Flaring	5 600	8	200	0	3	-	-	-	-	5 800
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>38 500</b>	<b>4</b>	<b>100</b>	<b>36</b>	<b>10 800</b>	<b>1 100</b>	<b>6 400</b>	<b>1 800</b>	<b>-</b>	<b>58 700</b>
a.	Mineral Products	9 400	-	-	-	-	-	-	-	-	9 400
	Cement Production	6 600	-	-	-	-	-	-	-	-	6 600
	Lime Production	1 860	-	-	-	-	-	-	-	-	1 860
	Mineral Product Use	990	-	-	-	-	-	-	-	-	990
b.	Chemical Industry	6 430	4	99	35	11 000	-	-	-	-	17 100
	Ammonia Production	2 800	-	-	-	-	-	-	-	-	2 800
	Nitric Acid Production	-	-	-	3	1 000	-	-	-	-	1 000
	Adipic Acid Production	-	-	-	32	9 500	-	-	-	-	9 500
	Petrochemical and Carbon Black Production	3 600	4	99	0	17	-	-	-	-	3 700
c.	Metal Production	15 000	0	2	-	-	-	6 350	1 650	-	23 000
	Iron and Steel Production	11 100	0	2	-	-	-	-	-	-	11 100
	Aluminium Production	3 930	-	-	-	-	-	6 350	56	-	10 300
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	1 600	-	1 600
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	1 100	22	3	0	1 100
e.	Non-Energy Products from Fuels and Solvent Use	7 600	-	-	-	-	-	-	-	-	7 600
f.	Other Product Manufacture and Use	-	-	-	1	220	-	1	170	-	390
	<b>AGRICULTURE</b>	<b>2 000</b>	<b>1 300</b>	<b>32 000</b>	<b>78</b>	<b>23 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>56 000</b>
a.	Enteric Fermentation	-	1 100	28 000	-	-	-	-	-	-	28 000
b.	Manure Management	-	150	3 800	20	5 000	-	-	-	-	8 600
c.	Agriculture Soils	-	-	-	62	18 000	-	-	-	-	18 000
	Direct Sources	-	-	-	51	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	6	100	0	40	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
	<b>WASTE</b>	<b>510</b>	<b>930</b>	<b>23 000</b>	<b>4</b>	<b>1 100</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	890	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	900
c.	Wastewater Treatment and Discharge	-	16	390	2	600	-	-	-	-	960
d.	Incineration and Open Burning of Waste	510	0	5	1	200	-	-	-	-	690
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-83 000</b>	<b>44</b>	<b>1 100</b>	<b>2</b>	<b>470</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-82 000</b>
a.	Forest Land	-240 000	16	410	1	200	-	-	-	-	-240 000
b.	Cropland	-530	6	100	0	80	-	-	-	-	-310
c.	Grassland	-	20	400	0	100	-	-	-	-	600
d.	Wetlands	3 000	1	10	0	7	-	-	-	-	3 000
e.	Settlements	3 000	4	100	0	50	-	-	-	-	3 000
f.	Harvested Wood Products	150,000	-	-	-	-	-	-	-	-	150,000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-22 1996 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>510 000</b>	<b>4 600</b>	<b>110 000</b>	<b>160</b>	<b>48 000</b>	<b>810</b>	<b>6 500</b>	<b>1 800</b>	<b>0</b>	<b>682 000</b>
<b>ENERGY</b>		<b>471 000</b>	<b>2 400</b>	<b>60 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>542 000</b>
a.	Stationary Combustion Sources	297 000	300	6 000	8	2 000	-	-	-	-	306 000
	Public Electricity and Heat Production	97 000	3	66	2	550	-	-	-	-	98 100
	Petroleum Refining Industries	19 000	1	10	0	60	-	-	-	-	19 000
	Mining and Upstream Oil and Gas Production	43 600	77	1 900	1	300	-	-	-	-	45 800
	Manufacturing Industries	57 000	3	63	2	570	-	-	-	-	57 600
	Iron and Steel	6 100	0	4	0	40	-	-	-	-	6 150
	Non Ferrous Metals	3 990	0	2	0	20	-	-	-	-	4 010
	Chemical	9 860	0	5	0	50	-	-	-	-	9 920
	Pulp and Paper	10 000	1	40	1	300	-	-	-	-	13 000
	Cement	4 120	0	5	0	20	-	-	-	-	4 140
	Other Manufacturing	19 800	0	11	0	100	-	-	-	-	20 000
	Construction	1 260	0	1	0	10	-	-	-	-	1 270
	Commercial and Institutional	29 400	1	13	1	200	-	-	-	-	29 600
	Residential	47 000	200	4 000	3	800	-	-	-	-	52 200
	Agriculture and Forestry	2 910	0	1	0	20	-	-	-	-	2 930
b.	Transport <sup>2</sup>	158 000	36	890	29	8 500	-	-	-	-	167 000
	Domestic Aviation	7 020	0	8	0	60	-	-	-	-	7 100
	Road Transportation	93 700	10	300	15	4 600	-	-	-	-	98 600
	Light-Duty Gasoline Vehicles	40 900	6	150	9	2 600	-	-	-	-	43 600
	Light-Duty Gasoline Trucks	25 300	3	77	6	1 700	-	-	-	-	27 100
	Heavy-Duty Gasoline Vehicles	8 650	1	29	0	71	-	-	-	-	8 750
	Motorcycles	82	0	2	0	1	-	-	-	-	85
	Light-Duty Diesel Vehicles	406	0	0	0	9	-	-	-	-	416
	Light-Duty Diesel Trucks	224	0	0	0	5	-	-	-	-	229
	Heavy-Duty Diesel Vehicles	17 300	1	20	1	200	-	-	-	-	17 500
	Propane and Natural Gas Vehicles	917	0	10	0	5	-	-	-	-	930
	Railways	5 500	0	8	2	600	-	-	-	-	6 100
	Domestic Navigation	4 170	0	10	0	30	-	-	-	-	4 200
	Other Transportation	47 100	20	600	10	3 000	-	-	-	-	51 000
	Off-Road Agriculture & Forestry	12 500	1	20	5	1 000	-	-	-	-	14 000
	Off-Road Commercial & Institutional	1 700	1	20	1	200	-	-	-	-	1 900
	Off-Road Manufacturing, Mining & Construction	11 400	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Residential	310	0	4	0	20	-	-	-	-	340
	Off-Road Other Transportation	9 100	8	200	1	300	-	-	-	-	9 600
	Pipeline Transport	12 100	12	300	0	100	-	-	-	-	12 500
c.	Fugitive Sources	16 000	2 100	53 000	0	40	-	-	-	-	69 000
	Coal Mining	-	90	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	16 000	2 000	50 000	0	40	-	-	-	-	66 000
	Oil	120	250	6 200	0	30	-	-	-	-	6 300
	Natural Gas	52	750	19 000	-	-	-	-	-	-	19 000
	Venting	10 000	1 000	25 000	-	-	-	-	-	-	36 000
	Flaring	5 400	8	190	0	3	-	-	-	-	5 600
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>37 300</b>	<b>4</b>	<b>110</b>	<b>41</b>	<b>12 300</b>	<b>810</b>	<b>6 500</b>	<b>1 800</b>	<b>-</b>	<b>58 800</b>
a.	Mineral Products	8 800	-	-	-	-	-	-	-	-	8 800
	Cement Production	6 100	-	-	-	-	-	-	-	-	6 100
	Lime Production	1 800	-	-	-	-	-	-	-	-	1 800
	Mineral Product Use	890	-	-	-	-	-	-	-	-	890
b.	Chemical Industry	6 310	4	100	41	12 000	-	-	-	-	18 500
	Ammonia Production	2 800	-	-	-	-	-	-	-	-	2 800
	Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
	Adipic Acid Production	-	-	-	37	11 000	-	-	-	-	11 000
	Petrochemical and Carbon Black Production	3 500	4	100	0	16	-	-	-	-	3 600
c.	Metal Production	15 100	0	3	-	-	6 480	1 620	-	-	23 200
	Iron and Steel Production	11 300	0	3	-	-	-	-	-	-	11 300
	Aluminium Production	3 860	-	-	-	-	6 480	56	-	-	10 400
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	1 560	-	-	1 560
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	810	26	3	0	840
e.	Non-Energy Products from Fuels and Solvent Use	7 000	-	-	-	-	-	-	-	-	7 000
f.	Other Product Manufacture and Use	-	-	-	1	210	-	150	-	-	350
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 300</b>	<b>32 000</b>	<b>78</b>	<b>23 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>56 000</b>
a.	Enteric Fermentation	-	1 100	28 000	-	-	-	-	-	-	28 000
b.	Manure Management	-	150	3 800	20	5 000	-	-	-	-	8 600
c.	Agriculture Soils	-	-	-	62	19 000	-	-	-	-	19 000
	Direct Sources	-	-	-	52	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	5	100	0	40	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>540</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 100</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	880	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	400	-	-	-	-	800
c.	Wastewater Treatment and Discharge	-	16	400	2	600	-	-	-	-	950
d.	Incineration and Open Burning of Waste	540	2	50	1	200	-	-	-	-	830
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-82 000</b>	<b>47</b>	<b>1 200</b>	<b>2</b>	<b>510</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-80 000</b>
a.	Forest Land	-240 000	19	480	1	240	-	-	-	-	-240 000
b.	Cropland	900	6	200	0	90	-	-	-	-	1 100
c.	Grassland	-	20	400	0	100	-	-	-	-	500
d.	Wetlands	3 000	0	8	0	5	-	-	-	-	3 000
e.	Settlements	3 000	4	100	0	50	-	-	-	-	3 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-23 1995 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>496 000</b>	<b>4 400</b>	<b>110 000</b>	<b>150</b>	<b>46 000</b>	<b>460</b>	<b>6 300</b>	<b>2 300</b>	<b>0</b>	<b>661 000</b>
<b>ENERGY</b>		<b>457 000</b>	<b>2 300</b>	<b>57 000</b>	<b>40</b>	<b>10 000</b>	-	-	-	-	<b>524 000</b>
a.	Stationary Combustion Sources	289 000	300	7 000	8	2 000	-	-	-	-	298 000
	Public Electricity and Heat Production	98 000	3	74	2	560	-	-	-	-	98 700
	Petroleum Refining Industries	16 000	0	10	0	50	-	-	-	-	16 000
	Mining and Upstream Oil and Gas Production	44 000	78	1 900	1	300	-	-	-	-	46 200
	Manufacturing Industries	55 400	2	61	2	560	-	-	-	-	56 000
	Iron and Steel	5 730	0	4	0	40	-	-	-	-	5 780
	Non Ferrous Metals	3 210	0	2	0	10	-	-	-	-	3 220
	Chemical	10 200	0	5	0	50	-	-	-	-	10 300
	Pulp and Paper	10 000	1	40	1	300	-	-	-	-	13 000
	Cement	4 140	0	5	0	20	-	-	-	-	4 160
	Other Manufacturing	19 600	0	10	0	100	-	-	-	-	19 700
	Construction	1 170	0	0	0	9	-	-	-	-	1 180
	Commercial and Institutional	28 800	1	13	1	200	-	-	-	-	29 000
	Residential	42 300	200	4 000	3	800	-	-	-	-	47 500
	Agriculture and Forestry	2 740	0	1	0	20	-	-	-	-	2 770
b.	Transport <sup>2</sup>	154 000	36	890	27	8 100	-	-	-	-	163 000
	Domestic Aviation	6 570	0	9	0	60	-	-	-	-	6 600
	Road Transportation	92 800	10	300	15	4 400	-	-	-	-	97 500
	Light-Duty Gasoline Vehicles	40 900	6	150	9	2 500	-	-	-	-	43 600
	Light-Duty Gasoline Trucks	24 200	3	76	5	1 600	-	-	-	-	25 800
	Heavy-Duty Gasoline Vehicles	8 390	1	29	0	57	-	-	-	-	8 470
	Motorcycles	81	0	2	0	1	-	-	-	-	84
	Light-Duty Diesel Vehicles	412	0	0	0	9	-	-	-	-	422
	Light-Duty Diesel Trucks	218	0	0	0	5	-	-	-	-	223
	Heavy-Duty Diesel Vehicles	17 600	1	20	1	200	-	-	-	-	17 800
	Propane and Natural Gas Vehicles	1 050	1	10	0	6	-	-	-	-	1 100
	Railways	5 630	0	8	2	600	-	-	-	-	6 300
	Domestic Navigation	4 060	0	9	0	30	-	-	-	-	4 100
	Other Transportation	44 600	20	600	10	3 000	-	-	-	-	48 000
	Off-Road Agriculture & Forestry	11 400	1	20	4	1 000	-	-	-	-	13 000
	Off-Road Commercial & Institutional	1 600	1	20	1	100	-	-	-	-	1 800
	Off-Road Manufacturing, Mining & Construction	10 400	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Residential	259	0	2	0	20	-	-	-	-	280
	Off-Road Other Transportation	9 200	9	200	1	300	-	-	-	-	9 700
	Pipeline Transport	11 700	12	290	0	100	-	-	-	-	12 000
c.	Fugitive Sources	15 000	2 000	49 000	0	40	-	-	-	-	64 000
	Coal Mining	-	90	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	15 000	1 900	47 000	0	40	-	-	-	-	62 000
	Oil	120	240	6 000	0	30	-	-	-	-	6 100
	Natural Gas	39	680	17 000	-	-	-	-	-	-	17 000
	Venting	9 600	950	24 000	-	-	-	-	-	-	33 000
	Flaring	5 100	8	190	0	3	-	-	-	-	5 300
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>36 300</b>	<b>4</b>	<b>100</b>	<b>39</b>	<b>11 500</b>	<b>460</b>	<b>6 300</b>	<b>2 300</b>	<b>-</b>	<b>56 900</b>
a.	Mineral Products	9 100	-	-	-	-	-	-	-	-	9 100
	Cement Production	6 500	-	-	-	-	-	-	-	-	6 500
	Lime Production	1 860	-	-	-	-	-	-	-	-	1 860
	Mineral Product Use	750	-	-	-	-	-	-	-	-	750
b.	Chemical Industry	6 610	4	100	38	11 000	-	-	-	-	18 000
	Ammonia Production	2 940	-	-	-	-	-	-	-	-	2 940
	Nitric Acid Production	-	-	-	3	960	-	-	-	-	960
	Adipic Acid Production	-	-	-	35	10 000	-	-	-	-	10 000
	Petrochemical and Carbon Black Production	3 700	4	100	0	16	-	-	-	-	3 800
c.	Metal Production	15 100	0	3	-	-	-	6 310	2 070	-	23 500
	Iron and Steel Production	11 500	0	3	-	-	-	-	-	-	11 500
	Aluminium Production	3 640	-	-	-	-	-	6 310	56	-	10 000
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 010	-	2 010
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	460	35	4	0	500
e.	Non-Energy Products from Fuels and Solvent Use	5 500	-	-	-	-	-	-	-	-	5 500
f.	Other Product Manufacture and Use	-	-	-	1	200	-	0	200	-	410
<b>AGRICULTURE</b>		<b>2 000</b>	<b>1 200</b>	<b>31 000</b>	<b>75</b>	<b>22 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>55 000</b>
a.	Enteric Fermentation	-	1 100	27 000	-	-	-	-	-	-	27 000
b.	Manure Management	-	150	3 800	20	5 000	-	-	-	-	8 500
c.	Agriculture Soils	-	-	-	59	18 000	-	-	-	-	18 000
	Direct Sources	-	-	-	49	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	6	100	0	40	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	2 000	-	-	-	-	-	-	-	-	2 000
<b>WASTE</b>		<b>580</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 100</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	880	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	300	-	-	-	-	800
c.	Wastewater Treatment and Discharge	-	16	390	2	500	-	-	-	-	940
d.	Incineration and Open Burning of Waste	580	2	50	1	300	-	-	-	-	890
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>		<b>-78 000</b>	<b>41</b>	<b>1 000</b>	<b>2</b>	<b>470</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-76 000</b>
a.	Forest Land	-240 000	22	540	1	260	-	-	-	-	-240 000
b.	Cropland	1 800	6	100	0	90	-	-	-	-	2 000
c.	Grassland	-	9	200	0	70	-	-	-	-	300
d.	Wetlands	3 000	0	8	0	5	-	-	-	-	3 000
e.	Settlements	3 000	4	100	0	40	-	-	-	-	3 000
f.	Harvested Wood Products	160 000	-	-	-	-	-	-	-	-	160 000

**Notes:**

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-24 1994 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
<i>Global Warming Potential</i>				25		298			22,800	17,200	
<i>Unit</i>		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>483 000</b>	<b>4 300</b>	<b>110 000</b>	<b>150</b>	<b>45 000</b>	-	<b>6 900</b>	<b>2 400</b>	<b>0</b>	<b>644 000</b>
<b>ENERGY</b>		<b>446 000</b>	<b>2 200</b>	<b>54 000</b>	<b>30</b>	<b>10 000</b>	-	-	-	-	<b>510 000</b>
a.	Stationary Combustion Sources	282 000	300	7 000	8	2 000	-	-	-	-	291 000
	Public Electricity and Heat Production	95 000	3	64	2	530	-	-	-	-	95 300
	Petroleum Refining Industries	16 000	0	10	0	50	-	-	-	-	16 000
	Mining and Upstream Oil and Gas Production	42 500	76	1 900	1	300	-	-	-	-	44 700
	Manufacturing Industries	53 600	3	62	2	560	-	-	-	-	54 300
	Iron and Steel	5 970	0	4	0	40	-	-	-	-	6 020
	Non Ferrous Metals	3 410	0	2	0	10	-	-	-	-	3 430
	Chemical	9 950	0	5	0	50	-	-	-	-	10 000
	Pulp and Paper	10 000	1	40	1	300	-	-	-	-	13 000
	Cement	4 050	0	5	0	20	-	-	-	-	4 080
	Other Manufacturing	17 700	0	10	0	100	-	-	-	-	17 800
	Construction	1 390	0	1	0	10	-	-	-	-	1 400
	Commercial and Institutional	27 300	1	13	1	200	-	-	-	-	27 500
	Residential	43 500	200	5 000	3	800	-	-	-	-	49 000
	Agriculture and Forestry	2 530	0	1	0	20	-	-	-	-	2 540
b.	Transport <sup>2</sup>	150 000	35	860	26	7 800	-	-	-	-	158 000
	Domestic Aviation	6 190	0	8	0	60	-	-	-	-	6 300
	Road Transportation	91 500	10	300	14	4 300	-	-	-	-	96 100
	Light-Duty Gasoline Vehicles	41 400	6	160	8	2 500	-	-	-	-	44 100
	Light-Duty Gasoline Trucks	23 800	3	77	5	1 500	-	-	-	-	25 400
	Heavy-Duty Gasoline Vehicles	8 160	1	29	0	58	-	-	-	-	8 250
	Motorcycles	82	0	2	0	1	-	-	-	-	85
	Light-Duty Diesel Vehicles	415	0	0	0	9	-	-	-	-	424
	Light-Duty Diesel Trucks	195	0	0	0	4	-	-	-	-	200
	Heavy-Duty Diesel Vehicles	16 400	1	20	1	100	-	-	-	-	16 600
	Propane and Natural Gas Vehicles	1 070	1	10	0	6	-	-	-	-	1 100
	Railways	6 210	0	9	2	700	-	-	-	-	6 900
	Domestic Navigation	4 350	0	10	0	30	-	-	-	-	4 400
	Other Transportation	41 500	20	500	9	3 000	-	-	-	-	45 000
	Off-Road Agriculture & Forestry	10 700	1	20	4	1 000	-	-	-	-	12 000
	Off-Road Commercial & Institutional	1 460	1	20	1	100	-	-	-	-	1 600
	Off-Road Manufacturing, Mining & Construction	9 490	1	20	3	1 000	-	-	-	-	11 000
	Off-Road Residential	228	0	2	0	20	-	-	-	-	250
	Off-Road Other Transportation	9 150	9	200	1	300	-	-	-	-	9 600
	Pipeline Transport	10 500	10	260	0	90	-	-	-	-	10 800
c.	Fugitive Sources	14 000	1 900	46 000	0	40	-	-	-	-	61 000
	Coal Mining	-	100	3 000	-	-	-	-	-	-	3 000
	Oil and Natural Gas	14 000	1 800	44 000	0	40	-	-	-	-	58 000
	Oil	110	220	5 500	0	30	-	-	-	-	5 700
	Natural Gas	36	650	16 000	-	-	-	-	-	-	16 000
	Venting	9 300	880	22 000	-	-	-	-	-	-	31 000
	Flaring	4 900	7	180	0	3	-	-	-	-	5 100
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>35 100</b>	<b>4</b>	<b>110</b>	<b>39</b>	<b>11 600</b>	-	<b>6 900</b>	<b>2 400</b>	-	<b>56 200</b>
a.	Mineral Products	8 400	-	-	-	-	-	-	-	-	8 400
	Cement Production	5 700	-	-	-	-	-	-	-	-	5 700
	Lime Production	1 850	-	-	-	-	-	-	-	-	1 850
	Mineral Product Use	850	-	-	-	-	-	-	-	-	850
b.	Chemical Industry	6 760	4	100	39	11 000	-	-	-	-	18 300
	Ammonia Production	3 030	-	-	-	-	-	-	-	-	3 030
	Nitric Acid Production	-	-	-	3	920	-	-	-	-	920
	Adipic Acid Production	-	-	-	35	11 000	-	-	-	-	11 000
	Petrochemical and Carbon Black Production	3 700	4	100	0	17	-	-	-	-	3 800
c.	Metal Production	14 700	0	2	-	-	-	6 890	2 240	-	23 900
	Iron and Steel Production	11 000	0	2	-	-	-	-	-	-	11 000
	Aluminium Production	3 770	-	-	-	-	-	6 890	56	-	10 700
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 180	-	2 180
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	-	0	4	0	5
e.	Non-Energy Products from Fuels and Solvent Use	5 200	-	-	-	-	-	-	-	-	5 200
f.	Other Product Manufacture and Use	-	-	-	1	170	-	-	200	-	370
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 200</b>	<b>30 000</b>	<b>74</b>	<b>22 000</b>	-	-	-	-	<b>53 000</b>
a.	Enteric Fermentation	-	1 000	26 000	-	-	-	-	-	-	26 000
b.	Manure Management	-	140	3 600	20	5 000	-	-	-	-	8 100
c.	Agriculture Soils	-	-	-	59	18 000	-	-	-	-	18 000
	Direct Sources	-	-	-	49	15 000	-	-	-	-	15 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	6	100	0	40	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>550</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 100</b>	-	-	-	-	<b>25 000</b>
a.	Solid Waste Disposal	-	890	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	500	1	300	-	-	-	-	800
c.	Wastewater Treatment and Discharge	-	16	390	2	500	-	-	-	-	930
d.	Incineration and Open Burning of Waste	550	2	50	1	200	-	-	-	-	830
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-90 000</b>	<b>64</b>	<b>1 600</b>	<b>2</b>	<b>660</b>	-	-	-	-	<b>-88 000</b>
a.	Forest Land	-250 000	23	570	1	280	-	-	-	-	-250 000
b.	Cropland	3 200	7	200	0	100	-	-	-	-	3 500
c.	Grassland	-	30	700	1	200	-	-	-	-	1 000
d.	Wetlands	3 000	0	7	0	5	-	-	-	-	3 000
e.	Settlements	3 000	4	100	0	40	-	-	-	-	4 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9–25 1993 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22,800	17,200	
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>468 000</b>	<b>4 100</b>	<b>100 000</b>	<b>140</b>	<b>42 000</b>	-	<b>7 500</b>	<b>2 400</b>	<b>0</b>	<b>623 000</b>
<b>ENERGY</b>		<b>431 000</b>	<b>2 100</b>	<b>52 000</b>	<b>30</b>	<b>10 000</b>	-	-	-	-	<b>493 000</b>
a.	Stationary Combustion Sources	276 000	300	7 000	8	2 000	-	-	-	-	285 000
	Public Electricity and Heat Production	92 000	3	62	2	520	-	-	-	-	93 100
	Petroleum Refining Industries	17 000	0	10	0	50	-	-	-	-	17 000
	Mining and Upstream Oil and Gas Production	40 900	73	1 800	1	300	-	-	-	-	43 000
	Manufacturing Industries	50 300	2	53	2	500	-	-	-	-	50 800
	Iron and Steel	5 350	0	4	0	40	-	-	-	-	5 390
	Non Ferrous Metals	2 820	0	2	0	10	-	-	-	-	2 830
	Chemical	8 480	0	4	0	40	-	-	-	-	8 530
	Pulp and Paper	10 000	1	30	1	300	-	-	-	-	13 000
	Cement	3 460	0	3	0	10	-	-	-	-	3 470
	Other Manufacturing	17 500	0	10	0	100	-	-	-	-	17 600
	Construction	1 380	0	1	0	10	-	-	-	-	1 390
	Commercial and Institutional	27 900	1	13	1	200	-	-	-	-	28 100
	Residential	42 800	200	5 000	3	800	-	-	-	-	48 100
	Agriculture and Forestry	3 020	0	1	0	20	-	-	-	-	3 050
b.	Transport <sup>2</sup>	143 000	34	860	25	7 400	-	-	-	-	151 000
	Domestic Aviation	5 920	0	8	0	50	-	-	-	-	6 000
	Road Transportation	85 900	10	300	13	4 000	-	-	-	-	90 200
	Light-Duty Gasoline Vehicles	41 800	7	170	8	2 400	-	-	-	-	44 400
	Light-Duty Gasoline Trucks	22 600	3	76	5	1 400	-	-	-	-	24 000
	Heavy-Duty Gasoline Vehicles	6 640	1	26	0	52	-	-	-	-	6 720
	Motorcycles	86	0	2	0	1	-	-	-	-	89
	Light-Duty Diesel Vehicles	446	0	0	0	10	-	-	-	-	456
	Light-Duty Diesel Trucks	177	0	0	0	4	-	-	-	-	181
	Heavy-Duty Diesel Vehicles	13 400	1	20	0	100	-	-	-	-	13 500
	Propane and Natural Gas Vehicles	809	0	9	0	4	-	-	-	-	820
	Railways	6 010	0	8	2	700	-	-	-	-	6 700
	Domestic Navigation	4 190	0	10	0	30	-	-	-	-	4 200
	Other Transportation	40 800	20	500	9	3 000	-	-	-	-	44 000
	Off-Road Agriculture & Forestry	10 200	1	10	4	1 000	-	-	-	-	11 000
	Off-Road Commercial & Institutional	1 440	1	20	0	100	-	-	-	-	1 600
	Off-Road Manufacturing, Mining & Construction	9 540	1	20	3	1 000	-	-	-	-	11 000
	Off-Road Residential	217	0	2	0	20	-	-	-	-	240
	Off-Road Other Transportation	9 340	9	200	1	300	-	-	-	-	9 800
	Pipeline Transport	10 000	10	250	0	80	-	-	-	-	10 400
c.	Fugitive Sources	13 000	1 800	44 000	0	30	-	-	-	-	57 000
	Coal Mining	-	100	3 000	-	-	-	-	-	-	3 000
	Oil and Natural Gas	13 000	1 700	42 000	0	30	-	-	-	-	54 000
	Oil	110	220	5 400	0	30	-	-	-	-	5 600
	Natural Gas	34	610	15 000	-	-	-	-	-	-	15 000
	Venting	8 000	830	21 000	-	-	-	-	-	-	29 000
	Flaring	4 700	7	170	0	3	-	-	-	-	4 800
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>34 500</b>	<b>4</b>	<b>100</b>	<b>33</b>	<b>9 910</b>	-	<b>7 500</b>	<b>2 400</b>	-	<b>54 300</b>
a.	Mineral Products	7 300	-	-	-	-	-	-	-	-	7 300
	Cement Production	4 800	-	-	-	-	-	-	-	-	4 800
	Lime Production	1 800	-	-	-	-	-	-	-	-	1 800
	Mineral Product Use	700	-	-	-	-	-	-	-	-	700
b.	Chemical Industry	6 260	4	100	33	9 800	-	-	-	-	16 100
	Ammonia Production	2 920	-	-	-	-	-	-	-	-	2 920
	Nitric Acid Production	-	-	-	3	1 000	-	-	-	-	1 000
	Adipic Acid Production	-	-	-	29	8 700	-	-	-	-	8 700
	Petrochemical and Carbon Black Production	3 300	4	100	0	16	-	-	-	-	3 500
c.	Metal Production	15 800	0	3	-	-	-	7 460	2 170	-	25 400
	Iron and Steel Production	11 900	0	3	-	-	-	-	-	-	11 900
	Aluminium Production	3 910	-	-	-	-	-	7 460	56	-	11 400
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 110	-	2 110
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	-	0	4	0	5
e.	Non-Energy Products from Fuels and Solvent Use	5 100	-	-	-	-	-	-	-	-	5 100
f.	Other Product Manufacture and Use	-	-	-	1	150	-	-	200	-	360
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 100</b>	<b>29 000</b>	<b>72</b>	<b>21 000</b>	-	-	-	-	<b>51 000</b>
a.	Enteric Fermentation	-	990	25 000	-	-	-	-	-	-	25 000
b.	Manure Management	-	140	3 500	10	4 000	-	-	-	-	7 900
c.	Agriculture Soils	-	-	-	57	17 000	-	-	-	-	17 000
	Direct Sources	-	-	-	47	14 000	-	-	-	-	14 000
	Indirect Sources	-	-	-	10	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	5	100	0	40	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>530</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 100</b>	-	-	-	-	<b>25 000</b>
a.	Solid Waste Disposal	-	890	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	400	1	300	-	-	-	-	700
c.	Wastewater Treatment and Discharge	-	15	390	2	500	-	-	-	-	910
d.	Incineration and Open Burning of Waste	530	2	50	1	200	-	-	-	-	790
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-90 000</b>	<b>52</b>	<b>1 300</b>	<b>2</b>	<b>590</b>	-	-	-	-	<b>-88 000</b>
a.	Forest Land	-250 000	26	650	1	320	-	-	-	-	-250 000
b.	Cropland	4 500	8	200	0	100	-	-	-	-	4 800
c.	Grassland	-	10	300	0	100	-	-	-	-	400
d.	Wetlands	5 000	0	10	0	7	-	-	-	-	5 000
e.	Settlements	3 000	4	100	0	40	-	-	-	-	4 000
f.	Harvested Wood Products	150 000	-	-	-	-	-	-	-	-	150 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.



**Table A9-26 1992 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
		Global Warming Potential									
		Unit									
		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>469 000</b>	<b>4 000</b>	<b>100 000</b>	<b>140</b>	<b>41 000</b>	<b>830</b>	<b>7 600</b>	<b>2 600</b>	<b>0</b>	<b>621 000</b>
<b>ENERGY</b>		<b>434 000</b>	<b>2 000</b>	<b>49 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>492 000</b>
a.	Stationary Combustion Sources	282 000	300	6 000	8	2 000	-	-	-	-	290 000
	Public Electricity and Heat Production	100 000	2	57	2	550	-	-	-	-	102 000
	Petroleum Refining Industries	16 000	0	10	0	50	-	-	-	-	17 000
	Mining and Upstream Oil and Gas Production	38 500	74	1 800	1	300	-	-	-	-	40 600
	Manufacturing Industries	52 400	2	54	2	510	-	-	-	-	53 000
	Iron and Steel	5 250	0	4	0	40	-	-	-	-	5 290
	Non Ferrous Metals	2 930	0	2	0	10	-	-	-	-	2 940
	Chemical	8 550	0	4	0	40	-	-	-	-	8 600
	Pulp and Paper	10 000	1	30	1	300	-	-	-	-	13 000
	Cement	3 390	0	2	0	10	-	-	-	-	3 410
	Other Manufacturing	19 600	0	11	0	100	-	-	-	-	19 700
	Construction	1 740	0	1	0	20	-	-	-	-	1 760
	Commercial and Institutional	26 900	0	12	1	200	-	-	-	-	27 100
	Residential	40 800	200	4 000	2	700	-	-	-	-	45 900
	Agriculture and Forestry	3 220	0	1	0	20	-	-	-	-	3 250
b.	Transport <sup>2</sup>	140 000	34	860	23	6 800	-	-	-	-	147 000
	Domestic Aviation	6 250	0	8	0	60	-	-	-	-	6 300
	Road Transportation	83 500	10	300	12	3 500	-	-	-	-	87 300
	Light-Duty Gasoline Vehicles	41 800	7	170	7	2 100	-	-	-	-	44 100
	Light-Duty Gasoline Trucks	21 400	3	78	4	1 200	-	-	-	-	22 700
	Heavy-Duty Gasoline Vehicles	6 030	1	24	0	48	-	-	-	-	6 100
	Motorcycles	87	0	2	0	1	-	-	-	-	89
	Light-Duty Diesel Vehicles	458	0	0	0	10	-	-	-	-	469
	Light-Duty Diesel Trucks	158	0	0	0	4	-	-	-	-	162
	Heavy-Duty Diesel Vehicles	12 300	1	20	0	100	-	-	-	-	12 500
	Propane and Natural Gas Vehicles	1 220	1	10	0	7	-	-	-	-	1 200
	Railways	6 030	0	8	2	700	-	-	-	-	6 700
	Domestic Navigation	4 800	0	10	0	40	-	-	-	-	4 800
	Other Transportation	39 200	20	500	8	2 000	-	-	-	-	42 000
	Off-Road Agriculture & Forestry	9 470	1	10	4	1 000	-	-	-	-	11 000
	Off-Road Commercial & Institutional	1 380	1	20	0	100	-	-	-	-	1 500
	Off-Road Manufacturing, Mining & Construction	9 290	1	20	3	900	-	-	-	-	10 000
	Off-Road Residential	201	0	1	0	20	-	-	-	-	220
	Off-Road Other Transportation	9 250	9	200	1	200	-	-	-	-	9 700
	Pipeline Transport	9 580	10	240	0	80	-	-	-	-	9 890
c.	Fugitive Sources	12 000	1 700	42 000	0	30	-	-	-	-	54 000
	Coal Mining	-	90	2 000	-	-	-	-	-	-	2 000
	Oil and Natural Gas	12 000	1 600	39 000	0	30	-	-	-	-	52 000
	Oil	110	220	5 400	0	30	-	-	-	-	5 500
	Natural Gas	30	580	15 000	-	-	-	-	-	-	15 000
	Venting	7 700	780	19 000	-	-	-	-	-	-	27 000
	Flaring	4 300	6	150	0	3	-	-	-	-	4 500
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>33 200</b>	<b>4</b>	<b>110</b>	<b>36</b>	<b>10 800</b>	<b>830</b>	<b>7 600</b>	<b>2 600</b>	<b>-</b>	<b>55 000</b>
a.	Mineral Products	7 300	-	-	-	-	-	-	-	-	7 300
	Cement Production	4 800	-	-	-	-	-	-	-	-	4 800
	Lime Production	1 800	-	-	-	-	-	-	-	-	1 800
	Mineral Product Use	700	-	-	-	-	-	-	-	-	700
b.	Chemical Industry	5 690	4	100	36	11 000	-	-	-	-	16 400
	Ammonia Production	2 500	-	-	-	-	-	-	-	-	2 500
	Nitric Acid Production	-	-	-	4	1 000	-	-	-	-	1 000
	Adipic Acid Production	-	-	-	32	9 600	-	-	-	-	9 600
	Petrochemical and Carbon Black Production	3 200	4	100	0	15	-	-	-	-	3 300
c.	Metal Production	15 700	0	3	-	-	-	7 580	2 350	-	25 600
	Iron and Steel Production	12 400	0	3	-	-	-	-	-	-	12 400
	Aluminium Production	3 270	-	-	-	-	-	7 580	56	-	10 900
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 290	-	2 290
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	830	0	4	0	830
e.	Non-Energy Products from Fuels and Solvent Use	4 600	-	-	-	-	-	-	-	-	4 600
f.	Other Product Manufacture and Use	-	-	-	0	140	-	-	200	-	340
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 100</b>	<b>28 000</b>	<b>69</b>	<b>20 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>50 000</b>
a.	Enteric Fermentation	-	980	24 000	-	-	-	-	-	-	24 000
b.	Manure Management	-	140	3 600	10	4 000	-	-	-	-	7 900
c.	Agriculture Soils	-	-	-	54	16 000	-	-	-	-	16 000
	Direct Sources	-	-	-	45	13 000	-	-	-	-	13 000
	Indirect Sources	-	-	-	9	3 000	-	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	5	100	0	40	-	-	-	-	200
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	1 000	-	-	-	-	-	-	-	-	1 000
	<b>WASTE</b>	<b>530</b>	<b>920</b>	<b>23 000</b>	<b>4</b>	<b>1 100</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25 000</b>
a.	Solid Waste Disposal	-	880	22 000	-	-	-	-	-	-	22 000
b.	Biological Treatment of Solid Waste	-	20	400	1	300	-	-	-	-	700
c.	Wastewater Treatment and Discharge	-	15	380	2	500	-	-	-	-	900
d.	Incineration and Open Burning of Waste	530	3	70	1	200	-	-	-	-	840
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-94 000</b>	<b>83</b>	<b>2 100</b>	<b>3</b>	<b>850</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-91 000</b>
a.	Forest Land	-250 000	30	740	1	360	-	-	-	-	-250 000
b.	Cropland	5 700	9	200	0	100	-	-	-	-	6 100
c.	Grassland	-	40	900	1	300	-	-	-	-	1 000
d.	Wetlands	5 000	1	30	0	20	-	-	-	-	5 000
e.	Settlements	4 000	5	100	0	50	-	-	-	-	4 000
f.	Harvested Wood Products	140 000	-	-	-	-	-	-	-	-	140 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9–27 1991 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
Global Warming Potential		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>a</sup>	PFCs <sup>a</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Unit		kt	kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq					
<b>TOTAL<sup>1</sup></b>		<b>454 000</b>	<b>3 800</b>	<b>96 000</b>	<b>140</b>	<b>41 000</b>	<b>1 100</b>	<b>8 000</b>	<b>3 700</b>	<b>0</b>	<b>604 000</b>
<b>ENERGY</b>		<b>419 000</b>	<b>1 800</b>	<b>46 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>474 000</b>
a.	<b>Stationary Combustion Sources</b>	<b>272 000</b>	<b>300</b>	<b>6 000</b>	<b>8</b>	<b>2 000</b>	-	-	-	-	<b>280 000</b>
	Public Electricity and Heat Production	95 000	2	42	2	510	-	-	-	-	95 800
	Petroleum Refining Industries	16 000	0	10	0	50	-	-	-	-	16 000
	Mining and Upstream Oil and Gas Production	36 500	70	1 700	1	300	-	-	-	-	38 500
	Manufacturing Industries	53 400	2	53	2	500	-	-	-	-	54 000
	Iron and Steel	4 920	0	4	0	40	-	-	-	-	4 960
	Non Ferrous Metals	2 690	0	1	0	10	-	-	-	-	2 700
	Chemical	8 600	0	4	0	40	-	-	-	-	8 650
	Pulp and Paper	10 000	1	30	1	300	-	-	-	-	14 000
	Cement	3 430	0	2	0	10	-	-	-	-	3 440
	Other Manufacturing	20 000	0	11	0	100	-	-	-	-	20 200
	Construction	1 620	0	1	0	20	-	-	-	-	1 630
	Commercial and Institutional	26 300	1	12	1	200	-	-	-	-	26 500
	Residential	39 600	200	5 000	3	800	-	-	-	-	45 000
	Agriculture and Forestry	2 720	0	1	0	20	-	-	-	-	2 740
b.	<b>Transport<sup>2</sup></b>	<b>136 000</b>	<b>32</b>	<b>790</b>	<b>22</b>	<b>6 600</b>	-	-	-	-	<b>144 000</b>
	Domestic Aviation	6 240	0	9	0	60	-	-	-	-	6 300
	Road Transportation	82 900	10	300	11	3 400	-	-	-	-	86 600
	Light-Duty Gasoline Vehicles	41 800	7	180	7	2 100	-	-	-	-	44 000
	Light-Duty Gasoline Trucks	20 600	3	76	4	1 100	-	-	-	-	21 800
	Heavy-Duty Gasoline Vehicles	5 850	1	24	0	48	-	-	-	-	5 920
	Motorcycles	89	0	2	0	1	-	-	-	-	91
	Light-Duty Diesel Vehicles	473	0	0	0	10	-	-	-	-	483
	Light-Duty Diesel Trucks	154	0	0	0	3	-	-	-	-	158
	Heavy-Duty Diesel Vehicles	12 600	1	20	0	100	-	-	-	-	12 700
	Propane and Natural Gas Vehicles	1 310	1	10	0	7	-	-	-	-	1 300
	Railways	5 760	0	8	2	700	-	-	-	-	6 400
	Domestic Navigation	4 950	1	10	0	40	-	-	-	-	5 000
	Other Transportation	36 300	20	500	8	2 000	-	-	-	-	39 000
	Off-Road Agriculture & Forestry	9 470	1	10	4	1 000	-	-	-	-	11 000
	Off-Road Commercial & Institutional	1 310	1	20	0	100	-	-	-	-	1 400
	Off-Road Manufacturing, Mining & Construction	8 650	1	20	3	900	-	-	-	-	9 600
	Off-Road Residential	194	0	1	0	20	-	-	-	-	210
	Off-Road Other Transportation	9 280	9	200	1	300	-	-	-	-	9 800
	Pipeline Transport	7 410	7	190	0	60	-	-	-	-	7 650
c.	<b>Fugitive Sources</b>	<b>11 000</b>	<b>1 500</b>	<b>39 000</b>	<b>0</b>	<b>30</b>	-	-	-	-	<b>50 000</b>
	Coal Mining	-	100	3 000	-	-	-	-	-	-	3 000
	Oil and Natural Gas	11 000	1 400	36 000	0	30	-	-	-	-	47 000
	Oil	100	200	5 000	0	30	-	-	-	-	5 100
	Natural Gas	28	540	14 000	-	-	-	-	-	-	14 000
	Venting	6 900	680	17 000	-	-	-	-	-	-	24 000
	Flaring	4 300	6	140	0	2	-	-	-	-	4 400
d.	<b>CO<sub>2</sub> Transport and Storage</b>	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>33 600</b>	<b>5</b>	<b>120</b>	<b>36</b>	<b>10 800</b>	<b>1 100</b>	<b>8 000</b>	<b>3 700</b>	-	<b>57 300</b>
a.	<b>Mineral Products</b>	<b>7 500</b>	-	-	-	-	-	-	-	-	<b>7 500</b>
	Cement Production	4 700	-	-	-	-	-	-	-	-	4 700
	Lime Production	1 790	-	-	-	-	-	-	-	-	1 790
	Mineral Product Use	1 000	-	-	-	-	-	-	-	-	1 000
b.	<b>Chemical Industry</b>	<b>5 880</b>	<b>5</b>	<b>110</b>	<b>36</b>	<b>11 000</b>	-	-	-	-	<b>16 600</b>
	Ammonia Production	2 750	-	-	-	-	-	-	-	-	2 750
	Nitric Acid Production	-	-	-	3	1 000	-	-	-	-	1 000
	Adipic Acid Production	-	-	-	32	9 600	-	-	-	-	9 600
	Petrochemical and Carbon Black Production	3 100	5	110	0	15	-	-	-	-	3 300
c.	<b>Metal Production</b>	<b>15 300</b>	<b>0</b>	<b>3</b>	-	-	-	<b>8 030</b>	<b>3 480</b>	-	<b>26 800</b>
	Iron and Steel Production	12 100	0	3	-	-	-	-	-	-	12 100
	Aluminium Production	3 150	-	-	-	-	-	8 030	56	-	11 200
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	3 420	-	3 420
d.	<b>Production and Consumption of Halocarbons, SF<sub>6</sub> and NF<sub>3</sub><sup>3</sup></b>	-	-	-	-	-	<b>1 100</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1 100</b>
e.	<b>Non-Energy Products from Fuels and Solvent Use</b>	<b>4 900</b>	-	-	-	-	-	-	-	-	<b>4 900</b>
f.	<b>Other Product Manufacture and Use</b>	-	-	-	<b>1</b>	<b>160</b>	-	<b>200</b>	-	-	<b>370</b>
	<b>AGRICULTURE</b>	<b>1 000</b>	<b>1 100</b>	<b>27 000</b>	<b>68</b>	<b>20 000</b>	-	-	-	-	<b>48 000</b>
a.	<b>Enteric Fermentation</b>	-	-	<b>930</b>	<b>23 000</b>	-	-	-	-	-	<b>23 000</b>
b.	<b>Manure Management</b>	-	<b>140</b>	<b>3 500</b>	<b>10</b>	<b>4 000</b>	-	-	-	-	<b>7 600</b>
c.	<b>Agriculture Soils</b>	-	-	-	<b>54</b>	<b>16 000</b>	-	-	-	-	<b>16 000</b>
	Direct Sources	-	-	-	45	13 000	-	-	-	-	13 000
	Indirect Sources	-	-	-	9	3 000	-	-	-	-	3 000
d.	<b>Field Burning of Agricultural Residues</b>	-	<b>6</b>	<b>100</b>	<b>0</b>	<b>40</b>	-	-	-	-	<b>200</b>
e.	<b>Liming, Urea Application and Other Carbon-containing Fertilizers</b>	<b>1 000</b>	-	-	-	-	-	-	-	-	<b>1 000</b>
	<b>WASTE</b>	<b>510</b>	<b>910</b>	<b>23 000</b>	<b>4</b>	<b>1 000</b>	-	-	-	-	<b>24 000</b>
a.	<b>Solid Waste Disposal</b>	-	<b>870</b>	<b>22 000</b>	-	-	-	-	-	-	<b>22 000</b>
b.	<b>Biological Treatment of Solid Waste</b>	-	<b>20</b>	<b>400</b>	<b>1</b>	<b>300</b>	-	-	-	-	<b>800</b>
c.	<b>Wastewater Treatment and Discharge</b>	-	<b>15</b>	<b>380</b>	<b>2</b>	<b>500</b>	-	-	-	-	<b>890</b>
d.	<b>Incineration and Open Burning of Waste</b>	<b>510</b>	<b>3</b>	<b>70</b>	<b>1</b>	<b>200</b>	-	-	-	-	<b>800</b>
	<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	<b>-99 000</b>	<b>73</b>	<b>1 800</b>	<b>3</b>	<b>780</b>	-	-	-	-	<b>-96 000</b>
a.	<b>Forest Land</b>	<b>-250 000</b>	<b>31</b>	<b>780</b>	<b>1</b>	<b>370</b>	-	-	-	-	<b>-250 000</b>
b.	<b>Cropland</b>	<b>7 200</b>	<b>10</b>	<b>300</b>	<b>1</b>	<b>200</b>	-	-	-	-	<b>7 600</b>
c.	<b>Grassland</b>	-	<b>20</b>	<b>600</b>	<b>1</b>	<b>200</b>	-	-	-	-	<b>800</b>
d.	<b>Wetlands</b>	<b>5 000</b>	<b>1</b>	<b>20</b>	<b>0</b>	<b>10</b>	-	-	-	-	<b>5 000</b>
e.	<b>Settlements</b>	<b>4 000</b>	<b>5</b>	<b>100</b>	<b>0</b>	<b>50</b>	-	-	-	-	<b>4 000</b>
f.	<b>Harvested Wood Products</b>	<b>140 000</b>	-	-	-	-	-	-	-	-	<b>140 000</b>

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

**Table A9-28 1990 GHG Emission Summary for Canada**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>1</sup>	PFCs <sup>1</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
		Global Warming Potential			25			298			
		Unit			kt	kt CO <sub>2</sub> eq	kt	kt CO <sub>2</sub> eq			
<b>TOTAL<sup>1</sup></b>		<b>463 000</b>	<b>3 700</b>	<b>94 000</b>	<b>140</b>	<b>42 000</b>	<b>970</b>	<b>7 600</b>	<b>3 200</b>	<b>0</b>	<b>611 000</b>
<b>ENERGY</b>		<b>429 000</b>	<b>1 800</b>	<b>45 000</b>	<b>30</b>	<b>9 000</b>	-	-	-	-	<b>483 000</b>
a.	<b>Stationary Combustion Sources</b>	<b>277 000</b>	<b>300</b>	<b>7 000</b>	<b>8</b>	<b>2 000</b>	-	-	-	-	<b>286 000</b>
	Public Electricity and Heat Production	94 000	2	45	2	520	-	-	-	-	94 300
	Petroleum Refining Industries	17 000	0	10	0	50	-	-	-	-	17 000
	Mining and Upstream Oil and Gas Production	38 900	74	1 900	1	300	-	-	-	-	41 100
	Manufacturing Industries	55 600	2	56	2	520	-	-	-	-	56 200
	Iron and Steel	4 900	0	4	0	40	-	-	-	-	4 950
	Non Ferrous Metals	3 300	0	2	0	10	-	-	-	-	3 310
	Chemical	8 220	0	4	0	40	-	-	-	-	8 260
	Pulp and Paper	10 000	1	30	1	300	-	-	-	-	15 000
	Cement	3 960	0	3	0	10	-	-	-	-	3 980
	Other Manufacturing	21 000	0	11	0	100	-	-	-	-	21 200
	Construction	1 860	0	1	0	20	-	-	-	-	1 880
	Commercial and Institutional	25 700	0	12	1	100	-	-	-	-	25 800
	Residential	41 100	200	5 000	3	800	-	-	-	-	46 500
	Agriculture and Forestry	2 390	0	1	0	20	-	-	-	-	2 410
b.	<b>Transport<sup>2</sup></b>	<b>141 000</b>	<b>31</b>	<b>760</b>	<b>22</b>	<b>6 600</b>	-	-	-	-	<b>148 000</b>
	Domestic Aviation	7 090	1	10	0	70	-	-	-	-	7 200
	Road Transportation	88 400	10	300	11	3 300	-	-	-	-	92 000
	Light-Duty Gasoline Vehicles	44 300	8	190	7	2 000	-	-	-	-	46 500
	Light-Duty Gasoline Trucks	21 200	3	82	4	1 100	-	-	-	-	22 400
	Heavy-Duty Gasoline Vehicles	6 740	1	28	0	57	-	-	-	-	6 830
	Motorcycles	96	0	2	0	1	-	-	-	-	99
	Light-Duty Diesel Vehicles	483	0	0	0	10	-	-	-	-	494
	Light-Duty Diesel Trucks	158	0	0	0	3	-	-	-	-	162
	Heavy-Duty Diesel Vehicles	14 100	1	20	0	100	-	-	-	-	14 200
	Propane and Natural Gas Vehicles	1 350	1	10	0	7	-	-	-	-	1 400
	Railways	6 220	0	9	2	700	-	-	-	-	6 900
	Domestic Navigation	4 740	0	10	0	40	-	-	-	-	4 800
	Other Transportation	34 500	20	400	8	2 000	-	-	-	-	37 000
	Off-Road Agriculture & Forestry	9 080	1	10	4	1 000	-	-	-	-	10 000
	Off-Road Commercial & Institutional	1 360	1	10	0	100	-	-	-	-	1 500
	Off-Road Manufacturing, Mining & Construction	8 980	1	20	3	1 000	-	-	-	-	10 000
	Off-Road Residential	204	0	1	0	20	-	-	-	-	230
	Off-Road Other Transportation	8 180	7	200	1	300	-	-	-	-	8 600
	Pipeline Transport	6 680	7	170	0	50	-	-	-	-	6 910
c.	<b>Fugitive Sources</b>	<b>12 000</b>	<b>1 500</b>	<b>37 000</b>	<b>0</b>	<b>30</b>	-	-	-	-	<b>49 000</b>
	Coal Mining	-	100	3 000	-	-	-	-	-	-	3 000
	Oil and Natural Gas	12 000	1 400	34 000	0	30	-	-	-	-	46 000
	Oil	95	190	4 800	0	30	-	-	-	-	5 000
	Natural Gas	26	520	13 000	-	-	-	-	-	-	13 000
	Venting	7 000	650	16 000	-	-	-	-	-	-	23 000
	Flaring	4 500	6	140	0	3	-	-	-	-	4 600
d.	<b>CO<sub>2</sub> Transport and Storage</b>	-	-	-	-	-	-	-	-	-	-
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>32 500</b>	<b>5</b>	<b>120</b>	<b>39</b>	<b>11 500</b>	<b>970</b>	<b>7 600</b>	<b>3 200</b>	-	<b>55 900</b>
a.	<b>Mineral Products</b>	<b>8 400</b>	-	-	-	-	-	-	-	-	<b>8 400</b>
	Cement Production	5 800	-	-	-	-	-	-	-	-	5 800
	Lime Production	1 760	-	-	-	-	-	-	-	-	1 760
	Mineral Product Use	910	-	-	-	-	-	-	-	-	910
b.	<b>Chemical Industry</b>	<b>5 900</b>	<b>5</b>	<b>120</b>	<b>38</b>	<b>11 000</b>	-	-	-	-	<b>17 300</b>
	Ammonia Production	2 770	-	-	-	-	-	-	-	-	2 770
	Nitric Acid Production	-	-	-	3	970	-	-	-	-	970
	Adipic Acid Production	-	-	-	35	10 000	-	-	-	-	10 000
	Petrochemical and Carbon Black Production	3 100	5	120	0	15	-	-	-	-	3 300
c.	<b>Metal Production</b>	<b>13 200</b>	<b>0</b>	<b>2</b>	-	-	-	<b>7 560</b>	<b>3 020</b>	-	<b>23 800</b>
	Iron and Steel Production	10 500	0	2	-	-	-	-	-	-	10 500
	Aluminium Production	2 710	-	-	-	-	-	7 560	56	-	10 300
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	2 960	-	2 960
d.	<b>Production and Consumption of Halocarbons, SF<sub>6</sub> and NF<sub>3</sub><sup>3</sup></b>	-	-	-	-	-	<b>970</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>980</b>
e.	<b>Non-Energy Products from Fuels and Solvent Use</b>	<b>5 000</b>	-	-	-	-	-	-	-	-	<b>5 000</b>
f.	<b>Other Product Manufacture and Use</b>	-	-	-	<b>1</b>	<b>170</b>	-	-	<b>200</b>	-	<b>370</b>
<b>AGRICULTURE</b>		<b>1 000</b>	<b>1 100</b>	<b>26 000</b>	<b>70</b>	<b>21 000</b>	-	-	-	-	<b>49 000</b>
a.	<b>Enteric Fermentation</b>	-	<b>910</b>	<b>23 000</b>	-	-	-	-	-	-	<b>23 000</b>
b.	<b>Manure Management</b>	-	<b>140</b>	<b>3 500</b>	<b>10</b>	<b>4 000</b>	-	-	-	-	<b>7 500</b>
c.	<b>Agriculture Soils</b>	-	-	-	<b>56</b>	<b>17 000</b>	-	-	-	-	<b>17 000</b>
	Direct Sources	-	-	-	47	14 000	-	-	-	-	14 000
	Indirect Sources	-	-	-	9	3 000	-	-	-	-	3 000
d.	<b>Field Burning of Agricultural Residues</b>	-	<b>7</b>	<b>200</b>	<b>0</b>	<b>50</b>	-	-	-	-	<b>200</b>
e.	<b>Liming, Urea Application and Other Carbon-containing Fertilizers</b>	<b>1 000</b>	-	-	-	-	-	-	-	-	<b>1 000</b>
<b>WASTE</b>		<b>510</b>	<b>900</b>	<b>22 000</b>	<b>3</b>	<b>1 000</b>	-	-	-	-	<b>24 000</b>
a.	<b>Solid Waste Disposal</b>	-	<b>860</b>	<b>22 000</b>	-	-	-	-	-	-	<b>22 000</b>
b.	<b>Biological Treatment of Solid Waste</b>	-	<b>20</b>	<b>400</b>	<b>1</b>	<b>300</b>	-	-	-	-	<b>700</b>
c.	<b>Wastewater Treatment and Discharge</b>	-	<b>15</b>	<b>380</b>	<b>2</b>	<b>500</b>	-	-	-	-	<b>870</b>
d.	<b>Incineration and Open Burning of Waste</b>	<b>510</b>	<b>3</b>	<b>70</b>	<b>1</b>	<b>200</b>	-	-	-	-	<b>790</b>
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>		<b>-100 000</b>	<b>51</b>	<b>1 300</b>	<b>2</b>	<b>540</b>	-	-	-	-	<b>-99 000</b>
a.	<b>Forest Land</b>	<b>-250 000</b>	<b>12</b>	<b>310</b>	<b>0</b>	<b>140</b>	-	-	-	-	<b>-250 000</b>
b.	<b>Cropland</b>	<b>8 400</b>	<b>10</b>	<b>300</b>	<b>1</b>	<b>200</b>	-	-	-	-	<b>8 900</b>
c.	<b>Grassland</b>	-	<b>20</b>	<b>500</b>	<b>1</b>	<b>200</b>	-	-	-	-	<b>600</b>
d.	<b>Wetlands</b>	<b>5 000</b>	<b>1</b>	<b>10</b>	<b>0</b>	<b>8</b>	-	-	-	-	<b>5 000</b>
e.	<b>Settlements</b>	<b>4 000</b>	<b>5</b>	<b>100</b>	<b>0</b>	<b>50</b>	-	-	-	-	<b>4 000</b>
f.	<b>Harvested Wood Products</b>	<b>130 000</b>	-	-	-	-	-	-	-	-	<b>130 000</b>

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
  - Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
- National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

# Annex 10

## CANADA'S GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2015

This annex contains summary tables illustrating national GHG emissions for the period 1990–2015 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 & 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 2016).

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:

1. Mining – Metal and non-metal mining fuel consumption data from the Canadian Industrial Energy End-Use Data and Analysis Centre (CIEEDAC) database on *Energy, Production and Intensity Indicators for Canadian Industry* (CIEED-AC 2016).
2. 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).
3. UOG sectors – Fuel consumption data for the various UOG sectors, except Oil Sands, is estimated from the UOG study (Environment Canada 2014).
4. 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).

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.

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<sub>6</sub> and NF<sub>3</sub>, which mainly consist of HFC emissions from refrigeration and air conditioning, are reallocated to Transportation 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 greenhouse gas emission tables are also available in electronic file format online at <http://www.open.canada.ca>.

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

Economic Sector	Description
<b>Oil and Gas</b>	
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 Light Oil Production	- conventional light crude oil production
Conventional Heavy Oil Production	- conventional heavy crude oil production
Frontier Oil Production	- offshore and arctic production of crude oil
Oil Sands (Mining, In-situ, Upgrading)	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Mining and Extraction	- crude bitumen mining and extraction
In-situ	- in-situ extraction of crude bitumen 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 and Natural Gas 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
<b>Electricity</b>	Combustion and process emissions from utility electricity generation and steam production (for sale). Excludes utility owned cogeneration at industrial sites.
<b>Transportation</b>	Mobile related emissions including all fossil fuels and non-CO <sub>2</sub> 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 4 500 lb. GVWR and motorcycles.
Bus, Rail and Domestic Aviation	- All buses and the passenger component of rail and domestic 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 4 500 lb. GVWR and the freight component of rail
Domestic Aviation and Marine	- Cargo/Freight component of domestic aviation and all domestic navigation
Other: Recreational, Commercial and Residential	Mobile related combustion emissions from the non-industrial use of small off-road engines.
<b>Heavy Industry</b>	Stationary combustion, onsite transportation, electricity 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 and rolling mills)
Cement	- Cement and other non-metallic mineral production
Lime & Gypsum	- Lime and Gypsum product manufacturing
Chemicals & Fertilizers	- Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
<b>Agriculture</b>	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 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
<b>Coal Production</b>	Stationary combustion, onsite transportation and fugitive emissions from underground and surface coal mines
<b>Waste</b>	Emissions resulting from:
Solid Waste	- Municipal solid waste management sites (landfills), dedicated wood waste landfills, and composting of municipal solid waste
Waste Water	- Domestic and industrial wastewater treatment
Waste Incineration	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	Stationary combustion, onsite transportation, electricity and steam production, and process emissions from:
Light Manufacturing	- all other manufacturing industries not included in the Heavy Industry category above
Construction	- construction industry – buildings, highways etc.
Forest Resources	- forestry and logging service industry



Table A10-2 Canada's GHG Emissions by Canadian Economic Sector, 1990-2015

	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
<b>NATIONAL GHG TOTAL</b>	<b>611</b>	<b>604</b>	<b>621</b>	<b>623</b>	<b>644</b>	<b>661</b>	<b>682</b>	<b>697</b>	<b>704</b>	<b>717</b>	<b>738</b>	<b>728</b>	<b>730</b>	<b>749</b>	<b>751</b>	<b>738</b>	<b>729</b>	<b>750</b>	<b>729</b>	<b>689</b>	<b>701</b>	<b>707</b>	<b>716</b>	<b>729</b>	<b>727</b>	<b>722</b>
<b>Oil and Gas</b>	<b>108</b>	<b>106</b>	<b>116</b>	<b>122</b>	<b>127</b>	<b>133</b>	<b>140</b>	<b>141</b>	<b>147</b>	<b>156</b>	<b>159</b>	<b>159</b>	<b>161</b>	<b>164</b>	<b>162</b>	<b>158</b>	<b>162</b>	<b>167</b>	<b>160</b>	<b>158</b>	<b>160</b>	<b>161</b>	<b>174</b>	<b>185</b>	<b>190</b>	<b>189</b>
Upstream Oil and Gas	88	87	97	103	108	114	118	119	125	135	138	138	139	141	137	134	138	143	137	135	136	139	150	161	167	167
Natural Gas Production and Processing	36	35	37	39	41	43	45	43	47	55	59	60	62	63	59	57	56	60	54	51	49	49	53	57	57	56
Conventional Oil Production	24	24	26	27	28	31	32	34	36	36	38	37	36	34	32	30	30	31	28	27	27	27	29	31	33	31
Conventional Light Oil Production	12	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	11	12	11	11	11	12	14	15	15	14
Conventional Heavy Oil Production	12	12	14	15	16	18	19	22	21	22	24	24	22	20	19	17	17	16	15	14	14	14	15	15	16	15
Frontier Oil Production	0	0	0	0	0	0	0	0	3	2	1	1	3	2	2	2	2	2	2	2	2	2	1	2	2	2
Oil Sands (Mining, In-situ, Upgrading)	15	16	19	20	21	21	22	23	24	24	25	28	28	32	35	35	40	42	45	48	53	55	60	64	68	71
Mining and Extraction	5	5	5	5	5	5	5	5	6	6	6	7	8	9	10	10	11	12	12	13	14	14	15	16	17	18
In-situ	5	5	5	5	6	6	6	8	8	8	8	8	8	9	10	11	13	13	17	18	20	22	25	28	30	34
Upgrading	6	6	8	10	10	10	10	10	10	11	11	12	13	14	14	14	16	17	16	18	19	19	20	20	20	19
Oil and Natural Gas 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
Downstream Oil and Gas	20	19	19	20	19	19	22	22	22	21	20	21	22	24	25	24	24	24	23	23	23	22	24	24	23	22
Petroleum Refining	18	17	17	18	17	17	20	20	20	19	19	20	21	22	24	22	22	23	21	21	22	21	23	23	22	21
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
Electricity	94	96	102	93	95	98	98	109	121	118	127	128	121	124	118	117	111	116	108	95	96	89	85	82	80	79
<b>Transportation</b>	<b>122</b>	<b>116</b>	<b>117</b>	<b>119</b>	<b>126</b>	<b>127</b>	<b>128</b>	<b>133</b>	<b>140</b>	<b>145</b>	<b>147</b>	<b>149</b>	<b>150</b>	<b>155</b>	<b>160</b>	<b>163</b>	<b>164</b>	<b>168</b>	<b>168</b>	<b>163</b>	<b>171</b>	<b>171</b>	<b>173</b>	<b>176</b>	<b>173</b>	<b>173</b>
Passenger Transport	78	74	75	76	77	77	79	81	83	87	87	88	90	91	93	93	92	92	91	90	92	90	90	92	89	91
Cars, Light Trucks and Motorcycles	71	68	69	70	72	71	73	75	76	79	80	81	83	84	85	85	85	85	83	84	85	83	83	84	82	83
Bus, Rail and Domestic Aviation	7	6	6	5	6	6	6	7	7	7	7	7	7	7	7	7	7	8	7	6	7	7	7	8	7	7
Freight Transport	34	31	31	32	37	37	38	41	46	48	51	53	53	56	59	64	65	69	71	66	73	75	77	78	77	76
Heavy Duty Trucks, Rail	27	25	25	26	31	32	32	35	40	42	44	46	46	49	51	56	58	61	63	59	65	69	71	72	71	71
Domestic Aviation and Marine	6	6	6	6	6	6	6	6	6	6	6	7	7	8	8	8	7	8	7	7	8	7	7	6	6	5
Other: Recreational, Commercial and Residential	10	11	11	12	11	12	12	11	11	9	9	8	8	8	8	7	7	7	7	7	7	6	6	6	6	6
<b>Heavy Industry</b>	<b>97</b>	<b>96</b>	<b>94</b>	<b>93</b>	<b>98</b>	<b>99</b>	<b>102</b>	<b>102</b>	<b>96</b>	<b>94</b>	<b>93</b>	<b>87</b>	<b>88</b>	<b>87</b>	<b>91</b>	<b>86</b>	<b>86</b>	<b>85</b>	<b>83</b>	<b>71</b>	<b>73</b>	<b>80</b>	<b>79</b>	<b>77</b>	<b>77</b>	<b>75</b>
Mining	7	6	6	6	7	8	8	9	7	7	8	6	6	7	7	7	7	8	8	8	8	8	8	8	8	8
Smelting and Refining (Non Ferrous Metals)	17	18	17	17	17	16	17	16	17	16	16	15	15	15	14	14	14	13	13	12	11	11	10	11	10	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	6	6
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	17	15	16	14
Cement	10	8	8	8	10	11	10	11	11	12	12	12	12	12	13	13	14	13	12	10	10	10	11	10	10	10
Lime & 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
Chemicals & Fertilizers	29	28	28	27	30	31	32	31	27	24	23	22	23	22	26	23	23	22	23	20	21	23	24	24	24	25
<b>Buildings</b>	<b>73</b>	<b>73</b>	<b>74</b>	<b>78</b>	<b>78</b>	<b>79</b>	<b>85</b>	<b>82</b>	<b>75</b>	<b>79</b>	<b>85</b>	<b>82</b>	<b>86</b>	<b>91</b>	<b>90</b>	<b>85</b>	<b>80</b>	<b>86</b>	<b>86</b>	<b>84</b>	<b>81</b>	<b>87</b>	<b>85</b>	<b>85</b>	<b>88</b>	<b>86</b>
Service Industry	27	28	28	30	29	32	33	34	31	33	38	37	40	43	43	40	37	38	38	38	38	40	42	41	41	41
Residential	47	45	46	48	49	48	52	49	44	45	47	44	47	48	47	46	44	48	47	46	43	46	43	45	47	45
<b>Agriculture</b>	<b>60</b>	<b>61</b>	<b>63</b>	<b>64</b>	<b>67</b>	<b>70</b>	<b>72</b>	<b>73</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>70</b>	<b>69</b>	<b>72</b>	<b>74</b>	<b>74</b>	<b>73</b>	<b>73</b>	<b>73</b>	<b>70</b>	<b>70</b>	<b>70</b>	<b>71</b>	<b>74</b>	<b>72</b>	<b>73</b>
On Farm Fuel Use	12	12	13	13	14	14	16	16	15	14	14	12	13	13	13	14	13	13	13	13	14	15	14	14	14	14
Crop Production	15	14	14	15	16	16	17	17	17	17	17	15	15	16	17	16	16	17	19	18	19	19	21	23	22	22
Animal Production	33	34	35	36	37	39	40	40	40	40	41	42	42	43	44	45	44	42	41	39	37	37	37	37	37	37
<b>Waste</b>	<b>24</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>26</b>	<b>27</b>	<b>27</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>26</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>24</b>	<b>24</b>	<b>25</b>	<b>25</b>						
Solid Waste	22	23	23	23	23	23	23	23	24	24	24	24	25	25	25	26	26	26	24	24	23	23	23	23	23	23
Wastewater	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
Waste Incineration	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
<b>Coal Production</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>								
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>29</b>	<b>27</b>	<b>27</b>	<b>24</b>	<b>24</b>	<b>27</b>	<b>27</b>	<b>28</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>24</b>	<b>25</b>	<b>25</b>	<b>26</b>	<b>24</b>	<b>23</b>	<b>24</b>	<b>23</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>22</b>	<b>22</b>	<b>21</b>	<b>21</b>
Light Manufacturing	21	20	20	18	18	20	20	21	18	18	19	17	17	17	17	15	16	15	14	14	15	15	15	16	15	14
Construction	7	6	6	5	5	6	6	6	5	6	6	6	6	7	7	6	6	6	6	5	6	6	6	5	5	6
Forest Resources	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	2	1	2	1	1	1	1	1

Notes:  
 Totals may not add up due to rounding.  
 National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.  
 Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.  
 Estimates presented here are under continual improvement. Historical emissions may change in future publications as new data becomes available and methods and models are refined and improved.  
 \*0\* Indicates emissions of less than 0.5 Mt CO<sub>2</</sub>

Table A10-3 Relationship between Canadian Economic Sectors and IPCC Sectors, 2015

Economic Category	National Inventory Category*																									LULUCF <sup>b</sup>	
	Energy								Industrial Processes and Product Use							Agriculture				Waste				Total			
	Energy: Fuel Combustion				Energy: Fugitive				Total	Mineral Products <sup>d</sup>	Chemical Industry <sup>e</sup>	Metal Production <sup>f</sup>	Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub>	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		
	Stationary	Industrial Cogeneration	Transport	Total	Fugitive (Unintentional)	Flaring	Venting	Total																			
<b>National Inventory total<sup>a,b</sup></b>	<b>722</b>	<b>305</b>	<b>21.2</b>	<b>1.3</b>	<b>202</b>	<b>21.0</b>	<b>5.1</b>	<b>30.8</b>	<b>587</b>	<b>8.0</b>	<b>6.5</b>	<b>14.2</b>	<b>11.0</b>	<b>10.8</b>	<b>0.5</b>	<b>51.1</b>	<b>8.5</b>	<b>25.0</b>	<b>25.4</b>	<b>59.0</b>	<b>22.1</b>	<b>0.9</b>	<b>1.1</b>	<b>0.6</b>	<b>24.7</b>	<b>National Inventory Total<sup>a,b</sup></b>	
<b>Oil and Gas</b>	<b>189</b>	<b>106.7</b>	<b>13.1</b>	<b>0.1</b>	<b>11.7</b>	<b>19.8</b>	<b>5.1</b>	<b>30.8</b>	<b>187.3</b>					<b>2.1</b>	<b>2.1</b>												<b>Oil and Gas</b>
Upstream Oil and Gas	167	89.9	12.7		11.5	18.7	4.9	29.4	167.2					0.2	0.2												Upstream Oil and Gas
Natural Gas Production and Processing	56	24.8	8.4		0.2	10.1	1.1	10.9	55.6					0.0	0.0												Natural Gas Production and Processing
Conventional Oil Production	31	8.8	0.8		0.1	3.1	2.7	15.2	30.8					0.0	0.0												Conventional Oil Production
Conventional Light Oil Production	14	2.8	0.6		0.1	2.0	2.0	6.8	14.2					0.0	0.0												Conventional Light Oil Production
Conventional Heavy Oil Production	15	5.2			0.0	1.1	0.2	8.4	15.0					0.0	0.0												Conventional Heavy Oil Production
Frontier Oil Production	2	0.8	0.3		0.0	0.0	0.5	0.0	1.6					0.0	0.0												Frontier Oil Production
Oil Sands (Mining, In-situ, Upgrading) <sup>c</sup>	71	56.3	3.4		3.1	4.4	1.1	2.5	70.8					0.1	0.1												Oil Sands (Mining, In-situ, Upgrading) <sup>c</sup>
Mining and Extraction	18	9.7	0.8		3.1	4.0	0.3		18.0					0.1	0.1												Mining and Extraction
In-situ	34	31.5	1.7			0.3	0.1	0.1	33.7					0.0	0.0												In-situ
Upgrading	19	15.0	0.9			0.1	0.7	2.4	19.1					0.0	0.0												Upgrading
Oil and Natural Gas Transmission	10				8.0	1.2	0.0	0.8	10.0																		Oil and Natural Gas Transmission
Downstream Oil and Gas	22	16.9	0.4	0.1	0.1	1.1	0.2	1.4	20.1					2.0	2.0												Downstream Oil and Gas
Petroleum Refining	21	16.9	0.4	0.1	0.0	0.1	0.2	1.3	19.0					2.0	2.0												Petroleum Refining
Natural Gas Distribution	1				0.1	1.0	0.0	0.1	1.2																		Natural Gas Distribution
<b>Electricity</b>	<b>79</b>	<b>78.1</b>		<b>0.5</b>					<b>78.6</b>						<b>0.2</b>	<b>0.2</b>											<b>Electricity</b>
<b>Transportation<sup>g</sup></b>	<b>173</b>				<b>169.7</b>				<b>169.7</b>				<b>3.3</b>	<b>0.0</b>	<b>0.0</b>	<b>3.3</b>											<b>Transportation<sup>g</sup></b>
Passenger Transport	91				88.7				88.7				1.8	0.0	0.0	1.8											Passenger Transport
Cars, Light Trucks and Motorcycles	83				81.6				81.6				1.7	0.0	0.0	1.7											Cars, Light Trucks and Motorcycles
Bus, Rail and Domestic Aviation	7				7.2				7.2				0.1	0.0	0.0	0.1											Bus, Rail and Domestic Aviation
Freight Transport	76				74.5				74.5				1.4	0.0	0.0	1.5											Freight Transport
Heavy Duty Trucks, Rail	71				69.2				69.2				1.4	0.0	0.0	1.4											Heavy Duty Trucks, Rail
Domestic Aviation and Marine	5				5.2				5.2				0.1	0.0	0.1												Domestic Aviation and Marine
Other: Recreational, Commercial and Residential	6				6.4				6.4																		Other: Recreational, Commercial and Residential
<b>Heavy Industry</b>	<b>75</b>	<b>31.3</b>	<b>6.7</b>	<b>0.6</b>	<b>3.3</b>				<b>41.9</b>	<b>7.9</b>	<b>6.5</b>	<b>14.2</b>	<b>0.6</b>	<b>3.5</b>		<b>32.7</b>											<b>Heavy Industry</b>
Mining	8	3.6	1.1		2.8				7.6				0.0	0.1	0.1												Mining
Smelting and Refining (Non Ferrous Metals)	10	2.6		0.3	0.1				2.9	0.0		6.2		0.8	7.0												Smelting and Refining (Non Ferrous Metals)
Pulp and Paper	6	4.5	1.3	0.1	0.1				5.9	0.0				0.0	0.0												Pulp and Paper
Iron and Steel	14	5.2	0.0	0.0	0.2				5.4			8.0		0.1	8.1												Iron and Steel
Cement	10	4.1			0.0				4.2	6.3				0.0	6.3												Cement
Lime & Gypsum	2	1.0			0.0				1.0	1.3				0.0	1.4												Lime & Gypsum
Chemicals & Fertilizers	25	10.3	4.2	0.3	0.1				14.9	0.2	6.5		0.6	2.4	9.7												Chemicals & Fertilizers
<b>Buildings</b>	<b>86</b>	<b>72.7</b>	<b>0.8</b>	<b>0.1</b>					<b>73.6</b>				<b>6.8</b>	<b>4.9</b>	<b>0.3</b>	<b>12.0</b>											<b>Buildings</b>
Service Industry	41	29.7	0.8	0.1					30.6				5.4	4.9	0.3	10.5											Service Industry
Residential	45	43.0							43.0				1.5		1.5												Residential
<b>Agriculture</b>	<b>73</b>	<b>3.6</b>			<b>10.2</b>				<b>13.9</b>					<b>0.0</b>	<b>0.0</b>	<b>8.5</b>	<b>25.0</b>	<b>25.4</b>	<b>59.0</b>								<b>Agriculture</b>
On Farm Fuel Use <sup>h</sup>	14	3.6			10.2				13.9					0.0	0.0												On Farm Fuel Use <sup>h</sup>
Crop Production	22																8.5	25.0	22.3	22.3							Crop Production
Animal Production	37																8.5	25.0	3.1	36.6							Animal Production
<b>Waste</b>	<b>25</b>																				<b>22.1</b>	<b>0.9</b>	<b>1.1</b>	<b>0.6</b>	<b>24.7</b>	<b>Waste</b>	
Solid Waste	23																				22.1	0.9			23.1	Solid Waste	
Wastewater	1																						1.1		1.1	Wastewater	
Waste Incineration	1																							0.6	0.6	Waste Incineration	
<b>Coal Production</b>	<b>2</b>	<b>0.5</b>			<b>0.5</b>	<b>1.1</b>			<b>2.1</b>																		<b>Coal Production</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>21</b>	<b>12.6</b>	<b>0.5</b>	<b>0.0</b>	<b>6.8</b>				<b>20.0</b>	<b>0.2</b>			<b>0.4</b>	<b>0.2</b>	<b>0.0</b>	<b>0.7</b>											<b>Light Manufacturing, Construction &amp; Forest Resources</b>
Light Manufacturing	14	11.2	0.5	0.0	1.4				13.2	0.2			0.4	0.2	0.0	0.7											Light Manufacturing
Construction	6	1.3			4.2				5.5						0.0	0.0											Construction
Forest Resources	1	0.1	0.0		1.2				1.3						0.0	0.0											Forest Resources
																											<b>-33.5</b>

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.

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.

d. 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 ammonia production, nitric acid production, petrochemical production, and adipic acid production.

f. Metal production includes iron and steel production, aluminium production, and SF<sub>6</sub> 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.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq.

# Annex 11

## PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2015

This annex contains summary tables (Table A11-1 to Table A11-28) illustrating GHG emissions (for GHG categories, see Table A11-1) by province/territory and year for each IPCC sector. To account for the creation of Nunavut in 1999, a time series from 1999–2015 is provided for both the Northwest Territories and Nunavut (Table A11-24 and Table A11-26), and the years 1990–1998 are presented as a combined region in Table A11-28.

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

Although the 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.

The reader should also note that many 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 emissions 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. The Department is striving to ensure consistency between different estimates, as some provincial/territorial GHG estimates presented in this report may differ from those developed by provincial/territorial governments.

Provincial/territorial greenhouse gas emission tables are also available in electronic file format online at <http://www.open.canada.ca>.

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

GHG Source/Sink Categories	
<b>a. Stationary Combustion Sources</b>	
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
Mining and Upstream Oil and Gas Production	Emissions from fuel consumed by: - Metal and non-metal mines, coal mines, stone quarries, and gravel pits - Oil and gas extraction industries - 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 & 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 & 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>b. Transportation</b>	
Domestic Aviation	Emissions resulting from the: - Consumption of fossil fuels by aircrafts flying domestically with Canadian purchased fuel
Road Transportation	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from ethanol and biodiesel) by vehicles licensed to operate on roads
Railways	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from biodiesel) by Canadian railways
Domestic Navigation	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from ethanol and biodiesel) by Canadian registered marine vessels fuelled domestically
Others – Off-road	- Consumption of fossil fuels (including non-CO <sub>2</sub> emissions from ethanol and biodiesel) by combustion devices not licensed to operate on roads
Others – Pipeline Transport	- Transportation and distribution of crude oil, natural gas and other products
<b>c. Fugitive Sources</b>	
Coal Mining	Intentional and unintentional releases of greenhouse gases from the following activities: - Underground and surface mining, abandoned underground coal mines
Oil and Natural Gas	- Conventional and unconventional oil and gas exploration, production, transportation, and distribution
<b>d. CO<sub>2</sub> Transport and Storage</b>	
Intentional and unintentional releases of greenhouse gases from the transport and storage of carbon dioxide	
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	
Emissions resulting from the following process activities:	
<b>a. Mineral Products</b>	- Cement production, lime production, and mineral product use (which includes glass production, other uses of soda ash, magnesite use, and limestone and dolomite use)
<b>b. Chemical Industry</b>	- Production of ammonia, nitric acid, adipic acid, carbide and petrochemicals. Petrochemical production includes production of carbon black, ethylene dichloride, ethylene, methanol and styrene
<b>c. Metal Production</b>	- Aluminium production, iron and steel production, magnesium production and casting
<b>d. Production and Consumption of Halocarbons, SF<sub>6</sub> and NF<sub>3</sub></b>	- 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; use of SF <sub>6</sub> and NF <sub>3</sub> in semiconductor manufacturing
<b>e. Non-Energy Products from Fuels and Solvent Use</b>	- Non-energy use of fossil fuels (including solvents and lubricants) that are not accounted for elsewhere under the Industrial Processes and Product Use Sector
<b>f. Other Product Manufacture and Use</b>	- Use of N <sub>2</sub> O as an anaesthetic and propellant; use of urea in selective catalytic reduction (SCR) equipped vehicles; use of SF <sub>6</sub> and PFCs in electrical equipment
<b>AGRICULTURE</b>	
Emissions resulting from the:	
<b>a. Enteric Fermentation</b>	- Eructation of CH <sub>4</sub> during the digestion of plant material by (mainly) ruminants
<b>b. Manure Management</b>	- Release of CH <sub>4</sub> and N <sub>2</sub> O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens - Indirect N <sub>2</sub> O emissions from volatilization and leaching of nitrogen from animal manure during storage
<b>c. Agricultural Soils</b>	
Direct sources	- Direct N <sub>2</sub> O emissions from Synthetic fertilizer, manure on cropland, pasture range and paddock, crop residue, tillage, summerfallow, irrigation and cultivation of organic soils
Indirect Sources	- Indirect N <sub>2</sub> O emissions from volatilization and leaching of animal manure nitrogen, synthetic fertilizer nitrogen and crop residue nitrogen
<b>d. Field Burning of Agricultural Residues</b>	- CH <sub>4</sub> and N <sub>2</sub> O emissions from crop residue burning
<b>e. Liming, Urea Application and Other Carbon-containing Fertilizers</b>	- Direct emissions of CO <sub>2</sub> from the application of lime, urea and other fertilizers containing carbon
<b>WASTE</b>	
Emissions resulting from:	
<b>a. Solid Waste Disposal</b>	- Municipal solid waste management sites (landfills) and dedicated wood waste landfills
<b>b. Biological Treatment of Solid Waste</b>	- Composting of municipal solid waste
<b>c. Wastewater Treatment and Discharge</b>	- Domestic and industrial wastewater treatment
<b>d. Incineration and Open Burning of Waste</b>	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
<b>LAND USE, LAND-USE CHANGE AND FORESTRY</b>	
Emissions and removals resulting from:	
<b>a. Forest Land</b>	- Managed forests and lands converted to forests; includes growth and anthropogenic disturbances related to forest management but excludes fire and most insect disturbances
<b>b. Cropland</b>	- Management practices on lands in annual crops, summerfallow and perennial crops (forage, specialty crops, orchards); immediate and residual emissions from lands converted to cropland
<b>c. Grassland</b>	- Managed agricultural grassland
<b>d. Wetlands</b>	- Peatlands disturbed for peat extraction, or land flooded from hydro reservoir development
<b>e. Settlements</b>	- Forest and grassland converted to built-up land (settlements, transport infrastructure, oil & gas infrastructure, mining, etc); urban tree growth
<b>f. Harvested Wood Products</b>	- Use and disposal of harvested wood products manufactured from wood coming from forest harvest and forest conversion activities in Canada



**Table A11-2 1990-2015 GHG Emission Summary for Newfoundland and Labrador**

Greenhouse Gas Categories								
	1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>								
<b>TOTAL</b>	<b>9 510</b>	<b>10 100</b>	<b>10 300</b>	<b>10 300</b>	<b>9 860</b>	<b>9 580</b>	<b>10 600</b>	<b>10 300</b>
<b>ENERGY</b>	<b>8 650</b>	<b>9 110</b>	<b>9 250</b>	<b>9 230</b>	<b>8 760</b>	<b>8 500</b>	<b>9 530</b>	<b>9 240</b>
a. Stationary Combustion Sources	5 550	4 770	4 790	4 640	4 430	4 600	5 130	4 760
Public Electricity and Heat Production	1 650	819	691	865	851	867	1 210	1 320
Petroleum Refining Industries	1 000	950	1 000	820	1 000	960	910	500
Mining and Upstream Oil and Gas Production	1 160	1 890	2 180	2 010	1 780	1 750	1 870	1 900
Manufacturing Industries	506	276	128	75	79	72	41	45
Construction	33	24	11	15	9	6	7	18
Commercial and Institutional	320	358	259	263	203	544	630	596
Residential	828	443	503	573	470	390	453	377
Agriculture and Forestry	25	8	12	18	11	8	11	12
b. Transport <sup>1</sup>	3 060	3 430	3 890	4 100	3 800	3 330	3 740	3 900
Domestic Aviation	190	210	190	190	230	230	220	220
Road Transportation	389	1 150	1 330	2 010	1 940	1 800	2 010	2 110
Light-Duty Gasoline Vehicles	164	281	317	416	446	388	405	413
Light-Duty Gasoline Trucks	107	300	415	576	650	589	646	684
Heavy-Duty Gasoline Vehicles	21	48	70	99	127	120	136	147
Motorcycles	1	1	3	4	4	4	4	5
Light-Duty Diesel Vehicles	1	3	4	7	6	5	6	7
Light-Duty Diesel Trucks	1	4	4	6	4	4	4	4
Heavy-Duty Diesel Vehicles	94	510	518	899	701	686	812	845
Propane and Natural Gas Vehicles	1	0	0	0	0	0	0	0
Railways	-	-	2	-	-	-	-	-
Domestic Navigation	630	x	800	560	390	220	210	210
Other Transportation	1 800	x	1 600	1 400	1 200	1 100	1 300	1 400
Off-Road Agriculture & Forestry	49	180	200	230	170	130	160	170
Off-Road Commercial & Institutional	1	10	21	25	23	21	27	27
Off-Road Manufacturing, Mining & Construction	25	80	96	180	95	78	120	120
Off-Road Residential	1	10	x	x	x	x	x	x
Off-Road Other Transportation	1 800	1 300	1 200	910	950	840	980	1 000
Pipeline Transport	-	x	x	x	x	x	x	x
c. Fugitive Sources	41	910	580	490	520	570	660	580
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	910	580	490	520	570	660	580
d. CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>87</b>	<b>153</b>	<b>211</b>	<b>252</b>	<b>207</b>	<b>219</b>	<b>199</b>	<b>211</b>
a. Mineral Products	64	2	1	1	1	1	1	1
Cement Production	60	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	2	1	1	1	1	1	1
b. Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	80	130	140	150	150	160	180
e. Non-Energy Products from Fuels and Solvent Use	19	64	79	110	54	65	30	26
f. Other Product Manufacture and Use	5	6	4	5	5	5	5	8
<b>AGRICULTURE</b>	<b>51</b>	<b>62</b>	<b>87</b>	<b>110</b>	<b>130</b>	<b>94</b>	<b>90</b>	<b>91</b>
a. Enteric Fermentation	25	35	36	35	34	36	36	36
b. Manure Management	17	17	22	22	22	22	22	22
c. Agriculture Soils	7	10	11	11	11	10	11	12
Direct Sources	6	9	10	10	10	9	9	10
Indirect Sources	1	1	2	2	2	2	2	2
d. Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e. Liming, Urea Application and Other Carbon-containing Fertilizers	3	-	20	40	70	30	20	20
<b>WASTE</b>	<b>720</b>	<b>790</b>	<b>750</b>	<b>750</b>	<b>770</b>	<b>770</b>	<b>770</b>	<b>780</b>
a. Solid Waste Disposal	670	730	700	700	710	720	720	720
b. Biological Treatment of Solid Waste	20	20	20	20	20	20	20	20
c. Wastewater Treatment and Discharge	37	33	34	34	34	34	34	34
d. Incineration and Open Burning of Waste	-	-	-	-	-	-	-	-

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-3 2015 GHG Emission Summary for Newfoundland and Labrador**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>8,940</b>	<b>42</b>	<b>1,000</b>	<b>1</b>	<b>160</b>	<b>180</b>	<b>0</b>	<b>3</b>	<b>-</b>	<b>10,300</b>
<b>ENERGY</b>		<b>8,890</b>	<b>9</b>	<b>230</b>	<b>0</b>	<b>100</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9,240</b>
a.	Stationary Combustion Sources	4,590	5	100	0	40	-	-	-	-	4,760
	Public Electricity and Heat Production	1,300	0	0	0	8	-	-	-	-	1,320
	Petroleum Refining Industries	490	0	0	0	1	-	-	-	-	500
	Mining and Upstream Oil and Gas Production	1,850	2	39	0	20	-	-	-	-	1,900
	Manufacturing Industries	44	0	0	0	0	-	-	-	-	45
	Construction	18	0	0	0	0	-	-	-	-	18
	Commercial and Institutional Residential	592	0	0	0	3	-	-	-	-	596
	Residential	278	3	90	0	10	-	-	-	-	377
	Agriculture and Forestry	12	0	0	0	0	-	-	-	-	12
b.	Transport <sup>1</sup>	3,790	1	32	0	76	-	-	-	-	3,900
	Domestic Aviation	219	0	0	0	2	-	-	-	-	220
	Road Transportation	2,070	0	3	0	28	-	-	-	-	2,110
	Light-Duty Gasoline Vehicles	408	0	1	0	4	-	-	-	-	413
	Light-Duty Gasoline Trucks	676	0	1	0	6	-	-	-	-	684
	Heavy-Duty Gasoline Vehicles	144	0	0	0	4	-	-	-	-	147
	Motorcycles	5	0	0	0	0	-	-	-	-	5
	Light-Duty Diesel Vehicles	6	0	0	0	0	-	-	-	-	7
	Light-Duty Diesel Trucks	4	0	0	0	0	-	-	-	-	4
	Heavy-Duty Diesel Vehicles	831	0	1	0	10	-	-	-	-	845
	Propane and Natural Gas Vehicles	0	0	0	0	0	-	-	-	-	0
	Railways	-	-	-	-	-	-	-	-	-	-
	Domestic Navigation	212	0	1	0	2	-	-	-	-	210
	Other Transportation	1,290	1	30	0	40	-	-	-	-	1,400
	Off-Road Agriculture & Forestry	154	0	0	0	20	-	-	-	-	170
	Off-Road Commercial & Institutional	25	0	0	0	2	-	-	-	-	27
	Off-Road Manufacturing, Mining & Construction	112	0	0	0	10	-	-	-	-	120
	Off-Road Residential	x	x	x	x	x	x	x	x	x	x
	Off-Road Other Transportation	986	1	30	0	10	-	-	-	-	1,000
	Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c.	Fugitive Sources	500	3	75	0	2	-	-	-	-	580
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	500	3	75	0	2	-	-	-	-	580
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>27</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>4</b>	<b>180</b>	<b>0</b>	<b>3</b>	<b>-</b>	<b>211</b>
a.	Mineral Products	1	-	-	-	-	-	-	-	-	1
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	1	-	-	-	-	-	-	-	-	1
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	180	0	-	-	180
e.	Non-Energy Products from Fuels and Solvent Use	26	-	-	-	-	-	-	-	-	26
f.	Other Product Manufacture and Use	0	-	-	0	4	-	0	3	-	8
	<b>AGRICULTURE</b>	<b>20</b>	<b>2</b>	<b>47</b>	<b>0.08</b>	<b>23</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>91</b>
a.	Enteric Fermentation	-	1	36	-	-	-	-	-	-	36
b.	Manure Management	-	0	12	0	10	-	-	-	-	22
c.	Agriculture Soils	-	-	-	0	12	-	-	-	-	12
	Direct Sources	-	-	-	0	10	-	-	-	-	10
	Indirect Sources	-	-	-	0	2	-	-	-	-	2
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	20	-	-	-	-	-	-	-	-	20
	<b>WASTE</b>	<b>-</b>	<b>30</b>	<b>760</b>	<b>0</b>	<b>18</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>780</b>
a.	Solid Waste Disposal	-	29	720	-	-	-	-	-	-	720
b.	Biological Treatment of Solid Waste	-	0	10	0	8	-	-	-	-	20
c.	Wastewater Treatment and Discharge	-	1	24	0	10	-	-	-	-	34
d.	Incineration and Open Burning of Waste	-	-	-	-	-	-	-	-	-	-

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions
  - 0 Indicates emissions truncated due to rounding
  - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-4 1990-2015 GHG Emission Summary for Prince Edward Island**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>1,950</b>	<b>2,060</b>	<b>1,980</b>	<b>2,190</b>	<b>2,080</b>	<b>1,770</b>	<b>1,770</b>	<b>1,770</b>
<b>ENERGY</b>		<b>1,440</b>	<b>1,460</b>	<b>1,490</b>	<b>1,690</b>	<b>1,560</b>	<b>1,290</b>	<b>1,230</b>	<b>1,240</b>
a.	Stationary Combustion Sources	738	615	651	726	673	537	443	388
	Public Electricity and Heat Production	104	5	2	1	11	4	4	17
	Petroleum Refining Industries	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	1	x	x	0	x	x	x	-
	Manufacturing Industries	55	145	172	143	189	116	76	64
	Construction	11	x	x	x	x	x	x	2
	Commercial and Institutional	159	119	47	86	73	74	60	56
	Residential	389	311	381	455	380	328	288	241
	Agriculture and Forestry	19	24	30	30	17	13	12	10
b.	Transport <sup>1</sup>	697	840	836	967	887	754	786	847
	Domestic Aviation	17	14	18	16	19	20	19	19
	Road Transportation	307	557	571	696	671	578	580	602
	Light-Duty Gasoline Vehicles	138	205	198	228	223	191	181	180
	Light-Duty Gasoline Trucks	75	192	202	242	244	210	206	210
	Heavy-Duty Gasoline Vehicles	25	39	37	44	44	40	39	40
	Motorcycles	0	1	1	2	2	1	1	1
	Light-Duty Diesel Vehicles	2	2	2	3	3	3	3	3
	Light-Duty Diesel Trucks	0	1	1	1	1	1	1	1
	Heavy-Duty Diesel Vehicles	65	118	130	176	155	133	149	166
	Propane and Natural Gas Vehicles	1	-	-	-	-	-	-	-
	Railways	-	-	-	-	-	-	-	-
	Domestic Navigation	80	90	96	130	x	63	85	120
	Other Transportation	290	180	150	130	x	93	100	110
	Off-Road Agriculture & Forestry	50	50	40	51	41	33	36	39
	Off-Road Commercial & Institutional	0	2	5	5	6	4	5	4
	Off-Road Manufacturing, Mining & Construction	5	5	5	6	3	3	4	5
	Off-Road Residential	0	x	x	x	4	x	x	x
	Off-Road Other Transportation	240	120	99	61	58	49	53	55
	Pipeline Transport	-	x	x	x	x	x	x	x
c.	Fugitive Sources	-	0	-	0	-	-	-	-
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	0	-	0	-	-	-	-
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>4</b>	<b>24</b>	<b>39</b>	<b>43</b>	<b>45</b>	<b>45</b>	<b>48</b>	<b>52</b>
a.	Mineral Products	0	1	1	1	1	1	1	1
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	0	1	1	1	1	1	1	1
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminum Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	20	37	40	42	42	46	50
e.	Non-Energy Products from Fuels and Solvent Use	3	1	1	1	1	1	1	0
f.	Other Product Manufacture and Use	1	2	1	1	1	1	1	1
	<b>AGRICULTURE</b>	<b>400</b>	<b>450</b>	<b>330</b>	<b>340</b>	<b>360</b>	<b>310</b>	<b>370</b>	<b>360</b>
a.	Enteric Fermentation	150	140	120	120	120	120	120	120
b.	Manure Management	60	60	44	44	44	44	44	44
c.	Agriculture Soils	180	240	170	170	190	150	200	190
	Direct Sources	150	200	140	140	160	120	170	160
	Indirect Sources	30	40	30	30	30	20	30	30
d.	Field Burning of Agricultural Residues	0	0	0	0	0	0	0	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	5	5	3	3	2	2	2	3
	<b>WASTE</b>	<b>110</b>	<b>130</b>	<b>120</b>	<b>120</b>	<b>120</b>	<b>120</b>	<b>120</b>	<b>120</b>
a.	Solid Waste Disposal	90	110	98	98	98	98	99	99
b.	Biological Treatment of Solid Waste	2	3	3	3	3	3	3	3
c.	Wastewater Treatment and Discharge	6	8	8	8	8	8	8	8
d.	Incineration and Open Burning of Waste	11	12	12	12	12	12	12	12

**Notes:**

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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 CF4 emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-5 2015 GHG Emission Summary for Prince Edward Island**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>1 190</b>	<b>11</b>	<b>280</b>	<b>1</b>	<b>240</b>	<b>50</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>1 770</b>
<b>ENERGY</b>		<b>1 180</b>	<b>2</b>	<b>38</b>	<b>0</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1 240</b>
a.	Stationary Combustion Sources	348	1	30	0	6	-	-	-	-	388
	Public Electricity and Heat Production	16	0	0	0	0	-	-	-	-	17
	Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	-	-	-	-	-	-	-	-	-	-
	Manufacturing Industries	64	0	0	0	0	-	-	-	-	64
	Construction	2	0	0	0	0	-	-	-	-	2
	Commercial and Institutional	55	0	0	0	0	-	-	-	-	56
	Residential	201	1	30	0	5	-	-	-	-	241
	Agriculture and Forestry	10	0	0	0	0	-	-	-	-	10
b.	Transport <sup>1</sup>	830	0	3	0	15	-	-	-	-	847
	Domestic Aviation	19	0	0	0	0	-	-	-	-	19
	Road Transportation	593	0	1	0	8	-	-	-	-	602
	Light-Duty Gasoline Vehicles	178	0	0	0	2	-	-	-	-	180
	Light-Duty Gasoline Trucks	207	0	0	0	3	-	-	-	-	210
	Heavy-Duty Gasoline Vehicles	39	0	0	0	1	-	-	-	-	40
	Motorcycles	1	0	0	0	0	-	-	-	-	1
	Light-Duty Diesel Vehicles	3	0	0	0	0	-	-	-	-	3
	Light-Duty Diesel Trucks	1	0	0	0	0	-	-	-	-	1
	Heavy-Duty Diesel Vehicles	163	0	0	0	3	-	-	-	-	166
	Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
	Railways	-	-	-	-	-	-	-	-	-	-
	Domestic Navigation	118	0	0	0	1	-	-	-	-	120
	Other Transportation	100	0	2	0	5	-	-	-	-	110
	Off-Road Agriculture & Forestry	35	0	0	0	4	-	-	-	-	39
	Off-Road Commercial & Institutional	4	0	0	0	0	-	-	-	-	4
	Off-Road Manufacturing, Mining & Construction	5	0	0	0	1	-	-	-	-	5
	Off-Road Residential	x	x	x	x	x	x	x	x	x	x
	Off-Road Other Transportation	53	0	2	0	0	-	-	-	-	55
	Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c.	Fugitive Sources	-	-	-	-	-	-	-	-	-	-
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	-	-	-	-	-	-	-	-	-
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>1</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>1</b>	<b>50</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>52</b>
a.	Mineral Products	1	-	-	-	-	-	-	-	-	1
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	1	-	-	-	-	-	-	-	-	1
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	50	0	-	-	50
e.	Non-Energy Products from Fuels and Solvent Use	0	-	-	-	-	-	-	-	-	0
f.	Other Product Manufacture and Use	0	-	-	0	1	-	0	-	-	1
<b>AGRICULTURE</b>		<b>3</b>	<b>6</b>	<b>140</b>	<b>0.71</b>	<b>210</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>360</b>
a.	Enteric Fermentation	-	5	120	-	-	-	-	-	-	120
b.	Manure Management	-	1	18	0	30	-	-	-	-	44
c.	Agriculture Soils	-	-	-	1	190	-	-	-	-	190
	Direct Sources	-	-	-	1	160	-	-	-	-	160
	Indirect Sources	-	-	-	0	30	-	-	-	-	30
d.	Field Burning of Agricultural Residues	-	0	0	0	0	-	-	-	-	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	3	-	-	-	-	-	-	-	-	3
<b>WASTE</b>		<b>10</b>	<b>4</b>	<b>110</b>	<b>0</b>	<b>6</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>120</b>
a.	Solid Waste Disposal	-	4	99	-	-	-	-	-	-	99
b.	Biological Treatment of Solid Waste	-	0	2	0	1	-	-	-	-	3
c.	Wastewater Treatment and Discharge	-	0	5	0	3	-	-	-	-	8
d.	Incineration and Open Burning of Waste	10	0	0	0	1	-	-	-	-	12

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-6 1990-2015 GHG Emission Summary for Nova Scotia**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
		<i>kt CO<sub>2</sub> equivalent</i>							
<b>TOTAL</b>		<b>19 800</b>	<b>23 200</b>	<b>20 300</b>	<b>21 000</b>	<b>19 400</b>	<b>18 400</b>	<b>16 500</b>	<b>16 200</b>
<b>ENERGY</b>		<b>18 000</b>	<b>21 500</b>	<b>18 700</b>	<b>19 400</b>	<b>17 700</b>	<b>16 700</b>	<b>14 900</b>	<b>14 700</b>
a.	Stationary Combustion Sources	11 500	15 300	13 200	13 400	12 100	11 500	10 300	9 900
	Public Electricity and Heat Production	6 870	10 600	8 730	8 400	7 600	7 490	7 140	6 720
	Petroleum Refining Industries	620	1 100	810	760	950	830	x	x
	Mining and Upstream Oil and Gas Production	85	326	413	628	525	526	718	554
	Manufacturing Industries	776	555	583	541	529	417	415	465
	Construction	50	49	26	24	21	10	x	x
	Commercial and Institutional	797	1 250	782	913	648	616	545	652
	Residential	2 230	1 410	1 810	2 030	1 790	1 590	1 460	1 480
	Agriculture and Forestry	104	96	82	109	70	38	33	28
b.	Transport <sup>1</sup>	4 860	5 970	5 290	5 810	5 420	4 970	4 540	4 700
	Domestic Aviation	280	260	220	220	240	250	240	240
	Road Transportation	3 590	4 410	4 060	4 580	4 370	4 020	3 620	3 760
	Light-Duty Gasoline Vehicles	1 680	1 410	1 230	1 330	1 330	1 140	1 010	1 040
	Light-Duty Gasoline Trucks	830	1 240	1 190	1 330	1 350	1 170	1 060	1 100
	Heavy-Duty Gasoline Vehicles	186	247	252	282	295	264	245	263
	Motorcycles	6	6	8	9	10	8	7	8
	Light-Duty Diesel Vehicles	36	47	46	56	48	52	47	48
	Light-Duty Diesel Trucks	8	10	9	11	8	9	8	9
	Heavy-Duty Diesel Vehicles	834	1 440	1 320	1 570	1 320	1 380	1 250	1 280
	Propane and Natural Gas Vehicles	7	5	0	0	0	0	0	0
	Railways	66	120	140	170	130	100	x	x
	Domestic Navigation	570	820	460	490	380	310	x	x
	Other Transportation	350	370	410	350	300	280	300	330
	Off-Road Agriculture & Forestry	83	70	58	59	44	45	43	48
	Off-Road Commercial & Institutional	15	40	50	51	51	47	56	61
	Off-Road Manufacturing, Mining & Construction	150	140	140	140	110	110	110	130
	Off-Road Residential	8	37	32	37	36	31	30	32
	Off-Road Other Transportation	90	45	55	57	54	48	48	54
	Pipeline Transport	-	35	75	3	4	4	9	6
c.	Fugitive Sources	1 700	230	200	190	190	170	73	60
	Coal Mining	2 000	100	90	80	80	80	1	1
	Oil and Natural Gas	51	130	120	110	100	86	73	59
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>314</b>	<b>480</b>	<b>479</b>	<b>563</b>	<b>563</b>	<b>622</b>	<b>486</b>	<b>516</b>
a.	Mineral Products	180	250	200	200	210	190	190	200
	Cement Production	180	250	190	190	210	190	190	200
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	4	3	2	2	2	1	2	2
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminum Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	140	200	230	230	230	240	270
e.	Non-Energy Products from Fuels and Solvent Use	100	52	49	100	89	150	10	8
f.	Other Product Manufacture and Use	29	40	34	40	30	46	40	40
	<b>AGRICULTURE</b>	<b>540</b>	<b>500</b>	<b>440</b>	<b>450</b>	<b>460</b>	<b>460</b>	<b>470</b>	<b>460</b>
a.	Enteric Fermentation	250	230	190	190	190	190	190	190
b.	Manure Management	140	140	130	130	130	130	140	140
c.	Agriculture Soils	120	120	110	110	120	110	120	110
	Direct Sources	94	100	94	91	97	87	96	94
	Indirect Sources	20	20	20	20	20	20	20	20
d.	Field Burning of Agricultural Residues	0	0	0	0	0	0	-	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	40	10	10	10	20	20	20	20
	<b>WASTE</b>	<b>930</b>	<b>700</b>	<b>620</b>	<b>600</b>	<b>600</b>	<b>610</b>	<b>600</b>	<b>590</b>
a.	Solid Waste Disposal	820	610	530	510	520	530	510	500
b.	Biological Treatment of Solid Waste	20	20	10	10	10	10	10	10
c.	Wastewater Treatment and Discharge	50	53	53	53	53	53	53	53
d.	Incineration and Open Burning of Waste	27	18	18	19	19	19	19	19

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
x Indicates data has been suppressed to respect confidentiality  
Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-7 2015 GHG Emission Summary for Nova Scotia**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>14 500</b>	<b>44</b>	<b>1 100</b>	<b>1</b>	<b>380</b>	<b>270</b>	<b>0</b>	<b>33</b>	<b>-</b>	<b>16 200</b>
<b>ENERGY</b>		<b>14 200</b>	<b>11</b>	<b>280</b>	<b>1</b>	<b>200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14 700</b>
a.	Stationary Combustion Sources	9 590	9	200	0	70	-	-	-	-	9 900
	Public Electricity and Heat Production	6 700	0	6	0	27	-	-	-	-	6 720
	Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
	Mining and Upstream Oil and Gas Production	519	1	31	0	4	-	-	-	-	554
	Manufacturing Industries	455	0	1	0	9	-	-	-	-	465
	Construction	x	x	x	x	x	x	x	x	x	x
	Commercial and Institutional	647	0	0	0	4	-	-	-	-	652
	Residential	1 250	8	200	0	30	-	-	-	-	1 480
	Agriculture and Forestry	28	0	0	0	0	-	-	-	-	28
b.	Transport <sup>1</sup>	4 600	0	11	0	89	-	-	-	-	4 700
	Domestic Aviation	240	0	0	0	2	-	-	-	-	240
	Road Transportation	3 700	0	6	0	50	-	-	-	-	3 760
	Light-Duty Gasoline Vehicles	1 030	0	2	0	10	-	-	-	-	1 040
	Light-Duty Gasoline Trucks	1 090	0	2	0	11	-	-	-	-	1 100
	Heavy-Duty Gasoline Vehicles	256	0	0	0	6	-	-	-	-	263
	Motorcycles	8	0	0	0	0	-	-	-	-	8
	Light-Duty Diesel Vehicles	47	0	0	0	1	-	-	-	-	48
	Light-Duty Diesel Trucks	8	0	0	0	0	-	-	-	-	9
	Heavy-Duty Diesel Vehicles	1 260	0	1	0	20	-	-	-	-	1 280
	Propane and Natural Gas Vehicles	0	0	0	0	0	-	-	-	-	0
	Railways	x	x	x	x	x	x	x	x	x	x
	Domestic Navigation	x	x	x	x	x	x	x	x	x	x
	Other Transportation	301	0	4	0	20	-	-	-	-	330
	Off-Road Agriculture & Forestry	43	0	0	0	5	-	-	-	-	48
	Off-Road Commercial & Institutional	57	0	2	0	3	-	-	-	-	61
	Off-Road Manufacturing, Mining & Construction	113	0	0	0	10	-	-	-	-	130
	Off-Road Residential	31	0	1	0	1	-	-	-	-	32
	Off-Road Other Transportation	51	0	1	0	1	-	-	-	-	54
	Pipeline Transport	6	0	0	0	0	-	-	-	-	6
c.	Fugitive Sources	22	2	37	0	0	-	-	-	-	60
	Coal Mining	-	0	1	-	-	-	-	-	-	1
	Oil and Natural Gas	22	2	37	0	0	-	-	-	-	59
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>211</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>7</b>	<b>270</b>	<b>0</b>	<b>33</b>	<b>-</b>	<b>516</b>
a.	Mineral Products	200	-	-	-	-	-	-	-	-	200
	Cement Production	200	-	-	-	-	-	-	-	-	200
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	2	-	-	-	-	-	-	-	-	2
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	270	0	-	-	270
e.	Non-Energy Products from Fuels and Solvent Use	8	-	-	-	-	-	-	-	-	8
f.	Other Product Manufacture and Use	1	-	-	0	7	-	0	33	-	40
	<b>AGRICULTURE</b>	<b>20</b>	<b>11</b>	<b>260</b>	<b>0.6</b>	<b>180</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>460</b>
a.	Enteric Fermentation	-	8	190	-	-	-	-	-	-	190
b.	Manure Management	-	3	70	0	70	-	-	-	-	140
c.	Agriculture Soils	-	-	-	0	110	-	-	-	-	110
	Direct Sources	-	-	-	0	94	-	-	-	-	94
	Indirect Sources	-	-	-	0	20	-	-	-	-	20
d.	Field Burning of Agricultural Residues	-	0	0	0	0	-	-	-	-	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	20	-	-	-	-	-	-	-	-	20
	<b>WASTE</b>	<b>16</b>	<b>22</b>	<b>550</b>	<b>0</b>	<b>26</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>590</b>
a.	Solid Waste Disposal	-	20	500	-	-	-	-	-	-	500
b.	Biological Treatment of Solid Waste	-	0	8	0	6	-	-	-	-	10
c.	Wastewater Treatment and Discharge	-	1	35	0	20	-	-	-	-	53
d.	Incineration and Open Burning of Waste	16	-	-	0	2	-	-	-	-	19

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
- Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
- 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- 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.

- Indicates no emissions

0 Indicates emissions truncated due to rounding

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Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-8 1990-2015 GHG Emission Summary for New Brunswick**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>16,300</b>	<b>20,300</b>	<b>18,600</b>	<b>18,900</b>	<b>17,000</b>	<b>15,000</b>	<b>14,500</b>	<b>14,100</b>
<b>ENERGY</b>		<b>14,900</b>	<b>18,600</b>	<b>16,000</b>	<b>16,800</b>	<b>14,700</b>	<b>12,900</b>	<b>12,800</b>	<b>12,300</b>
a.	Stationary Combustion Sources	10,800	13,200	10,700	10,600	9,450	8,600	8,780	8,120
	Public Electricity and Heat Production	6,010	8,060	5,340	4,920	4,060	4,190	4,390	3,780
	Petroleum Refining Industries	1,200	2,300	2,600	2,600	2,500	2,500	x	x
	Mining and Upstream Oil and Gas Production	126	161	361	275	221	129	x	x
	Manufacturing Industries	1,640	1,170	847	846	841	850	692	691
	Construction	69	6	55	19	14	9	10	28
	Commercial and Institutional	580	602	525	783	833	320	318	348
	Residential	1,160	834	877	983	864	570	594	725
	Agriculture and Forestry	53	33	114	117	86	57	60	61
b.	Transport <sup>1</sup>	4,060	5,240	5,040	5,970	5,070	4,120	3,900	4,030
	Domestic Aviation	140	120	99	87	100	110	110	110
	Road Transportation	3,210	4,130	3,950	4,640	4,100	3,350	3,110	3,240
	Light-Duty Gasoline Vehicles	1,310	1,160	1,010	1,110	1,070	874	758	818
	Light-Duty Gasoline Trucks	751	1,110	1,130	1,300	1,280	1,070	951	1,050
	Heavy-Duty Gasoline Vehicles	176	221	240	277	278	230	205	225
	Motorcycles	4	7	9	9	10	8	7	8
	Light-Duty Diesel Vehicles	21	26	25	31	22	19	19	19
	Light-Duty Diesel Trucks	8	12	8	10	7	5	5	5
	Heavy-Duty Diesel Vehicles	927	1,600	1,530	1,910	1,430	1,150	1,170	1,120
	Propane and Natural Gas Vehicles	4	1	0	0	0	0	-	-
	Railways	130	x	x	x	270	200	x	x
	Domestic Navigation	240	x	x	x	330	240	x	x
	Other Transportation	340	320	320	340	270	220	220	250
	Off-Road Agriculture & Forestry	92	87	71	75	52	42	42	46
	Off-Road Commercial & Institutional	11	30	43	50	42	39	35	39
	Off-Road Manufacturing, Mining & Construction	110	110	120	110	82	64	70	76
	Off-Road Residential	6	x	x	x	x	x	x	x
	Off-Road Other Transportation	120	59	67	74	66	54	53	62
	Pipeline Transport	-	x	x	x	x	x	x	x
c.	Fugitive Sources	60	220	210	200	200	190	160	180
	Coal Mining	1	0	-	-	-	-	-	-
	Oil and Natural Gas	60	220	210	200	200	190	160	180
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>165</b>	<b>363</b>	<b>1,420</b>	<b>956</b>	<b>1,050</b>	<b>865</b>	<b>422</b>	<b>518</b>
a.	Mineral Products	88	94	53	55	56	53	57	52
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	76	86	49	51	52	49	53	48
	Mineral Products Use	11	8	4	4	4	4	4	5
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	120	180	210	210	200	210	230
e.	Non-Energy Products from Fuels and Solvent Use	72	140	1,200	690	770	600	150	230
f.	Other Product Manufacture and Use	5	8	6	6	7	7	6	7
	<b>AGRICULTURE</b>	<b>520</b>	<b>560</b>	<b>490</b>	<b>470</b>	<b>500</b>	<b>500</b>	<b>530</b>	<b>520</b>
a.	Enteric Fermentation	210	200	180	180	170	170	170	170
b.	Manure Management	90	93	81	78	78	79	77	77
c.	Agriculture Soils	150	210	160	150	180	140	190	180
	Direct Sources	130	180	140	130	150	120	160	150
	Indirect Sources	30	30	20	20	30	20	30	30
d.	Field Burning of Agricultural Residues	0	0	0	0	0	0	0	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	70	50	70	60	80	100	90	90
	<b>WASTE</b>	<b>690</b>	<b>770</b>	<b>720</b>	<b>690</b>	<b>720</b>	<b>720</b>	<b>720</b>	<b>720</b>
a.	Solid Waste Disposal	640	720	670	640	660	660	660	670
b.	Biological Treatment of Solid Waste	20	20	20	20	20	20	20	20
c.	Wastewater Treatment and Discharge	29	31	31	31	32	31	31	31
d.	Incineration and Open Burning of Waste	-	1	1	1	1	1	1	1

**Notes:**

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-9 2015 GHG Emission Summary for New Brunswick**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>12 400</b>	<b>43</b>	<b>1 100</b>	<b>1</b>	<b>400</b>	<b>230</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>14 100</b>
<b>ENERGY</b>		<b>12 000</b>	<b>7</b>	<b>170</b>	<b>1</b>	<b>200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>12 300</b>
a.	Stationary Combustion Sources	7 930	5	100	0	60	-	-	-	-	8 120
	Public Electricity and Heat Production	3 700	0	8	0	19	-	-	-	-	3 780
	Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
	Mining and Upstream Oil and Gas Production	x	x	x	x	x	x	x	x	x	x
	Manufacturing Industries	671	0	2	0	18	-	-	-	-	691
	Construction	27	0	0	0	0	-	-	-	-	28
	Commercial and Institutional Residential	346	0	0	0	2	-	-	-	-	348
	Residential	588	5	100	0	20	-	-	-	-	725
	Agriculture and Forestry	61	0	0	0	0	-	-	-	-	61
b.	Transport <sup>1</sup>	3 940	0	10	0	84	-	-	-	-	4 030
	Domestic Aviation	109	0	0	0	1	-	-	-	-	110
	Road Transportation	3 190	0	6	0	47	-	-	-	-	3 240
	Light-Duty Gasoline Vehicles	807	0	2	0	10	-	-	-	-	818
	Light-Duty Gasoline Trucks	1 030	0	2	0	13	-	-	-	-	1 050
	Heavy-Duty Gasoline Vehicles	220	0	0	0	6	-	-	-	-	225
	Motorcycles	8	0	0	0	0	-	-	-	-	8
	Light-Duty Diesel Vehicles	18	0	0	0	0	-	-	-	-	19
	Light-Duty Diesel Trucks	5	0	0	0	0	-	-	-	-	5
	Heavy-Duty Diesel Vehicles	1 100	0	1	0	20	-	-	-	-	1 120
	Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
	Railways	x	x	x	x	x	x	x	x	x	x
	Domestic Navigation	x	x	x	x	x	x	x	x	x	x
	Other Transportation	226	0	3	0	20	-	-	-	-	250
	Off-Road Agriculture & Forestry	41	0	0	0	5	-	-	-	-	46
	Off-Road Commercial & Institutional	36	0	1	0	2	-	-	-	-	39
	Off-Road Manufacturing, Mining & Construction	68	0	0	0	7	-	-	-	-	76
	Off-Road Residential	x	x	x	x	x	x	x	x	x	x
	Off-Road Other Transportation	59	0	2	0	1	-	-	-	-	62
	Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c.	Fugitive Sources	150	1	29	0	4	-	-	-	-	180
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	150	1	29	0	4	-	-	-	-	180
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>281</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>5</b>	<b>230</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>518</b>
a.	Mineral Products	52	-	-	-	-	-	-	-	-	52
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	48	-	-	-	-	-	-	-	-	48
	Mineral Products Use	5	-	-	-	-	-	-	-	-	5
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	230	0	-	-	230
e.	Non-Energy Products from Fuels and Solvent Use	230	-	-	-	-	-	-	-	-	230
f.	Other Product Manufacture and Use	1	-	-	0	5	-	0	1	-	7
	<b>AGRICULTURE</b>	<b>90</b>	<b>8</b>	<b>210</b>	<b>0.72</b>	<b>220</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>520</b>
a.	Enteric Fermentation	-	7	170	-	-	-	-	-	-	170
b.	Manure Management	-	2	39	0	40	-	-	-	-	77
c.	Agriculture Soils	-	-	-	1	180	-	-	-	-	180
	Direct Sources	-	-	-	1	150	-	-	-	-	150
	Indirect Sources	-	-	-	0	30	-	-	-	-	30
d.	Field Burning of Agricultural Residues	-	0	0	0	0	-	-	-	-	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	90	-	-	-	-	-	-	-	-	90
	<b>WASTE</b>	<b>1</b>	<b>28</b>	<b>700</b>	<b>0</b>	<b>24</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>720</b>
a.	Solid Waste Disposal	-	27	670	-	-	-	-	-	-	670
b.	Biological Treatment of Solid Waste	-	1	10	0	10	-	-	-	-	20
c.	Wastewater Treatment and Discharge	-	1	17	0	10	-	-	-	-	31
d.	Incineration and Open Burning of Waste	1	0	0	0	0	-	-	-	-	1

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-10 1990-2015 GHG Emission Summary for Quebec**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
		<i>kt CO<sub>2</sub> equivalent</i>							
<b>TOTAL</b>		<b>89 000</b>	<b>88 900</b>	<b>82 000</b>	<b>83 900</b>	<b>81 100</b>	<b>82 300</b>	<b>80 000</b>	<b>80 100</b>
<b>ENERGY</b>		<b>59 800</b>	<b>61 800</b>	<b>58 700</b>	<b>59 300</b>	<b>57 600</b>	<b>58 000</b>	<b>56 200</b>	<b>56 900</b>
a.	Stationary Combustion Sources	31 400	27 400	23 100	22 700	21 800	22 700	22 600	22 600
	Public Electricity and Heat Production	1 500	622	430	405	488	371	249	208
	Petroleum Refining Industries	3 500	3 700	2 600	2 400	2 300	2 100	2 000	2 200
	Mining and Upstream Oil and Gas Production	824	319	1 210	487	655	1 080	730	583
	Manufacturing Industries	12 300	10 000	7 970	8 890	9 000	9 350	9 280	9 050
	Construction	458	314	424	347	369	367	374	351
	Commercial and Institutional	4 240	5 370	4 980	4 980	4 080	4 450	4 960	5 250
	Residential	8 290	6 680	4 930	4 770	4 480	4 440	4 500	4 450
	Agriculture and Forestry	291	367	511	462	477	480	469	474
b.	Transport <sup>1</sup>	28 100	34 000	35 300	36 300	35 500	35 100	33 300	34 000
	Domestic Aviation	820	740	610	630	740	730	680	680
	Road Transportation	19 700	26 700	27 700	28 300	28 400	28 000	26 500	26 800
	Light-Duty Gasoline Vehicles	11 700	11 100	10 200	10 200	9 840	9 670	9 040	9 150
	Light-Duty Gasoline Trucks	3 920	7 070	7 330	7 570	7 520	7 500	7 210	7 420
	Heavy-Duty Gasoline Vehicles	860	1 650	1 960	1 910	2 040	2 050	2 000	2 080
	Motorcycles	18	73	71	72	74	72	69	71
	Light-Duty Diesel Vehicles	222	150	156	207	188	191	180	174
	Light-Duty Diesel Trucks	61	68	85	109	93	98	101	106
	Heavy-Duty Diesel Vehicles	2 990	6 640	7 830	8 290	8 650	8 400	7 950	7 800
	Propane and Natural Gas Vehicles	2	1	0	0	0	0	0	0
	Railways	570	710	850	900	940	870	780	750
	Domestic Navigation	1 400	1 300	1 300	950	800	910	740	730
	Other Transportation	5 500	4 500	4 800	5 500	4 600	4 600	4 500	5 100
	Off-Road Agriculture & Forestry	1 200	900	890	1 000	810	760	710	840
	Off-Road Commercial & Institutional	440	510	580	700	510	610	600	590
	Off-Road Manufacturing, Mining & Construction	2 400	1 900	2 200	2 500	2 100	2 000	1 900	2 200
	Off-Road Residential	71	270	250	290	270	250	260	260
	Off-Road Other Transportation	1 400	650	800	850	760	730	740	810
	Pipeline Transport	26	338	156	152	201	268	360	325
c.	Fugitive Sources	430	390	340	290	280	270	270	290
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	430	390	340	290	280	270	270	290
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>14 600</b>	<b>12 500</b>	<b>10 200</b>	<b>11 800</b>	<b>10 900</b>	<b>11 400</b>	<b>11 000</b>	<b>10 100</b>
a.	Mineral Products	1 900	2 000	1 700	1 800	1 900	1 700	1 800	1 800
	Cement Production	1 400	1 300	1 200	1 200	1 400	1 200	1 200	1 300
	Lime Production	272	465	423	441	446	421	454	413
	Mineral Products Use	210	260	81	85	88	72	73	83
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	10 900	7 560	6 070	6 010	5 630	5 830	5 330	5 290
	Iron and Steel Production	-	-	36	37	32	31	28	27
	Aluminium Production	8 660	7 460	6 020	5 960	5 580	5 780	5 280	5 240
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	2 280	103	13	13	16	22	23	23
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	2	1 100	1 600	1 700	1 800	1 900	2 000	2 200
e.	Non-Energy Products from Fuels and Solvent Use	1 700	1 700	720	2 300	1 500	1 900	1 900	750
f.	Other Product Manufacture and Use	80	120	88	92	130	130	81	140
	<b>AGRICULTURE</b>	<b>7 600</b>	<b>7 800</b>	<b>7 700</b>	<b>7 600</b>	<b>7 900</b>	<b>7 800</b>	<b>7 800</b>	<b>8 000</b>
a.	Enteric Fermentation	3 300	3 300	3 000	3 000	2 900	2 900	2 900	2 900
b.	Manure Management	1 700	1 800	1 700	1 700	1 700	1 700	1 700	1 700
c.	Agriculture Soils	2 400	2 500	2 800	2 700	3 000	2 900	2 900	3 200
	Direct Sources	2 000	2 100	2 400	2 300	2 600	2 500	2 500	2 700
	Indirect Sources	400	400	400	400	400	400	400	400
d.	Field Burning of Agricultural Residues	0	0	0	0	0	0	0	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	200	200	200	200	300	300	300	300
	<b>WASTE</b>	<b>7 000</b>	<b>6 800</b>	<b>5 400</b>	<b>5 100</b>	<b>4 700</b>	<b>5 100</b>	<b>5 100</b>	<b>5 100</b>
a.	Solid Waste Disposal	6 200	6 000	4 600	4 300	4 100	4 500	4 500	4 500
b.	Biological Treatment of Solid Waste	200	300	200	200	200	200	200	200
c.	Wastewater Treatment and Discharge	270	240	250	260	260	260	260	260
d.	Incineration and Open Burning of Waste	350	260	270	260	120	120	120	130

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11–11 2015 GHG Emission Summary for Quebec**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>61 400</b>	<b>410</b>	<b>10 000</b>	<b>18</b>	<b>5 400</b>	<b>2 200</b>	<b>710</b>	<b>110</b>	<b>0</b>	<b>80 100</b>
<b>ENERGY</b>		<b>54 000</b>	<b>68</b>	<b>1 700</b>	<b>4</b>	<b>1 000</b>	-	-	-	-	<b>56 900</b>
a.	Stationary Combustion Sources	20 700	60	1 000	1	400	-	-	-	-	22 600
	Public Electricity and Heat Production	200	0	0	0	4	-	-	-	-	208
	Petroleum Refining Industries	2 200	0	1	0	6	-	-	-	-	2 200
	Mining and Upstream Oil and Gas Production	579	0	1	0	3	-	-	-	-	583
	Manufacturing Industries	8 920	1	14	0	110	-	-	-	-	9 050
	Construction	349	0	0	0	2	-	-	-	-	351
	Commercial and Institutional Residential	5 210	0	3	0	30	-	-	-	-	5 250
	Residential	2 750	60	1 000	1	200	-	-	-	-	4 450
	Agriculture and Forestry	466	0	0	0	7	-	-	-	-	474
b.	Transport <sup>1</sup>	33 100	4	100	3	840	-	-	-	-	34 000
	Domestic Aviation	678	0	1	0	6	-	-	-	-	680
	Road Transportation	26 400	2	50	1	370	-	-	-	-	26 800
	Light-Duty Gasoline Vehicles	9 030	1	19	0	100	-	-	-	-	9 150
	Light-Duty Gasoline Trucks	7 330	1	16	0	81	-	-	-	-	7 420
	Heavy-Duty Gasoline Vehicles	2 030	0	2	0	52	-	-	-	-	2 080
	Motorcycles	70	0	1	0	0	-	-	-	-	71
	Light-Duty Diesel Vehicles	169	0	0	0	4	-	-	-	-	174
	Light-Duty Diesel Trucks	103	0	0	0	3	-	-	-	-	106
	Heavy-Duty Diesel Vehicles	7 660	0	8	0	100	-	-	-	-	7 800
	Propane and Natural Gas Vehicles	0	0	0	0	0	-	-	-	-	0
	Railways	666	0	1	0	80	-	-	-	-	750
	Domestic Navigation	718	0	2	0	6	-	-	-	-	730
	Other Transportation	4 640	2	50	1	400	-	-	-	-	5 100
	Off-Road Agriculture & Forestry	747	0	1	0	90	-	-	-	-	840
	Off-Road Commercial & Institutional	546	1	10	0	30	-	-	-	-	590
	Off-Road Manufacturing, Mining & Construction	2 020	0	5	1	200	-	-	-	-	2 200
	Off-Road Residential	251	0	6	0	7	-	-	-	-	260
	Off-Road Other Transportation	767	1	20	0	30	-	-	-	-	810
	Pipeline Transport	315	0	8	0	3	-	-	-	-	325
c.	Fugitive Sources	190	4	92	0	6	-	-	-	-	290
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	190	4	92	0	6	-	-	-	-	290
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>7 090</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>58</b>	<b>2 200</b>	<b>710</b>	<b>110</b>	<b>-</b>	<b>10 100</b>
a.	Mineral Products	1 800	-	-	-	-	-	-	-	-	1 800
	Cement Production	1 300	-	-	-	-	-	-	-	-	1 300
	Lime Production	413	-	-	-	-	-	-	-	-	413
	Mineral Products Use	83	-	-	-	-	-	-	-	-	83
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	4 560	0	0	-	-	702	32	-	-	5 290
	Iron and Steel Production	27	0	0	-	-	-	-	-	-	27
	Aluminium Production	4 530	-	-	-	-	702	10	-	-	5 240
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	23	-	-	23
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	2 200	1	1	0	2 200
e.	Non-Energy Products from Fuels and Solvent Use	750	-	-	-	-	-	-	-	-	750
f.	Other Product Manufacture and Use	4	-	-	0	58	4	74	-	-	140
<b>AGRICULTURE</b>		<b>300</b>	<b>150</b>	<b>3 900</b>	<b>13</b>	<b>3 900</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8 000</b>
a.	Enteric Fermentation	-	110	2 900	-	-	-	-	-	-	2 900
b.	Manure Management	-	39	990	2	700	-	-	-	-	1 700
c.	Agriculture Soils	-	-	-	11	3 200	-	-	-	-	3 200
	Direct Sources	-	-	-	9	2 700	-	-	-	-	2 700
	Indirect Sources	-	-	-	2	400	-	-	-	-	400
d.	Field Burning of Agricultural Residues	-	0	0	0	0	-	-	-	-	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	300	-	-	-	-	-	-	-	-	300
<b>WASTE</b>		<b>97</b>	<b>190</b>	<b>4 700</b>	<b>1</b>	<b>270</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5 100</b>
a.	Solid Waste Disposal	-	180	4 500	-	-	-	-	-	-	4 500
b.	Biological Treatment of Solid Waste	-	5	100	0	90	-	-	-	-	200
c.	Wastewater Treatment and Discharge	-	4	110	1	200	-	-	-	-	260
d.	Incineration and Open Burning of Waste	97	0	6	0	20	-	-	-	-	130

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
- Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
- 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- 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.

- Indicates no emissions

0 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11–12 1990-2015 GHG Emission Summary for Ontario**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>181 000</b>	<b>204 000</b>	<b>175 000</b>	<b>175 000</b>	<b>171 000</b>	<b>171 000</b>	<b>168 000</b>	<b>166 000</b>
<b>ENERGY</b>		<b>133 000</b>	<b>160 000</b>	<b>136 000</b>	<b>134 000</b>	<b>129 000</b>	<b>130 000</b>	<b>128 000</b>	<b>126 000</b>
a.	Stationary Combustion Sources	83 100	93 900	73 100	71 800	69 000	67 100	66 100	63 500
	Public Electricity and Heat Production	25 600	32 300	18 600	13 800	13 900	10 100	6 010	6 210
	Petroleum Refining Industries	6 200	7 000	6 700	6 600	6 800	6 100	6 100	5 700
	Mining and Upstream Oil and Gas Production	593	614	831	820	929	634	645	636
	Manufacturing Industries	22 000	18 800	15 400	16 100	15 900	16 200	16 600	15 900
	Construction	571	637	557	416	436	361	380	349
	Commercial and Institutional	9 140	12 800	10 900	11 800	10 900	11 900	13 100	12 500
	Residential	18 200	20 700	18 900	20 500	18 300	20 200	21 800	20 700
	Agriculture and Forestry	775	1 040	1 110	1 650	1 690	1 650	1 500	1 470
b.	Transport <sup>1</sup>	48 500	64 900	61 800	61 300	59 000	61 600	59 900	61 200
	Domestic Aviation	2 200	2 200	1 900	1 900	2 200	2 300	2 200	2 200
	Road Transportation	34 400	50 100	49 500	49 400	47 200	49 300	47 400	48 300
	Light-Duty Gasoline Vehicles	19 800	18 000	16 000	15 100	13 800	14 400	13 700	13 800
	Light-Duty Gasoline Trucks	8 730	17 100	18 100	17 800	16 700	17 800	17 500	18 000
	Heavy-Duty Gasoline Vehicles	1 790	3 410	3 790	3 690	3 560	3 810	3 790	3 900
	Motorcycles	33	66	91	91	90	93	94	100
	Light-Duty Diesel Vehicles	123	207	217	262	285	312	298	313
	Light-Duty Diesel Trucks	33	69	110	137	151	184	193	220
	Heavy-Duty Diesel Vehicles	3 850	11 300	11 200	12 300	12 600	12 600	11 700	12 000
	Propane and Natural Gas Vehicles	39	34	2	3	3	1	1	1
	Railways	1 800	1 600	1 300	1 300	1 200	1 300	1 400	1 400
	Domestic Navigation	920	860	1 100	780	980	1 200	1 300	940
	Other Transportation	9 100	10 000	8 000	8 000	7 400	7 500	7 700	8 300
	Off-Road Agriculture & Forestry	1 800	1 900	1 700	1 700	1 600	1 600	1 500	1 600
	Off-Road Commercial & Institutional	590	700	670	530	540	540	550	600
	Off-Road Manufacturing, Mining & Construction	3 700	4 000	4 200	4 300	4 000	3 900	3 700	4 100
	Off-Road Residential	72	72	71	85	81	84	82	88
	Off-Road Other Transportation	700	440	400	350	340	340	330	350
	Pipeline Transport	2 280	3 070	897	896	844	1 070	1 530	1 540
c.	Fugitive Sources	1 600	1 500	1 400	1 400	1 300	1 400	1 400	1 500
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	1 600	1 500	1 400	1 400	1 300	1 400	1 400	1 500
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>30 200</b>	<b>24 500</b>	<b>20 300</b>	<b>21 600</b>	<b>23 700</b>	<b>22 100</b>	<b>22 600</b>	<b>21 800</b>
a.	Mineral Products	3 900	4 800	3 400	3 500	3 700	3 400	3 400	3 500
	Cement Production	2 400	3 700	2 700	2 700	2 900	2 700	2 700	2 800
	Lime Production	1 090	797	572	596	604	569	613	558
	Mineral Products Use	410	320	150	160	160	120	120	140
b.	Chemical Industry <sup>2</sup>	10 300	2 550	-	-	-	-	-	-
	Adipic Acid Production	10 000	2 500	-	-	-	-	-	-
c.	Metal Production	11 200	11 400	9 300	10 200	10 400	8 200	9 110	8 160
	Iron and Steel Production	10 500	10 300	9 130	10 000	10 100	8 010	8 900	7 970
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	687	1 130	170	170	232	191	205	198
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	970	2 000	2 900	3 200	3 400	3 500	3 800	4 100
e.	Non-Energy Products from Fuels and Solvent Use	3 700	3 600	4 500	4 500	6 000	6 800	6 100	5 800
f.	Other Product Manufacture and Use	140	190	150	140	170	170	150	160
	<b>AGRICULTURE</b>	<b>11 000</b>	<b>10 000</b>	<b>10 000</b>	<b>9 900</b>	<b>9 700</b>	<b>10 000</b>	<b>9 900</b>	<b>9 700</b>
a.	Enteric Fermentation	4 400	4 300	3 700	3 600	3 600	3 600	3 600	3 600
b.	Manure Management	2 100	2 200	1 900	1 900	1 900	1 900	1 900	1 900
c.	Agriculture Soils	3 700	3 500	4 700	4 200	4 100	4 400	4 200	4 000
	Direct Sources	3 200	3 000	4 000	3 600	3 500	3 800	3 600	3 400
	Indirect Sources	600	500	600	600	600	600	600	500
d.	Field Burning of Agricultural Residues	4	1	1	0	0	0	0	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	300	200	200	200	200	200	200	200
	<b>WASTE</b>	<b>7 400</b>	<b>9 300</b>	<b>8 400</b>	<b>8 700</b>	<b>8 600</b>	<b>8 500</b>	<b>8 500</b>	<b>8 600</b>
a.	Solid Waste Disposal	6 600	8 400	7 600	7 800	7 800	7 600	7 700	7 700
b.	Biological Treatment of Solid Waste	300	300	300	300	300	300	300	300
c.	Wastewater Treatment and Discharge	230	340	310	310	310	320	320	320
d.	Incineration and Open Burning of Waste	300	290	280	270	270	290	290	290

**Notes:**

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-13 2015 GHG Emission Summary for Ontario**

Greenhouse Gas Categories		Greenhouse Gases									TOTAL
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	
Global Warming Potential		kt	kt	25 kt CO <sub>2</sub> eq.	kt	298 kt CO <sub>2</sub> eq.	kt CO <sub>2</sub> eq.	kt CO <sub>2</sub> eq.	22 800 kt CO <sub>2</sub> eq.	17 200 kt CO <sub>2</sub> eq.	kt CO <sub>2</sub> eq.
<b>TOTAL</b>		<b>139 000</b>	<b>590</b>	<b>15 000</b>	<b>26</b>	<b>7 900</b>	<b>4 100</b>	<b>6</b>	<b>250</b>	<b>-</b>	<b>166 000</b>
<b>ENERGY</b>		<b>122 000</b>	<b>88</b>	<b>2 200</b>	<b>8</b>	<b>2 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>126 000</b>
a.	Stationary Combustion Sources	62 100	40	900	2	500	-	-	-	-	63 500
	Public Electricity and Heat Production	6 100	2	40	0	55	-	-	-	-	6 210
	Petroleum Refining Industries	5 700	0	3	0	9	-	-	-	-	5 700
	Mining and Upstream Oil and Gas Production	628	0	0	0	8	-	-	-	-	636
	Manufacturing Industries	15 800	1	13	0	120	-	-	-	-	15 900
	Construction	346	0	0	0	3	-	-	-	-	349
	Commercial and Institutional	12 400	0	6	0	80	-	-	-	-	12 500
	Residential	19 700	30	800	1	200	-	-	-	-	20 700
	Agriculture and Forestry	1 460	0	1	0	10	-	-	-	-	1 470
b.	Transport <sup>1</sup>	59 300	5	130	6	1 800	-	-	-	-	61 200
	Domestic Aviation	2 190	0	2	0	20	-	-	-	-	2 200
	Road Transportation	47 300	3	80	3	910	-	-	-	-	48 300
	Light-Duty Gasoline Vehicles	13 500	1	26	1	270	-	-	-	-	13 800
	Light-Duty Gasoline Trucks	17 600	1	33	1	330	-	-	-	-	18 000
	Heavy-Duty Gasoline Vehicles	3 800	0	3	0	100	-	-	-	-	3 900
	Motorcycles	98	0	1	0	1	-	-	-	-	100
	Light-Duty Diesel Vehicles	305	0	0	0	7	-	-	-	-	313
	Light-Duty Diesel Trucks	214	0	0	0	5	-	-	-	-	220
	Heavy-Duty Diesel Vehicles	11 800	1	10	1	200	-	-	-	-	12 000
	Propane and Natural Gas Vehicles	1	0	0	0	0	-	-	-	-	1
	Railways	1 260	0	2	1	100	-	-	-	-	1 400
	Domestic Navigation	934	0	2	0	7	-	-	-	-	940
	Other Transportation	7 580	2	50	2	700	-	-	-	-	8 300
	Off-Road Agriculture & Forestry	1 450	0	2	1	200	-	-	-	-	1 600
	Off-Road Commercial & Institutional	537	0	4	0	60	-	-	-	-	600
	Off-Road Manufacturing, Mining & Construction	3 710	0	8	1	400	-	-	-	-	4 100
	Off-Road Residential	79	0	0	0	9	-	-	-	-	88
	Off-Road Other Transportation	315	0	1	0	40	-	-	-	-	350
	Pipeline Transport	1 490	2	37	0	10	-	-	-	-	1 540
c.	Fugitive Sources	270	47	1 200	0	7	-	-	-	-	1 500
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	270	47	1 200	0	7	-	-	-	-	1 500
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>17 200</b>	<b>2</b>	<b>41</b>	<b>0</b>	<b>124</b>	<b>4 100</b>	<b>6</b>	<b>250</b>	<b>-</b>	<b>21 800</b>
a.	Mineral Products	3 500	-	-	-	-	-	-	-	-	3 500
	Cement Production	2 800	-	-	-	-	-	-	-	-	2 800
	Lime Production	558	-	-	-	-	-	-	-	-	558
	Mineral Products Use	140	-	-	-	-	-	-	-	-	140
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	7 970	0	2	-	-	-	-	198	-	8 160
	Iron and Steel Production	7 970	0	2	-	-	-	-	-	-	7 970
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	198	-	198
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	4 100	1	0	-	4 100
e.	Non-Energy Products from Fuels and Solvent Use	5 800	-	-	0	-	-	-	-	-	5 800
f.	Other Product Manufacture and Use	6	-	-	0	97	-	5	56	-	160
	<b>AGRICULTURE</b>	<b>200</b>	<b>180</b>	<b>4 500</b>	<b>17</b>	<b>5 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9 700</b>
a.	Enteric Fermentation	-	140	3 600	-	-	-	-	-	-	3 600
b.	Manure Management	-	35	880	3	1 000	-	-	-	-	1 900
c.	Agriculture Soils	-	-	-	13	4 000	-	-	-	-	4 000
	Direct Sources	-	-	-	12	3 400	-	-	-	-	3 400
	Indirect Sources	-	-	-	2	500	-	-	-	-	500
d.	Field Burning of Agricultural Residues	-	0	0	0	0	-	-	-	-	0
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	200	-	-	-	-	-	-	-	-	200
	<b>WASTE</b>	<b>210</b>	<b>320</b>	<b>7 900</b>	<b>2</b>	<b>450</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8 600</b>
a.	Solid Waste Disposal	-	310	7 700	-	-	-	-	-	-	7 700
b.	Biological Treatment of Solid Waste	-	6	200	0	100	-	-	-	-	300
c.	Wastewater Treatment and Discharge	-	3	62	1	300	-	-	-	-	320
d.	Incineration and Open Burning of Waste	210	0	0	0	80	-	-	-	-	290

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
- Indicates no emissions
  - 0 Indicates emissions truncated due to rounding
  - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-14 1990-2015 GHG Emission Summary for Manitoba**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>18 600</b>	<b>20 600</b>	<b>19 600</b>	<b>19 400</b>	<b>20 600</b>	<b>21 300</b>	<b>21 200</b>	<b>20 800</b>
<b>ENERGY</b>		<b>12 600</b>	<b>12 400</b>	<b>11 400</b>	<b>11 600</b>	<b>12 800</b>	<b>12 900</b>	<b>13 200</b>	<b>12 300</b>
a.	Stationary Combustion Sources	4 880	4 510	3 920	3 860	3 860	4 230	4 230	3 780
	Public Electricity and Heat Production	442	284	78	110	99	103	108	121
	Petroleum Refining Industries	-	-	-	-	-	-	0	0
	Mining and Upstream Oil and Gas Production	80	97	163	91	96	107	92	74
	Manufacturing Industries	1 160	1 460	1 290	1 210	1 280	1 220	1 190	1 110
	Construction	63	86	106	113	108	123	111	103
	Commercial and Institutional	1 400	1 420	1 190	1 220	1 180	1 390	1 450	1 300
	Residential	1 690	1 130	1 020	1 080	1 070	1 240	1 250	1 040
	Agriculture and Forestry	43	43	75	33	37	43	34	30
b.	Transport <sup>1</sup>	7 230	7 720	7 130	7 350	8 470	8 200	8 490	8 110
	Domestic Aviation	480	560	460	430	480	490	460	460
	Road Transportation	2 550	3 930	4 240	4 480	5 460	5 340	5 380	5 090
	Light-Duty Gasoline Vehicles	1 130	1 100	1 080	1 030	1 230	1 230	1 190	1 140
	Light-Duty Gasoline Trucks	672	1 330	1 500	1 540	1 910	1 960	1 950	1 900
	Heavy-Duty Gasoline Vehicles	233	402	411	416	510	521	522	510
	Motorcycles	3	4	5	5	7	7	7	7
	Light-Duty Diesel Vehicles	8	11	13	14	18	16	17	16
	Light-Duty Diesel Trucks	6	16	11	10	12	10	10	8
	Heavy-Duty Diesel Vehicles	442	1 060	1 220	1 460	1 770	1 590	1 680	1 510
	Propane and Natural Gas Vehicles	57	10	0	1	1	1	0	0
	Railways	610	300	x	x	620	570	660	680
	Domestic Navigation	0	2	x	x	-	-	-	1
	Other Transportation	3 600	2 900	1 800	1 700	1 900	1 800	2 000	1 900
	Off-Road Agriculture & Forestry	1 200	1 500	1 100	1 200	1 300	1 100	1 100	960
	Off-Road Commercial & Institutional	18	48	71	53	66	73	78	78
	Off-Road Manufacturing, Mining & Construction	130	160	130	130	140	120	130	130
	Off-Road Residential	5	38	34	39	45	42	44	41
	Off-Road Other Transportation	1 400	550	490	310	360	350	380	370
	Pipeline Transport	848	601	18	32	13	109	268	311
c.	Fugitive Sources	450	210	300	370	430	440	440	410
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	450	210	300	370	430	440	440	410
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>454</b>	<b>661</b>	<b>913</b>	<b>939</b>	<b>808</b>	<b>841</b>	<b>787</b>	<b>867</b>
a.	Mineral Products	220	69	60	63	64	59	63	59
	Cement Production	150	-	-	-	-	-	-	-
	Lime Production	58	59	54	56	57	53	57	52
	Mineral Products Use	6	10	6	7	7	6	6	7
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	200	300	320	350	360	390	420
e.	Non-Energy Products from Fuels and Solvent Use	230	380	540	540	380	410	320	370
f.	Other Product Manufacture and Use	11	17	13	15	12	11	11	11
	<b>AGRICULTURE</b>	<b>4 800</b>	<b>6 400</b>	<b>6 300</b>	<b>5 700</b>	<b>5 900</b>	<b>6 600</b>	<b>6 200</b>	<b>6 500</b>
a.	Enteric Fermentation	1 900	3 300	2 700	2 500	2 400	2 500	2 400	2 500
b.	Manure Management	490	880	790	770	760	780	790	800
c.	Agriculture Soils	2 100	2 100	2 600	2 200	2 500	3 000	2 700	3 000
	Direct Sources	1 700	1 600	2 100	1 800	2 000	2 400	2 200	2 400
	Indirect Sources	400	400	500	500	500	600	500	600
d.	Field Burning of Agricultural Residues	200	10	20	10	20	20	20	20
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	100	200	200	200	200	300	200	300
	<b>WASTE</b>	<b>780</b>	<b>1 100</b>	<b>1 100</b>	<b>1 100</b>	<b>1 100</b>	<b>1 000</b>	<b>1 100</b>	<b>1 100</b>
a.	Solid Waste Disposal	710	990	1 000	1 000	1 000	940	960	980
b.	Biological Treatment of Solid Waste	30	40	50	50	50	50	50	50
c.	Wastewater Treatment and Discharge	36	41	42	42	43	43	44	44
d.	Incineration and Open Burning of Waste	1	0	0	0	0	0	0	0

**Notes:**

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11–15 2015 GHG Emission Summary for Manitoba**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>12 300</b>	<b>170</b>	<b>4 300</b>	<b>13</b>	<b>3 800</b>	<b>420</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>20 800</b>
<b>ENERGY</b>		<b>11 600</b>	<b>16</b>	<b>390</b>	<b>1</b>	<b>300</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>12 300</b>
a.	Stationary Combustion Sources	3 690	2	60	0	40	-	-	-	-	3 780
	Public Electricity and Heat Production	120	0	0	0	1	-	-	-	-	121
	Petroleum Refining Industries	0	0	0	0	0	-	-	-	-	0
	Mining and Upstream Oil and Gas Production	73	0	0	0	1	-	-	-	-	74
	Manufacturing Industries	1 100	0	1	0	11	-	-	-	-	1 110
	Construction	103	0	0	0	1	-	-	-	-	103
	Commercial and Institutional Residential	1 290	0	1	0	8	-	-	-	-	1 300
	Residential	976	2	50	0	10	-	-	-	-	1 040
	Agriculture and Forestry	30	0	0	0	1	-	-	-	-	30
b.	Transport <sup>1</sup>	7 800	1	34	1	270	-	-	-	-	8 110
	Domestic Aviation	458	0	1	0	4	-	-	-	-	460
	Road Transportation	5 000	0	10	0	78	-	-	-	-	5 090
	Light-Duty Gasoline Vehicles	1 120	0	3	0	15	-	-	-	-	1 140
	Light-Duty Gasoline Trucks	1 870	0	5	0	24	-	-	-	-	1 900
	Heavy-Duty Gasoline Vehicles	496	0	0	0	13	-	-	-	-	510
	Motorcycles	7	0	0	0	0	-	-	-	-	7
	Light-Duty Diesel Vehicles	15	0	0	0	0	-	-	-	-	16
	Light-Duty Diesel Trucks	8	0	0	0	0	-	-	-	-	8
	Heavy-Duty Diesel Vehicles	1 480	0	2	0	20	-	-	-	-	1 510
	Propane and Natural Gas Vehicles	0	0	0	0	0	-	-	-	-	0
	Railways	605	0	1	0	70	-	-	-	-	680
	Domestic Navigation	1	0	0	0	0	-	-	-	-	1
	Other Transportation	1 740	1	20	0	100	-	-	-	-	1 900
	Off-Road Agriculture & Forestry	854	0	1	0	100	-	-	-	-	960
	Off-Road Commercial & Institutional	74	0	2	0	2	-	-	-	-	78
	Off-Road Manufacturing, Mining & Construction	115	0	1	0	10	-	-	-	-	130
	Off-Road Residential	39	0	1	0	1	-	-	-	-	41
	Off-Road Other Transportation	354	0	10	0	4	-	-	-	-	370
	Pipeline Transport	301	0	8	0	2	-	-	-	-	311
c.	Fugitive Sources	110	12	300	0	0	-	-	-	-	410
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	110	12	300	0	0	-	-	-	-	410
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>396</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>46</b>	<b>420</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>867</b>
a.	Mineral Products	59	-	-	-	-	-	-	-	-	59
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	52	-	-	-	-	-	-	-	-	52
	Mineral Products Use	7	-	-	-	-	-	-	-	-	7
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	420	0	-	-	420
e.	Non-Energy Products from Fuels and Solvent Use	340	-	-	-	-	-	-	-	-	370
f.	Other Product Manufacture and Use	1	-	-	0	9	-	0	1	-	11
	<b>AGRICULTURE</b>	<b>300</b>	<b>120</b>	<b>2 900</b>	<b>11</b>	<b>3 400</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>6 500</b>
a.	Enteric Fermentation	-	98	2 500	-	-	-	-	-	-	2 500
b.	Manure Management	-	17	430	1	400	-	-	-	-	800
c.	Agriculture Soils	-	-	-	10	3 000	-	-	-	-	3 000
	Direct Sources	-	-	-	8	2 400	-	-	-	-	2 400
	Indirect Sources	-	-	-	2	600	-	-	-	-	600
d.	Field Burning of Agricultural Residues	-	1	10	0	4	-	-	-	-	20
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	300	-	-	-	-	-	-	-	-	300
	<b>WASTE</b>	<b>0</b>	<b>41</b>	<b>1 000</b>	<b>0</b>	<b>44</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1 100</b>
a.	Solid Waste Disposal	-	39	980	-	-	-	-	-	-	980
b.	Biological Treatment of Solid Waste	-	1	30	0	20	-	-	-	-	50
c.	Wastewater Treatment and Discharge	-	1	20	0	20	-	-	-	-	44
d.	Incineration and Open Burning of Waste	0	0	0	0	0	-	-	-	-	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
- Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
- 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- 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.

- Indicates no emissions

0 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-16 1990-2015 GHG Emission Summary for Saskatchewan**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
		<i>kt CO<sub>2</sub> equivalent</i>							
<b>TOTAL</b>		<b>45 200</b>	<b>69 500</b>	<b>69 900</b>	<b>69 300</b>	<b>71 600</b>	<b>73 700</b>	<b>75 000</b>	<b>75 000</b>
<b>ENERGY</b>		<b>36 300</b>	<b>55 100</b>	<b>57 000</b>	<b>56 000</b>	<b>57 500</b>	<b>58 400</b>	<b>60 700</b>	<b>60 200</b>
a.	Stationary Combustion Sources	20 200	27 500	29 600	29 100	29 200	28 700	30 600	31 000
	Public Electricity and Heat Production	11 100	15 300	16 200	15 600	16 200	15 100	15 200	15 300
	Petroleum Refining Industries	630	780	1 100	1 000	1 200	1 200	1 200	1 300
	Mining and Upstream Oil and Gas Production	4 150	7 520	7 700	8 010	7 490	7 870	9 220	9 640
	Manufacturing Industries	792	534	628	705	809	751	969	855
	Construction	70	42	71	56	37	36	39	67
	Commercial and Institutional	985	1 510	1 380	1 280	1 110	1 120	1 130	1 110
	Residential	2 140	1 630	1 950	1 800	1 760	1 870	1 870	1 710
	Agriculture and Forestry	296	256	531	615	661	772	997	997
b.	Transport <sup>1</sup>	9 420	11 900	15 100	14 500	15 200	16 600	16 500	16 500
	Domestic Aviation	260	190	190	190	220	230	220	230
	Road Transportation	3 410	5 070	7 200	6 890	7 880	8 650	8 260	8 510
	Light-Duty Gasoline Vehicles	1 310	1 320	1 530	1 300	1 450	1 460	1 270	1 280
	Light-Duty Gasoline Trucks	1 080	1 660	2 490	2 280	2 730	2 920	2 700	2 890
	Heavy-Duty Gasoline Vehicles	553	750	987	872	1 050	1 130	1 030	1 080
	Motorcycles	1	2	6	6	7	6	6	7
	Light-Duty Diesel Vehicles	5	11	17	19	21	24	24	24
	Light-Duty Diesel Trucks	9	39	33	31	30	31	30	27
	Heavy-Duty Diesel Vehicles	395	1 280	2 130	2 380	2 600	3 070	3 200	3 210
	Propane and Natural Gas Vehicles	63	8	1	2	2	1	1	1
	Railways	590	x	x	x	x	x	x	x
	Domestic Navigation	0	x	x	x	x	x	x	x
	Other Transportation	5 200	6 200	7 000	6 700	6 600	7 100	7 300	7 000
	Off-Road Agriculture & Forestry	2 400	3 700	3 900	4 000	3 800	4 200	4 200	4 100
	Off-Road Commercial & Institutional	11	45	69	63	70	79	93	97
	Off-Road Manufacturing, Mining & Construction	120	180	260	250	230	250	280	330
	Off-Road Residential	2	31	40	38	43	44	43	45
	Off-Road Other Transportation	1 000	390	520	320	360	390	380	410
	Pipeline Transport	1 590	1 900	2 170	2 070	2 040	2 060	2 320	2 010
c.	Fugitive Sources	6 700	16 000	12 000	12 000	13 000	13 000	13 000	13 000
	Coal Mining	20	20	20	20	20	20	20	20
	Oil and Natural Gas	6 700	16 000	12 000	12 000	13 000	13 000	13 000	13 000
d.	CO <sub>2</sub> Transport and Storage	-	0	0	0	0	0	0	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>316</b>	<b>782</b>	<b>814</b>	<b>1 000</b>	<b>947</b>	<b>1 100</b>	<b>781</b>	<b>833</b>
a.	Mineral Products	96	10	8	8	9	9	9	10
	Cement Production	87	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	8	10	8	8	9	9	9	10
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	180	290	320	350	360	380	420
e.	Non-Energy Products from Fuels and Solvent Use	210	580	510	660	580	720	380	390
f.	Other Product Manufacture and Use	8	12	9	9	10	10	10	10
	<b>AGRICULTURE</b>	<b>7 800</b>	<b>13 000</b>	<b>11 000</b>	<b>11 000</b>	<b>12 000</b>	<b>13 000</b>	<b>12 000</b>	<b>13 000</b>
a.	Enteric Fermentation	3 300	6 100	4 900	4 800	4 800	4 800	4 800	4 700
b.	Manure Management	780	1 400	1 200	1 100	1 100	1 100	1 200	1 200
c.	Agriculture Soils	3 500	4 600	4 300	4 600	5 400	6 200	5 600	5 900
	Direct Sources	3 000	3 700	3 500	3 700	4 300	5 100	4 500	4 800
	Indirect Sources	500	900	800	900	1 000	1 000	1 000	1 000
d.	Field Burning of Agricultural Residues	70	30	20	20	20	30	30	30
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	200	400	600	600	700	900	900	900
	<b>WASTE</b>	<b>760</b>	<b>950</b>	<b>1 100</b>					
a.	Solid Waste Disposal	690	880	970	980	990	1 000	1 000	1 000
b.	Biological Treatment of Solid Waste	30	40	40	40	40	40	40	40
c.	Wastewater Treatment and Discharge	40	41	43	43	44	45	45	46
d.	Incineration and Open Burning of Waste	1	0	0	0	0	0	0	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- Indicates no emissions
  - 0 Indicates emissions truncated due to rounding
  - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-17 2015 GHG Emission Summary for Saskatchewan**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>49,200</b>	<b>700</b>	<b>18,000</b>	<b>26</b>	<b>7,700</b>	<b>420</b>	<b>0</b>	<b>1</b>	-	<b>75,000</b>
<b>ENERGY</b>		<b>47,900</b>	<b>460</b>	<b>11,000</b>	<b>3</b>	<b>900</b>	-	-	-	-	<b>60,200</b>
a.	Stationary Combustion Sources	30 400	10	400	1	200	-	-	-	-	31 000
	Public Electricity and Heat Production	15 000	1	23	0	110	-	-	-	-	15 300
	Petroleum Refining Industries	1 300	0	1	0	4	-	-	-	-	1 300
	Mining and Upstream Oil and Gas Production	9 260	13	310	0	70	-	-	-	-	9 640
	Manufacturing Industries	847	0	1	0	7	-	-	-	-	855
	Construction	67	0	0	0	0	-	-	-	-	67
	Commercial and Institutional Residential	1 110	0	1	0	7	-	-	-	-	1 110
	Residential	1 660	1	30	0	10	-	-	-	-	1 710
	Agriculture and Forestry	990	0	0	0	6	-	-	-	-	997
b.	Transport <sup>1</sup>	15 700	4	89	2	700	-	-	-	-	16 500
	Domestic Aviation	223	0	1	0	2	-	-	-	-	230
	Road Transportation	8 370	1	10	0	130	-	-	-	-	8 510
	Light-Duty Gasoline Vehicles	1 260	0	3	0	18	-	-	-	-	1 280
	Light-Duty Gasoline Trucks	2 840	0	7	0	34	-	-	-	-	2 890
	Heavy-Duty Gasoline Vehicles	1 050	0	1	0	27	-	-	-	-	1 080
	Motorcycles	7	0	0	0	0	-	-	-	-	7
	Light-Duty Diesel Vehicles	23	0	0	0	1	-	-	-	-	24
	Light-Duty Diesel Trucks	27	0	0	0	1	-	-	-	-	27
	Heavy-Duty Diesel Vehicles	3 160	0	3	0	50	-	-	-	-	3 210
	Propane and Natural Gas Vehicles	1	0	0	0	0	-	-	-	-	1
	Railways	x	x	x	x	x	x	x	x	x	x
	Domestic Navigation	x	x	x	x	x	x	x	x	x	x
	Other Transportation	6 470	3	70	2	500	-	-	-	-	7 000
	Off-Road Agriculture & Forestry	3 700	0	6	1	400	-	-	-	-	4 100
	Off-Road Commercial & Institutional	92	0	2	0	3	-	-	-	-	97
	Off-Road Manufacturing, Mining & Construction	294	0	1	0	30	-	-	-	-	330
	Off-Road Residential	43	0	1	0	1	-	-	-	-	45
	Off-Road Other Transportation	398	1	10	0	4	-	-	-	-	410
	Pipeline Transport	1 940	2	50	0	20	-	-	-	-	2 010
c.	Fugitive Sources	1 800	440	11 000	0	6	-	-	-	-	13 000
	Coal Mining	-	1	20	-	-	-	-	-	-	20
	Oil and Natural Gas	1 800	440	11 000	0	6	-	-	-	-	13 000
d.	CO <sub>2</sub> Transport and Storage	0	-	-	-	-	-	-	-	-	0
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>395</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>19</b>	<b>420</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>833</b>
a.	Mineral Products	10	-	-	-	-	-	-	-	-	10
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	10	-	-	-	-	-	-	-	-	10
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	420	0	-	-	420
e.	Non-Energy Products from Fuels and Solvent Use	380	-	-	-	-	-	-	-	-	390
f.	Other Product Manufacture and Use	2	-	-	0	8	-	0	1	-	10
	<b>AGRICULTURE</b>	<b>900</b>	<b>200</b>	<b>5 100</b>	<b>23</b>	<b>6 800</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>13 000</b>
a.	Enteric Fermentation	-	190	4 700	-	-	-	-	-	-	4 700
b.	Manure Management	-	14	350	3	800	-	-	-	-	1 200
c.	Agriculture Soils	-	-	-	20	5 900	-	-	-	-	5 900
	Direct Sources	-	-	-	16	4 800	-	-	-	-	4 800
	Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d.	Field Burning of Agricultural Residues	-	1	30	0	8	-	-	-	-	30
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	900	-	-	-	-	-	-	-	-	900
	<b>WASTE</b>	<b>0</b>	<b>43</b>	<b>1 100</b>	<b>0</b>	<b>39</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1 100</b>
a.	Solid Waste Disposal	-	41	1 000	-	-	-	-	-	-	1 000
b.	Biological Treatment of Solid Waste	-	1	30	0	20	-	-	-	-	40
c.	Wastewater Treatment and Discharge	-	1	25	0	20	-	-	-	-	46
d.	Incineration and Open Burning of Waste	0	0	0	0	0	-	-	-	-	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-18 1990-2015 GHG Emission Summary for Alberta**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>175 000</b>	<b>233 000</b>	<b>241 000</b>	<b>246 000</b>	<b>260 000</b>	<b>272 000</b>	<b>276 000</b>	<b>274 000</b>
<b>ENERGY</b>		<b>153 000</b>	<b>201 000</b>	<b>212 000</b>	<b>215 000</b>	<b>225 000</b>	<b>239 000</b>	<b>244 000</b>	<b>241 000</b>
a.	Stationary Combustion Sources	97 000	130 000	138 000	141 000	148 000	158 000	162 000	164 000
	Public Electricity and Heat Production	39 900	52 200	49 200	49 000	47 200	48 400	49 400	49 000
	Petroleum Refining Industries	3 000	4 000	3 700	3 800	4 300	4 400	4 400	4 700
	Mining and Upstream Oil and Gas Production	31 000	51 000	60 100	61 400	70 300	78 000	80 300	84 300
	Manufacturing Industries	10 500	8 870	10 300	11 500	10 900	11 800	11 300	10 400
	Construction	238	171	168	261	289	306	298	297
	Commercial and Institutional	5 040	5 660	5 580	5 930	6 330	6 340	6 790	6 320
	Residential	6 850	7 620	8 330	8 840	8 750	8 780	9 160	8 260
	Agriculture and Forestry	477	240	196	214	207	211	213	221
b.	Transport <sup>1</sup>	22 700	34 800	40 000	39 600	41 100	43 700	44 600	41 900
	Domestic Aviation	1 100	1 300	1 300	1 200	1 400	1 500	1 500	1 500
	Road Transportation	12 500	19 800	25 900	25 200	26 300	28 100	28 700	26 500
	Light-Duty Gasoline Vehicles	4 410	3 750	3 540	3 080	3 170	3 360	3 450	3 120
	Light-Duty Gasoline Trucks	3 570	5 240	5 920	5 620	6 130	6 620	6 960	6 710
	Heavy-Duty Gasoline Vehicles	1 800	3 260	3 180	2 940	3 310	3 600	3 750	3 560
	Motorcycles	14	29	38	35	38	42	44	43
	Light-Duty Diesel Vehicles	21	52	91	93	91	101	105	93
	Light-Duty Diesel Trucks	16	52	86	88	83	89	93	87
	Heavy-Duty Diesel Vehicles	2 210	7 310	13 000	13 300	13 500	14 200	14 300	12 900
	Propane and Natural Gas Vehicles	490	120	3	4	3	3	3	2
	Railways	1 800	x	x	x	x	x	x	x
	Domestic Navigation	0	x	x	x	x	x	x	x
	Other Transportation	7 300	11 000	11 000	11 000	10 000	11 000	11 000	11 000
	Off-Road Agriculture & Forestry	2 800	3 800	4 100	3 900	3 600	3 600	3 500	3 200
	Off-Road Commercial & Institutional	160	270	370	360	350	350	420	340
	Off-Road Manufacturing, Mining & Construction	1 700	2 900	4 000	4 100	3 900	4 400	4 500	4 200
	Off-Road Residential	22	130	110	110	110	120	130	120
	Off-Road Other Transportation	1 300	520	520	420	420	440	480	470
	Pipeline Transport	1 300	3 210	1 560	1 680	1 820	2 190	2 360	2 660
c.	Fugitive Sources	34 000	36 000	34 000	35 000	36 000	37 000	38 000	36 000
	Coal Mining	400	300	400	300	300	300	200	300
	Oil and Natural Gas	33 000	36 000	34 000	34 000	36 000	37 000	37 000	36 000
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>6 490</b>	<b>10 400</b>	<b>10 200</b>	<b>11 100</b>	<b>14 400</b>	<b>12 500</b>	<b>11 000</b>	<b>12 200</b>
a.	Mineral Products	1 100	1 400	1 200	1 200	1 300	1 100	1 200	1 200
	Cement Production	790	1 100	910	910	980	900	890	940
	Lime Production	104	120	110	114	116	109	117	107
	Mineral Products Use	200	250	140	160	150	140	140	170
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	1
	Iron and Steel Production	-	-	-	-	-	-	-	1
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	0	710	1 100	1 200	1 300	1 400	1 500	1 600
e.	Non-Energy Products from Fuels and Solvent Use	5 400	8 200	7 900	8 700	12 000	9 900	8 300	9 300
f.	Other Product Manufacture and Use	17	38	28	31	38	36	38	40
	<b>AGRICULTURE</b>	<b>14 000</b>	<b>19 000</b>	<b>17 000</b>	<b>17 000</b>	<b>18 000</b>	<b>18 000</b>	<b>18 000</b>	<b>18 000</b>
a.	Enteric Fermentation	7 800	12 000	9 600	9 400	9 500	9 500	9 500	9 400
b.	Manure Management	1 800	2 600	2 200	2 100	2 100	2 200	2 200	2 200
c.	Agriculture Soils	4 100	4 500	4 800	5 200	5 400	5 800	5 700	5 700
	Direct Sources	3 400	3 600	3 900	4 200	4 400	4 700	4 600	4 600
	Indirect Sources	700	900	900	1 000	1 000	1 000	1 000	1 000
d.	Field Burning of Agricultural Residues	4	1	0	1	1	1	1	1
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	300	400	600	600	700	800	800	900
	<b>WASTE</b>	<b>1 400</b>	<b>2 100</b>	<b>2 000</b>	<b>2 000</b>	<b>2 100</b>	<b>2 200</b>	<b>2 300</b>	<b>2 300</b>
a.	Solid Waste Disposal	1 300	1 800	1 700	1 700	1 800	1 900	1 900	2 000
b.	Biological Treatment of Solid Waste	70	200	200	200	200	200	200	200
c.	Wastewater Treatment and Discharge	68	95	110	110	110	120	110	120
d.	Incineration and Open Burning of Waste	11	35	18	24	45	48	48	46

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-19 2015 GHG Emission Summary for Alberta**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>219 000</b>	<b>1 700</b>	<b>43 000</b>	<b>37</b>	<b>11 000</b>	<b>1 600</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>274 000</b>
<b>ENERGY</b>		<b>208 000</b>	<b>1 200</b>	<b>31 000</b>	<b>9</b>	<b>3 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>241 000</b>
a.	Stationary Combustion Sources	161 000	70	2 000	3	1 000	-	-	-	-	164 000
	Public Electricity and Heat Production	49 000	2	55	1	280	-	-	-	-	49 000
	Petroleum Refining Industries	4 700	0	2	0	7	-	-	-	-	4 700
	Mining and Upstream Oil and Gas Production	82 400	57	1 400	2	500	-	-	-	-	84 300
	Manufacturing Industries	10 300	0	9	0	95	-	-	-	-	10 400
	Construction	294	0	0	0	3	-	-	-	-	297
	Commercial and Institutional	6 270	0	3	0	40	-	-	-	-	6 320
	Residential	8 060	6	100	0	70	-	-	-	-	8 260
	Agriculture and Forestry	220	0	0	0	1	-	-	-	-	221
b.	Transport <sup>1</sup>	40 200	6	140	5	1 600	-	-	-	-	41 900
	Domestic Aviation	1 510	0	1	0	10	-	-	-	-	1 500
	Road Transportation	26 000	2	40	1	420	-	-	-	-	26 500
	Light-Duty Gasoline Vehicles	3 070	0	7	0	39	-	-	-	-	3 120
	Light-Duty Gasoline Trucks	6 620	1	15	0	74	-	-	-	-	6 710
	Heavy-Duty Gasoline Vehicles	3 470	0	3	0	90	-	-	-	-	3 560
	Motorcycles	42	0	0	0	0	-	-	-	-	43
	Light-Duty Diesel Vehicles	90	0	0	0	2	-	-	-	-	93
	Light-Duty Diesel Trucks	85	0	0	0	2	-	-	-	-	87
	Heavy-Duty Diesel Vehicles	12 700	1	10	1	200	-	-	-	-	12 900
	Propane and Natural Gas Vehicles	2	0	0	0	0	-	-	-	-	2
	Railways	x	x	x	x	x	x	x	x	x	x
	Domestic Navigation	x	x	x	x	x	x	x	x	x	x
	Other Transportation	10 100	4	100	3	800	-	-	-	-	11 000
	Off-Road Agriculture & Forestry	2 860	0	4	1	300	-	-	-	-	3 200
	Off-Road Commercial & Institutional	312	0	9	0	20	-	-	-	-	340
	Off-Road Manufacturing, Mining & Construction	3 780	0	8	1	400	-	-	-	-	4 200
	Off-Road Residential	111	0	3	0	3	-	-	-	-	120
	Off-Road Other Transportation	446	1	10	0	10	-	-	-	-	470
	Pipeline Transport	2 580	3	63	0	20	-	-	-	-	2 660
c.	Fugitive Sources	7 200	1 200	29 000	0	10	-	-	-	-	36 000
	Coal Mining	-	10	300	-	-	-	-	-	-	300
	Oil and Natural Gas	7 200	1 100	29 000	0	10	-	-	-	-	36 000
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>9 440</b>	<b>1</b>	<b>33</b>	<b>4</b>	<b>1 080</b>	<b>1 600</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>12 200</b>
a.	Mineral Products	1 200	-	-	-	-	-	-	-	-	1 200
	Cement Production	940	-	-	-	-	-	-	-	-	940
	Lime Production	107	-	-	-	-	-	-	-	-	107
	Mineral Products Use	170	-	-	-	-	-	-	-	-	170
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	1	0	0	-	-	-	-	-	-	1
	Iron and Steel Production	1	0	0	-	-	-	-	-	-	1
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	1 600	0	0	-	1 600
e.	Non-Energy Products from Fuels and Solvent Use	8 200	-	-	-	-	-	-	-	-	9 300
f.	Other Product Manufacture and Use	6	-	-	0	29	-	1	3	-	40
	<b>AGRICULTURE</b>	<b>900</b>	<b>410</b>	<b>10 000</b>	<b>24</b>	<b>7 200</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>18 000</b>
a.	Enteric Fermentation	-	380	9 400	-	-	-	-	-	-	9 400
b.	Manure Management	-	29	720	5	1 000	-	-	-	-	2 200
c.	Agriculture Soils	-	-	-	19	5 700	-	-	-	-	5 700
	Direct Sources	-	-	-	16	4 600	-	-	-	-	4 600
	Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d.	Field Burning of Agricultural Residues	-	0	1	0	0	-	-	-	-	1
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	900	-	-	-	-	-	-	-	-	900
	<b>WASTE</b>	<b>29</b>	<b>85</b>	<b>2 100</b>	<b>1</b>	<b>170</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2 300</b>
a.	Solid Waste Disposal	-	79	2 000	-	-	-	-	-	-	2 000
b.	Biological Treatment of Solid Waste	-	4	100	0	80	-	-	-	-	200
c.	Wastewater Treatment and Discharge	-	2	38	0	80	-	-	-	-	120
d.	Incineration and Open Burning of Waste	29	0	0	0	20	-	-	-	-	46

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11–20 1990-2015 GHG Emission Summary for British Columbia**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>ENERGY</b>		<b>51 900</b>	<b>63 900</b>	<b>59 400</b>	<b>59 900</b>	<b>61 100</b>	<b>61 800</b>	<b>61 200</b>	<b>60 900</b>
<b>42 200</b>		<b>51 700</b>	<b>48 700</b>	<b>49 300</b>	<b>50 600</b>	<b>51 500</b>	<b>51 200</b>	<b>50 400</b>	
a.	Stationary Combustion Sources	19 300	21 400	20 000	21 400	21 800	21 400	21 500	19 800
	Public Electricity and Heat Production	807	1 340	1 230	782	705	860	808	754
	Petroleum Refining Industries	1 200	500	660	550	590	530	570	590
	Mining and Upstream Oil and Gas Production	2 690	5 430	7 380	8 130	8 690	8 570	8 580	7 350
	Manufacturing Industries	6 520	6 210	3 900	4 030	4 120	4 120	4 420	4 420
	Construction	307	114	84	103	100	68	66	71
	Commercial and Institutional	2 850	3 060	2 550	2 870	2 850	2 620	2 550	2 300
	Residential	4 590	4 680	3 860	4 640	4 320	4 270	4 090	3 950
	Agriculture and Forestry	323	75	310	281	388	385	382	407
b.	Transport <sup>1</sup>	18 800	24 900	23 800	22 500	23 800	24 500	24 300	25 500
	Domestic Aviation	1 300	1 600	1 200	1 100	1 300	1 300	1 300	1 300
	Road Transportation	11 700	17 000	16 400	15 700	16 400	17 400	17 400	18 200
	Light-Duty Gasoline Vehicles	4 800	4 890	4 250	3 880	3 900	3 980	3 940	4 020
	Light-Duty Gasoline Trucks	2 610	4 290	4 430	4 220	4 360	4 530	4 700	4 930
	Heavy-Duty Gasoline Vehicles	1 170	2 050	1 980	1 850	1 900	1 940	2 000	2 100
	Motorcycles	18	23	25	24	25	26	27	28
	Light-Duty Diesel Vehicles	52	102	101	107	120	134	125	137
	Light-Duty Diesel Trucks	20	50	55	58	64	80	82	92
	Heavy-Duty Diesel Vehicles	2 310	5 370	5 530	5 520	6 000	6 730	6 530	6 920
	Propane and Natural Gas Vehicles	710	230	48	49	34	21	18	14
	Railways	1 400	430	510	680	690	540	670	670
	Domestic Navigation	960	2 400	2 600	2 200	2 600	2 100	1 900	1 700
	Other Transportation	3 400	3 500	3 100	2 800	2 800	3 100	3 000	3 600
	Off-Road Agriculture & Forestry	490	500	380	310	300	330	310	350
	Off-Road Commercial & Institutional	250	210	200	170	200	220	210	230
	Off-Road Manufacturing, Mining & Construction	1 600	1 600	1 500	1 400	1 300	1 400	1 400	1 600
	Off-Road Residential	37	33	28	29	30	33	32	35
	Off-Road Other Transportation	150	110	81	70	72	77	73	79
	Pipeline Transport	863	998	843	813	806	1 020	1 040	1 300
c.	Fugitive Sources	4 100	5 300	4 900	5 400	5 100	5 500	5 400	5 100
	Coal Mining	800	1 000	900	900	1 000	1 000	1 000	900
	Oil and Natural Gas	3 300	4 400	3 900	4 500	4 100	4 400	4 400	4 300
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>		<b>3 210</b>	<b>4 490</b>	<b>3 810</b>	<b>3 720</b>	<b>3 850</b>	<b>3 750</b>	<b>3 500</b>	<b>3 880</b>
a.	Mineral Products	870	1 500	1 200	1 200	1 300	1 200	1 200	1 200
	Cement Production	650	1 300	990	990	1 100	980	970	1 000
	Lime Production	162	181	165	172	174	164	177	161
	Mineral Products Use	58	51	21	22	21	20	22	24
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	1 670	1 220	848	848	886	759	547	775
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	1 670	1 220	847	847	885	758	546	774
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	1	1	1	1	1	1	1
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	620	1 000	1 100	1 200	1 200	1 300	1 400
e.	Non-Energy Products from Fuels and Solvent Use	600	1 100	710	530	450	530	410	390
f.	Other Product Manufacture and Use	77	95	90	59	83	77	60	57
<b>AGRICULTURE</b>		<b>2 300</b>	<b>2 800</b>	<b>2 300</b>	<b>2 200</b>	<b>2 200</b>	<b>2 300</b>	<b>2 300</b>	<b>2 300</b>
a.	Enteric Fermentation	1 400	1 800	1 400	1 300	1 400	1 400	1 400	1 400
b.	Manure Management	420	520	460	460	450	460	460	470
c.	Agriculture Soils	480	460	430	430	400	480	410	430
	Direct Sources	380	350	340	330	320	380	320	340
	Indirect Sources	100	100	90	90	90	100	90	90
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	30	20	10	30	20	30	20	20
<b>WASTE</b>		<b>4 100</b>	<b>4 900</b>	<b>4 600</b>	<b>4 600</b>	<b>4 400</b>	<b>4 300</b>	<b>4 300</b>	<b>4 300</b>
a.	Solid Waste Disposal	3 900	4 600	4 300	4 300	4 100	4 000	4 000	4 000
b.	Biological Treatment of Solid Waste	80	100	100	100	100	100	100	100
c.	Wastewater Treatment and Discharge	96	130	140	140	140	140	140	140
d.	Incineration and Open Burning of Waste	81	79	67	65	63	61	59	56

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
x Indicates data has been suppressed to respect confidentiality  
Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11–21 2015 GHG Emission Summary for British Columbia**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>48 200</b>	<b>360</b>	<b>9 100</b>	<b>6</b>	<b>1 900</b>	<b>1 400</b>	<b>250</b>	<b>21</b>	<b>-</b>	<b>60 900</b>
<b>ENERGY</b>		<b>46 000</b>	<b>140</b>	<b>3 400</b>	<b>4</b>	<b>1 000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>50 400</b>
a.	Stationary Combustion Sources	18 900	30	600	1	300	-	-	-	-	19 800
	Public Electricity and Heat Production	740	0	4	0	13	-	-	-	-	754
	Petroleum Refining Industries	590	0	0	0	1	-	-	-	-	590
	Mining and Upstream Oil and Gas Production	6 930	14	360	0	60	-	-	-	-	7 350
	Manufacturing Industries	4 240	1	18	1	160	-	-	-	-	4 420
	Construction	70	0	0	0	0	-	-	-	-	71
	Commercial and Institutional Residential	2 280	0	1	0	10	-	-	-	-	2 300
	Residential	3 640	10	300	0	60	-	-	-	-	3 950
	Agriculture and Forestry	404	0	0	0	2	-	-	-	-	407
b.	Transport <sup>1</sup>	24 700	3	72	3	750	-	-	-	-	25 500
	Domestic Aviation	1 300	0	2	0	10	-	-	-	-	1 300
	Road Transportation	17 800	1	30	1	420	-	-	-	-	18 200
	Light-Duty Gasoline Vehicles	3 910	0	8	0	95	-	-	-	-	4 020
	Light-Duty Gasoline Trucks	4 770	0	10	1	150	-	-	-	-	4 930
	Heavy-Duty Gasoline Vehicles	2 050	0	2	0	50	-	-	-	-	2 100
	Motorcycles	28	0	0	0	0	-	-	-	-	28
	Light-Duty Diesel Vehicles	133	0	0	0	3	-	-	-	-	137
	Light-Duty Diesel Trucks	89	0	0	0	2	-	-	-	-	92
	Heavy-Duty Diesel Vehicles	6 800	0	7	0	100	-	-	-	-	6 920
	Propane and Natural Gas Vehicles	13	0	0	0	0	-	-	-	-	14
	Railways	596	0	1	0	70	-	-	-	-	670
	Domestic Navigation	1 670	0	4	0	10	-	-	-	-	1 700
	Other Transportation	3 290	2	40	1	200	-	-	-	-	3 600
	Off-Road Agriculture & Forestry	311	0	1	0	40	-	-	-	-	350
	Off-Road Commercial & Institutional	209	0	3	0	20	-	-	-	-	230
	Off-Road Manufacturing, Mining & Construction	1 410	0	3	1	200	-	-	-	-	1 600
	Off-Road Residential	32	0	0	0	4	-	-	-	-	35
	Off-Road Other Transportation	70	0	0	0	8	-	-	-	-	79
	Pipeline Transport	1 260	1	31	0	10	-	-	-	-	1 300
c.	Fugitive Sources	2 500	110	2 700	0	1	-	-	-	-	5 100
	Coal Mining	-	30	900	-	-	-	-	-	-	900
	Oil and Natural Gas	2 500	72	1 800	0	1	-	-	-	-	4 300
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>2 130</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>33</b>	<b>1 400</b>	<b>250</b>	<b>21</b>	<b>-</b>	<b>3 880</b>
a.	Mineral Products	1 200	-	-	-	-	-	-	-	-	1 200
	Cement Production	1 000	-	-	-	-	-	-	-	-	1 000
	Lime Production	161	-	-	-	-	-	-	-	-	161
	Mineral Products Use	24	-	-	-	-	-	-	-	-	24
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	523	-	-	-	-	-	251	1	-	775
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	523	-	-	-	-	-	251	-	-	774
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	1	-	1
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	1 400	0	-	-	1 400
e.	Non-Energy Products from Fuels and Solvent Use	390	-	-	-	-	-	-	-	-	390
f.	Other Product Manufacture and Use	4	-	-	0	33	-	0	20	-	57
	<b>AGRICULTURE</b>	<b>20</b>	<b>66</b>	<b>1 600</b>	<b>2.2</b>	<b>660</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2 300</b>
a.	Enteric Fermentation	-	56	1 400	-	-	-	-	-	-	1 400
b.	Manure Management	-	10	240	1	200	-	-	-	-	470
c.	Agriculture Soils	-	-	-	1	430	-	-	-	-	430
	Direct Sources	-	-	-	1	340	-	-	-	-	340
	Indirect Sources	-	-	-	0	90	-	-	-	-	90
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	20	-	-	-	-	-	-	-	-	20
	<b>WASTE</b>	<b>49</b>	<b>160</b>	<b>4 100</b>	<b>0</b>	<b>140</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4 300</b>
a.	Solid Waste Disposal	-	160	4 000	-	-	-	-	-	-	4 000
b.	Biological Treatment of Solid Waste	-	2	60	0	40	-	-	-	-	100
c.	Wastewater Treatment and Discharge	-	2	54	0	90	-	-	-	-	140
d.	Incineration and Open Burning of Waste	49	-	-	0	7	-	-	-	-	56

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11–22 1990-2015 GHG Emission Summary for Yukon**

Greenhouse Gas Categories		1990	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>537</b>	<b>476</b>	<b>354</b>	<b>395</b>	<b>406</b>	<b>365</b>	<b>250</b>	<b>255</b>
<b>ENERGY</b>		<b>532</b>	<b>463</b>	<b>332</b>	<b>371</b>	<b>379</b>	<b>339</b>	<b>223</b>	<b>226</b>
a.	Stationary Combustion Sources	222	201	136	153	146	119	68	67
	Public Electricity and Heat Production	94	19	19	28	19	18	17	18
	Petroleum Refining Industries	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	9	60	25	19	21	5	4	4
	Manufacturing Industries	6	-	15	15	15	15	14	14
	Construction	4	3	2	2	2	2	1	1
	Commercial and Institutional	77	35	43	61	64	57	25	25
	Residential	31	69	32	30	26	23	7	5
	Agriculture and Forestry	1	17	-	-	-	-	-	-
b.	Transport <sup>1</sup>	310	254	186	206	223	220	155	158
	Domestic Aviation	34	36	39	39	47	45	39	39
	Road Transportation	157	166	131	155	164	163	109	97
	Light-Duty Gasoline Vehicles	29	16	8	8	8	8	3	3
	Light-Duty Gasoline Trucks	13	14	14	14	15	16	7	6
	Heavy-Duty Gasoline Vehicles	6	10	10	10	11	12	5	4
	Motorcycles	0	0	0	0	0	0	0	0
	Light-Duty Diesel Vehicles	2	2	0	0	1	0	0	0
	Light-Duty Diesel Trucks	0	x	0	0	0	0	0	0
	Heavy-Duty Diesel Vehicles	106	123	97	120	128	126	92	84
	Propane and Natural Gas Vehicles	2	x	1	2	1	1	1	0
	Railways	-	x	x	x	x	x	x	x
	Domestic Navigation	-	x	x	x	x	x	x	16
	Other Transportation	120	52	x	x	x	x	x	x
	Off-Road Agriculture & Forestry	-	0	1	0	0	1	1	1
	Off-Road Commercial & Institutional	-	0	0	0	x	x	x	x
	Off-Road Manufacturing, Mining & Construction	14	7	x	x	0	0	0	1
	Off-Road Residential	-	0	0	0	0	0	0	0
	Off-Road Other Transportation	100	45	15	10	10	10	5	4
	Pipeline Transport	-	x	x	x	x	x	x	x
c.	Fugitive Sources	-	9	11	11	10	0	0	0
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	9	11	11	10	0	0	0
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>2</b>	<b>9</b>	<b>15</b>	<b>18</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>22</b>
a.	Mineral Products	0	-	-	-	0	0	0	0
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	0	-	-	-	0	0	0	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	8	14	16	18	19	20	22
e.	Non-Energy Products from Fuels and Solvent Use	1	0	1	1	1	0	1	0
f.	Other Product Manufacture and Use	0	0	0	0	0	0	0	0
	<b>AGRICULTURE</b>	<b>-</b>							
a.	Enteric Fermentation	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
a.	Solid Waste Disposal	1	2	4	4	4	4	4	5
b.	Biological Treatment of Solid Waste	1	1	1	1	1	1	1	1
c.	Wastewater Treatment and Discharge	1	2	2	2	2	2	2	2
d.	Incineration and Open Burning of Waste	-	0	-	-	-	-	-	-

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-23 2015 GHG Emission Summary for Yukon**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>221</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>5</b>	<b>22</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>255</b>
<b>ENERGY</b>		<b>221</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>226</b>
a.	Stationary Combustion Sources	65	0	1	0	1	-	-	-	-	67
	Public Electricity and Heat Production	17	0	0	0	1	-	-	-	-	18
	Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	4	0	0	0	0	-	-	-	-	4
	Manufacturing Industries	14	0	0	0	0	-	-	-	-	14
	Construction	1	0	0	0	0	-	-	-	-	1
	Commercial and Institutional Residential	25	0	0	0	0	-	-	-	-	25
	Residential	5	0	1	0	0	-	-	-	-	5
	Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b.	Transport <sup>1</sup>	156	0	0	0	2	-	-	-	-	158
	Domestic Aviation	39	0	0	0	0	-	-	-	-	39
	Road Transportation	96	0	0	0	2	-	-	-	-	97
	Light-Duty Gasoline Vehicles	3	0	0	0	0	-	-	-	-	3
	Light-Duty Gasoline Trucks	6	0	0	0	0	-	-	-	-	6
	Heavy-Duty Gasoline Vehicles	4	0	0	0	0	-	-	-	-	4
	Motorcycles	0	0	0	0	0	-	-	-	-	0
	Light-Duty Diesel Vehicles	0	0	0	0	0	-	-	-	-	0
	Light-Duty Diesel Trucks	0	0	0	0	0	-	-	-	-	0
	Heavy-Duty Diesel Vehicles	82	0	0	0	1	-	-	-	-	84
	Propane and Natural Gas Vehicles	0	0	0	0	0	-	-	-	-	0
	Railways	x	x	x	x	x	x	x	x	x	x
	Domestic Navigation	16	0	0	0	0	-	-	-	-	16
	Other Transportation	x	x	x	x	x	x	x	x	x	x
	Off-Road Agriculture & Forestry	1	0	0	0	0	-	-	-	-	1
	Off-Road Commercial & Institutional	x	x	x	x	x	x	x	x	x	x
	Off-Road Manufacturing, Mining & Construction	1	0	0	0	0	-	-	-	-	1
	Off-Road Residential	0	0	0	0	0	-	-	-	-	0
	Off-Road Other Transportation	4	0	0	0	0	-	-	-	-	4
	Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c.	Fugitive Sources	0	0	0	-	-	-	-	-	-	0
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	0	0	0	-	-	-	-	-	-	0
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>22</b>
a.	Mineral Products	0	-	-	-	-	-	-	-	-	0
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	0	-	-	-	-	-	-	-	-	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	22	0	-	-	22
e.	Non-Energy Products from Fuels and Solvent Use	0	-	-	-	-	-	-	-	-	0
f.	Other Product Manufacture and Use	0	-	-	0	0	-	-	-	-	0
	<b>AGRICULTURE</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
a.	Enteric Fermentation	-	-	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>-</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>7</b>
a.	Solid Waste Disposal	-	0	5	-	-	-	-	-	-	5
b.	Biological Treatment of Solid Waste	-	0	1	0	0	-	-	-	-	1
c.	Wastewater Treatment and Discharge	-	0	1	0	1	-	-	-	-	2
d.	Incineration and Open Burning of Waste	-	-	-	-	-	-	-	-	-	-

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-24 1999-2015 GHG Emission Summary for Northwest Territories**

Greenhouse Gas Categories		1999	2005	2010	2011	2012	2013	2014	2015
		<i>kt CO<sub>2</sub> equivalent</i>							
<b>TOTAL</b>		<b>1 230</b>	<b>1 640</b>	<b>1 350</b>	<b>1 420</b>	<b>1 480</b>	<b>1 380</b>	<b>1 310</b>	<b>1 440</b>
<b>ENERGY</b>		<b>1 210</b>	<b>1 610</b>	<b>1 310</b>	<b>1 390</b>	<b>1 440</b>	<b>1 340</b>	<b>1 270</b>	<b>1 400</b>
a.	Stationary Combustion Sources	604	725	658	635	696	638	452	469
	Public Electricity and Heat Production	92	99	67	66	65	67	87	124
	Petroleum Refining Industries	-	-	-	x	x	x	x	-
	Mining and Upstream Oil and Gas Production	235	381	402	376	452	388	173	159
	Manufacturing Industries	-	x	x	x	x	-	-	-
	Construction	1	x	x	x	x	x	0	1
	Commercial and Institutional	192	141	101	96	88	91	86	83
	Residential	85	102	89	97	88	92	107	102
	Agriculture and Forestry	0	2	-	-	-	-	-	-
b.	Transport <sup>1</sup>	590	865	642	739	723	679	800	914
	Domestic Aviation	130	240	120	130	140	130	110	110
	Road Transportation	320	564	465	545	536	503	613	710
	Light-Duty Gasoline Vehicles	24	8	10	10	11	8	7	9
	Light-Duty Gasoline Trucks	15	28	40	44	47	37	30	38
	Heavy-Duty Gasoline Vehicles	9	17	25	26	30	23	19	24
	Motorcycles	0	0	0	0	0	0	0	0
	Light-Duty Diesel Vehicles	4	1	1	1	1	1	1	2
	Light-Duty Diesel Trucks	1	x	1	1	1	1	1	2
	Heavy-Duty Diesel Vehicles	265	507	387	462	446	431	555	635
	Propane and Natural Gas Vehicles	1	x	1	-	-	-	-	-
	Railways	3	x	3	10	11	11	18	20
	Domestic Navigation	4	x	-	0	-	1	3	1
	Other Transportation	140	57	52	59	37	31	53	69
	Off-Road Agriculture & Forestry	0	0	0	0	0	0	0	1
	Off-Road Commercial & Institutional	0	1	2	2	2	x	3	4
	Off-Road Manufacturing, Mining & Construction	60	35	25	38	14	13	36	46
	Off-Road Residential	0	0	0	0	1	0	0	1
	Off-Road Other Transportation	73	19	22	16	18	14	13	18
	Pipeline Transport	5	3	3	2	3	x	1	1
c.	Fugitive Sources	14	18	15	14	24	20	19	14
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	14	18	15	14	24	20	19	14
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>9</b>	<b>20</b>	<b>23</b>	<b>26</b>	<b>28</b>	<b>29</b>	<b>32</b>	<b>33</b>
a.	Mineral Products	0	0	0	0	0	0	0	0
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	0	0	0	0	0	0	0	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	6	15	20	24	25	26	27	30
e.	Non-Energy Products from Fuels and Solvent Use	2	4	2	2	2	3	4	3
f.	Other Product Manufacture and Use	1	0	0	0	0	0	1	1
	<b>AGRICULTURE</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
a.	Enteric Fermentation	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>
a.	Solid Waste Disposal	6	7	6	6	6	6	6	6
b.	Biological Treatment of Solid Waste	1	1	1	1	1	1	1	1
c.	Wastewater Treatment and Discharge	3	3	3	3	3	3	3	3
d.	Incineration and Open Burning of Waste	0	0	0	0	0	0	0	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
x Indicates data has been suppressed to respect confidentiality  
Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11–25 2015 GHG Emission Summary for Northwest Territories**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>1 370</b>	<b>1</b>	<b>17</b>	<b>0</b>	<b>28</b>	<b>30</b>	<b>0</b>	-	-	<b>1 440</b>
<b>ENERGY</b>		<b>1 360</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>30</b>	-	-	-	-	<b>1 400</b>
a.	Stationary Combustion Sources	462	0	0	0	7	-	-	-	-	469
	Public Electricity and Heat Production	120	0	0	0	5	-	-	-	-	124
	Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	158	0	0	0	1	-	-	-	-	159
	Manufacturing Industries	-	-	-	-	-	-	-	-	-	-
	Construction	1	0	0	0	0	-	-	-	-	1
	Commercial and Institutional	82	0	0	0	1	-	-	-	-	83
	Residential	101	0	0	0	0	-	-	-	-	102
	Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b.	Transport <sup>1</sup>	892	0	2	0	20	-	-	-	-	914
	Domestic Aviation	113	0	0	0	1	-	-	-	-	110
	Road Transportation	698	0	1	0	12	-	-	-	-	710
	Light-Duty Gasoline Vehicles	8	0	0	0	0	-	-	-	-	9
	Light-Duty Gasoline Trucks	38	0	0	0	0	-	-	-	-	38
	Heavy-Duty Gasoline Vehicles	24	0	0	0	1	-	-	-	-	24
	Motorcycles	0	0	0	0	0	-	-	-	-	0
	Light-Duty Diesel Vehicles	2	0	0	0	0	-	-	-	-	2
	Light-Duty Diesel Trucks	1	0	0	0	0	-	-	-	-	2
	Heavy-Duty Diesel Vehicles	624	0	1	0	10	-	-	-	-	635
	Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
	Railways	18	0	0	0	2	-	-	-	-	20
	Domestic Navigation	1	0	0	0	0	-	-	-	-	1
	Other Transportation	63	0	1	0	5	-	-	-	-	69
	Off-Road Agriculture & Forestry	1	0	0	0	0	-	-	-	-	1
	Off-Road Commercial & Institutional	3	0	0	0	0	-	-	-	-	4
	Off-Road Manufacturing, Mining & Construction	41	0	0	0	5	-	-	-	-	46
	Off-Road Residential	0	0	0	0	0	-	-	-	-	1
	Off-Road Other Transportation	17	0	1	0	0	-	-	-	-	18
	Pipeline Transport	1	0	0	0	0	-	-	-	-	1
c.	Fugitive Sources	8	0	7	0	0	-	-	-	-	14
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	8	0	7	0	0	-	-	-	-	14
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>3</b>	-	-	<b>0</b>	<b>0</b>	<b>30</b>	<b>0</b>	-	-	<b>33</b>
a.	Mineral Products	0	-	-	-	-	-	-	-	-	0
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	0	-	-	-	-	-	-	-	-	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	30	0	-	-	30
e.	Non-Energy Products from Fuels and Solvent Use	3	-	-	-	-	-	-	-	-	3
f.	Other Product Manufacture and Use	0	-	-	0	0	-	-	-	-	1
	<b>AGRICULTURE</b>	-	-	-	-	-	-	-	-	-	-
a.	Enteric Fermentation	-	-	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>1</b>	-	-	-	-	<b>10</b>
a.	Solid Waste Disposal	-	0	6	-	-	-	-	-	-	6
b.	Biological Treatment of Solid Waste	-	0	1	0	0	-	-	-	-	1
c.	Wastewater Treatment and Discharge	-	0	2	0	1	-	-	-	-	3
d.	Incineration and Open Burning of Waste	0	0	0	0	0	-	-	-	-	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
  - 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.
    - Indicates no emissions
    - 0 Indicates emissions truncated due to rounding
    - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11-26 1999-2015 GHG Emission Summary for Nunavut**

Greenhouse Gas Categories		1999	2005	2010	2011	2012	2013	2014	2015
<i>kt CO<sub>2</sub> equivalent</i>									
<b>TOTAL</b>		<b>266</b>	<b>454</b>	<b>501</b>	<b>521</b>	<b>556</b>	<b>578</b>	<b>698</b>	<b>626</b>
<b>ENERGY</b>		<b>256</b>	<b>439</b>	<b>480</b>	<b>498</b>	<b>532</b>	<b>552</b>	<b>670</b>	<b>597</b>
a.	Stationary Combustion Sources	109	133	125	76	77	72	123	118
	Public Electricity and Heat Production	18	125	125	x	x	x	x	x
	Petroleum Refining Industries	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	91	0	x	-	-	-	-	-
	Manufacturing Industries	-	x	x	x	-	-	-	-
	Construction	-	x	x	x	x	x	x	x
	Commercial and Institutional	-	8	-	-	-	-	-	-
	Residential	-	-	-	-	-	-	-	-
	Agriculture and Forestry	-	-	-	-	-	-	-	-
b.	Transport <sup>1</sup>	147	306	354	422	455	481	547	479
	Domestic Aviation	110	140	120	130	140	140	130	130
	Road Transportation	2	33	66	151	238	253	181	138
	Light-Duty Gasoline Vehicles	0	0	1	1	1	1	1	1
	Light-Duty Gasoline Trucks	0	0	1	2	2	3	2	2
	Heavy-Duty Gasoline Vehicles	0	0	1	1	2	2	2	2
	Motorcycles	0	0	0	0	0	0	0	0
	Light-Duty Diesel Vehicles	0	0	0	1	1	1	1	1
	Light-Duty Diesel Trucks	-	0	0	1	1	1	1	0
	Heavy-Duty Diesel Vehicles	1	30	63	145	231	245	174	131
	Propane and Natural Gas Vehicles	1	1	1	-	-	-	-	-
	Railways	-	x	x	x	x	x	x	x
	Domestic Navigation	-	x	x	x	x	x	130	120
	Other Transportation	35	x	x	x	x	x	x	x
	Off-Road Agriculture & Forestry	0	x	x	7	10	13	11	11
	Off-Road Commercial & Institutional	0	0	0	x	x	x	x	x
	Off-Road Manufacturing, Mining & Construction	3	23	25	78	1	1	35	23
	Off-Road Residential	0	0	0	0	0	0	0	0
	Off-Road Other Transportation	31	110	140	59	68	71	61	60
	Pipeline Transport	-	x	x	x	x	x	-	-
c.	Fugitive Sources	-	-	-	-	-	-	-	-
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	-	-	-	-	-	-	-
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>3</b>	<b>8</b>	<b>14</b>	<b>15</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>21</b>
a.	Mineral Products	0	0	-	-	0	0	0	0
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	0	0	-	-	0	0	0	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	3	8	13	15	16	17	19	21
e.	Non-Energy Products from Fuels and Solvent Use	-	-	-	-	-	-	-	-
f.	Other Product Manufacture and Use	0	0	0	0	0	0	0	0
	<b>AGRICULTURE</b>	<b>-</b>							
a.	Enteric Fermentation	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>
a.	Solid Waste Disposal	4	5	5	5	5	5	5	5
b.	Biological Treatment of Solid Waste	1	1	1	1	1	1	1	1
c.	Wastewater Treatment and Discharge	2	2	2	2	2	2	2	3
d.	Incineration and Open Burning of Waste	-	0	0	0	0	0	0	0

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  2. Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  3. 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- Indicates no emissions
  - 0 Indicates emissions truncated due to rounding
  - x Indicates data has been suppressed to respect confidentiality
- Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

**Table A11-27 2015 GHG Emission Summary for Northwest Territories**

Greenhouse Gas Categories		Greenhouse Gases									
		CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>	N <sub>2</sub> O	N <sub>2</sub> O	HFCs <sup>4</sup>	PFCs <sup>4</sup>	SF <sub>6</sub>	NF <sub>3</sub>	TOTAL
Global Warming Potential				25		298			22 800	17 200	
Unit		kt	kt	kt CO <sub>2</sub> eq.	kt	kt CO <sub>2</sub> eq.					
<b>TOTAL</b>		<b>581</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>15</b>	<b>21</b>	<b>0</b>	-	-	<b>626</b>
<b>ENERGY</b>		<b>581</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>10</b>	-	-	-	-	<b>597</b>
a.	Stationary Combustion Sources	113	0	0	0	5	-	-	-	-	118
	Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
	Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
	Mining and Upstream Oil and Gas Production	-	-	-	-	-	-	-	-	-	-
	Manufacturing Industries	-	-	-	-	-	-	-	-	-	-
	Construction	x	x	x	x	x	x	x	x	x	x
	Commercial and Institutional	-	-	-	-	-	-	-	-	-	-
	Residential	-	-	-	-	-	-	-	-	-	-
	Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b.	Transport <sup>1</sup>	468	0	2	0	9	-	-	-	-	479
	Domestic Aviation	128	0	0	0	1	-	-	-	-	130
	Road Transportation	135	0	0	0	2	-	-	-	-	138
	Light-Duty Gasoline Vehicles	1	0	0	0	0	-	-	-	-	1
	Light-Duty Gasoline Trucks	2	0	0	0	0	-	-	-	-	2
	Heavy-Duty Gasoline Vehicles	2	0	0	0	0	-	-	-	-	2
	Motorcycles	0	0	0	0	0	-	-	-	-	0
	Light-Duty Diesel Vehicles	0	0	0	0	0	-	-	-	-	1
	Light-Duty Diesel Trucks	0	0	0	0	0	-	-	-	-	0
	Heavy-Duty Diesel Vehicles	129	0	0	0	2	-	-	-	-	131
	Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
	Railways	x	x	x	x	x	x	x	x	x	x
	Domestic Navigation	116	0	0	0	0	-	-	-	-	120
	Other Transportation	x	x	x	x	x	x	x	x	x	x
	Off-Road Agriculture & Forestry	10	0	0	0	1	-	-	-	-	11
	Off-Road Commercial & Institutional	x	x	x	x	x	x	x	x	x	x
	Off-Road Manufacturing, Mining & Construction	20	0	0	0	2	-	-	-	-	23
	Off-Road Residential	0	0	0	0	0	-	-	-	-	0
	Off-Road Other Transportation	57	0	1	0	2	-	-	-	-	60
	Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c.	Fugitive Sources	-	-	-	-	-	-	-	-	-	-
	Coal Mining	-	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	-	-	-	-	-	-	-	-	-
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>0</b>	-	-	<b>21</b>
a.	Mineral Products	0	-	-	-	-	-	-	-	-	0
	Cement Production	-	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-	-
	Mineral Products Use	0	-	-	-	-	-	-	-	-	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	21	0	-	-	21
e.	Non-Energy Products from Fuels and Solvent Use	-	-	-	-	-	-	-	-	-	-
f.	Other Product Manufacture and Use	0	-	-	0	0	-	-	-	-	0
	<b>AGRICULTURE</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
a.	Enteric Fermentation	-	-	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9</b>
a.	Solid Waste Disposal	-	0	5	-	-	-	-	-	-	5
b.	Biological Treatment of Solid Waste	-	0	0	0	0	-	-	-	-	1
c.	Wastewater Treatment and Discharge	-	0	2	0	1	-	-	-	-	3
d.	Incineration and Open Burning of Waste	0	0	0	0	0	-	-	-	-	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
- Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
- 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<sub>4</sub> emissions from the use of NF<sub>3</sub>.
- 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.

- Indicates no emissions

0 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.



**Table A11–28 1990-1998 GHG Emission Summary for Northwest Territories & Nunavut**

Greenhouse Gas Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998
		<i>kt CO<sub>2</sub> equivalent</i>								
<b>TOTAL</b>		<b>1,660</b>	<b>1,600</b>	<b>1,410</b>	<b>1,680</b>	<b>1,840</b>	<b>1,970</b>	<b>1,910</b>	<b>1,730</b>	<b>1,570</b>
<b>ENERGY</b>		<b>1,640</b>	<b>1,580</b>	<b>1,390</b>	<b>1,640</b>	<b>1,720</b>	<b>1,870</b>	<b>1,890</b>	<b>1,710</b>	<b>1,550</b>
a.	Stationary Combustion Sources	922	992	854	952	1,010	1,160	1,040	982	741
	Public Electricity and Heat Production	163	163	132	142	146	162	124	135	181
	Petroleum Refining Industries	8	6	7	5	12	11	4	-	-
	Mining and Upstream Oil and Gas Production	311	237	129	172	244	357	305	294	262
	Manufacturing Industries	26	16	18	8	14	20	-	-	-
	Construction	6	5	6	3	4	21	1	1	1
	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	-	0	0
b.	Transport <sup>1</sup>	620	483	447	596	648	639	799	717	798
	Domestic Aviation	240	210	220	230	240	220	230	230	230
	Road Transportation	27	78	61	113	152	144	264	208	285
	Light-Duty Gasoline Vehicles	3	1	1	2	2	1	2	2	2
	Light-Duty Gasoline Trucks	1	1	1	1	1	1	1	1	1
	Heavy-Duty Gasoline Vehicles	1	0	0	0	0	0	1	1	1
	Motorcycles	0	0	0	0	0	0	0	0	0
	Light-Duty Diesel Vehicles	0	2	1	2	2	2	3	3	4
	Light-Duty Diesel Trucks	0	0	0	0	0	0	1	1	1
	Heavy-Duty Diesel Vehicles	20	72	55	106	141	135	255	199	274
	Propane and Natural Gas Vehicles	2	2	3	2	6	4	2	2	2
	Railways	3	2	2	2	2	2	1	3	2
	Domestic Navigation	0	0	1	0	0	63	-	-	-
	Other Transportation	350	190	170	250	260	210	300	280	280
	Off-Road Agriculture & Forestry	0	0	0	0	0	0	0	0	0
	Off-Road Commercial & Institutional	-	-	0	0	0	0	0	0	0
	Off-Road Manufacturing, Mining & Construction	37	15	11	18	19	15	25	22	31
	Off-Road Residential	-	0	0	0	0	0	0	0	0
	Off-Road Other Transportation	310	180	150	230	230	190	270	260	250
	Pipeline Transport	-	-	-	-	2	0	0	0	-
c.	Fugitive Sources	97	100	89	94	65	65	60	12	10
	Coal Mining	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	97	100	89	94	65	65	60	12	10
d.	CO <sub>2</sub> Transport and Storage	-	-	-	-	-	-	-	-	-
	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>	<b>3</b>	<b>12</b>	<b>3</b>	<b>25</b>	<b>104</b>	<b>87</b>	<b>4</b>	<b>5</b>	<b>7</b>
a.	Mineral Products	-	-	-	-	-	0	0	0	0
	Cement Production	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-
	Mineral Products Use	-	-	-	-	-	0	0	0	0
b.	Chemical Industry <sup>2</sup>	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-
	Aluminium Production	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub> Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons, SF <sub>6</sub> and NF <sub>3</sub> <sup>3</sup>	-	-	-	-	-	2	3	4	7
e.	Non-Energy Products from Fuels and Solvent Use	3	11	2	24	100	85	0	0	0
f.	Other Product Manufacture and Use	0	0	0	0	0	0	0	1	1
	<b>AGRICULTURE</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
a.	Enteric Fermentation	-	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-
e.	Liming, Urea Application and Other Carbon-containing Fertilizers	-	-	-	-	-	-	-	-	-
	<b>WASTE</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>16</b>
a.	Solid Waste Disposal	7	7	7	8	8	8	9	9	9
b.	Biological Treatment of Solid Waste	2	2	2	2	2	2	2	2	2
c.	Wastewater Treatment and Discharge	4	4	4	4	4	5	5	5	5
d.	Incineration and Open Burning of Waste	0	0	0	0	0	0	0	0	0

Notes:

- Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
  - Emissions from the Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use within the provincial/territorial tables as CO<sub>2</sub> eq values.
  - 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 CF4 emissions from the use of NF<sub>3</sub>.
- Indicates no emissions  
0 Indicates emissions truncated due to rounding  
x Indicates data has been suppressed to respect confidentiality  
Estimates for the latest year (2015) 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/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

# Annex 12

## PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2015

This annex contains summary tables (Table A12-2 to Table A12-15) illustrating GHG emissions by province/territory, allocated to Canadian economic sectors, from 1990-2015. To account for the creation of Nunavut in 1999, a time series from 1999–2015 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 Table A12-15. In addition, Table A12-1 provides a brief description of each economic sector.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Reallocating provincial/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/territorial emission estimates. Estimates for each economic sector includes emissions from energy-related and non energy related processes.

Although the 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/territorial greenhouse gas emission tables are also available in electronic file format online at <http://www.open.canada.ca>.

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

Economic Sector	Description
<b>Oil and Gas</b>	
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 Light Oil Production	- conventional light crude oil production
Conventional Heavy Oil Production	- conventional heavy crude oil production
Frontier Oil Production	- offshore and arctic production of crude oil
Oil Sands (Mining, In-situ, Upgrading)	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Mining and Extraction	- crude bitumen mining and extraction
In-situ	- in-situ extraction of crude bitumen 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 and Natural Gas 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
<b>Electricity</b>	Combustion and process emissions from utility electricity generation and steam production (for sale). Excludes utility owned cogeneration at industrial sites.
<b>Transportation</b>	Mobile related emissions including all fossil fuels and non-CO <sub>2</sub> 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 4 500 lb. GVWR and motorcycles.
Bus, Rail and Domestic Aviation	- All buses and the passenger component of rail and domestic 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 4 500 lb. GVWR and the freight component of rail
Domestic Aviation and Marine	- Cargo/Freight component of domestic aviation and all domestic navigation
Other: Recreational, Commercial and Residential	Mobile related combustion emissions from the non-industrial use of small off-road engines.
<b>Heavy Industry</b>	Stationary combustion, onsite transportation, electricity 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 and rolling mills)
Cement	- Cement and other non-metallic mineral production
Lime & Gypsum	- Lime and Gypsum product manufacturing
Chemicals & Fertilizers	- Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
<b>Agriculture</b>	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 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
<b>Coal Production</b>	Stationary combustion, onsite transportation and fugitive emissions from underground and surface coal mines
<b>Waste</b>	Emissions resulting from:
Solid Waste	- Municipal solid waste management sites (landfills), dedicated wood waste landfills, and composting of municipal solid waste
Waste Water	- Domestic and industrial wastewater treatment
Waste Incineration	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	Stationary combustion, onsite transportation, electricity and steam production, and process emissions from:
Light Manufacturing	- all other manufacturing industries not included in the Heavy Industry category above
Construction	- construction industry – 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	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>9.5</b>	<b>10.1</b>	<b>10.3</b>	<b>10.3</b>	<b>9.9</b>	<b>9.6</b>	<b>10.6</b>	<b>10.3</b>
<b>Oil and Gas</b>	<b>1.1</b>	<b>2.6</b>	<b>2.6</b>	<b>2.4</b>	<b>2.3</b>	<b>2.6</b>	<b>2.7</b>	<b>2.1</b>
Upstream Oil and Gas	-	1.6	1.6	1.5	1.2	1.6	1.7	1.6
Natural Gas Production and Processing	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	-	1.6	1.6	1.5	1.2	1.6	1.7	1.5
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	1.6	1.6	1.5	1.2	1.6	1.7	1.5
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	1.1	1.0	1.1	0.9	1.1	1.0	1.0	0.6
Petroleum Refining	1.1	1.0	1.1	0.9	1.1	1.0	1.0	0.6
Natural Gas Distribution	-	-	-	-	-	-	-	-
<b>Electricity</b>	<b>1.6</b>	<b>0.8</b>	<b>0.7</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>1.2</b>	<b>1.3</b>
<b>Transportation</b>	<b>3.0</b>	<b>3.2</b>	<b>3.7</b>	<b>3.8</b>	<b>3.6</b>	<b>3.2</b>	<b>3.5</b>	<b>3.7</b>
Passenger Transport	0.4	0.8	0.9	1.2	1.3	1.2	1.3	1.3
Cars, Light Trucks and Motorcycles	0.3	0.6	0.8	1.0	1.1	1.0	1.1	1.1
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	0.8	1.1	1.4	1.6	1.3	1.1	1.2	1.3
Heavy Duty Trucks, Rail	0.1	0.6	0.6	1.0	0.8	0.8	1.0	1.0
Domestic Aviation and Marine	0.7	0.6	0.8	0.6	0.4	0.3	0.2	0.2
Other: Recreational, Commercial and Residential	1.8	1.3	1.3	0.9	1.0	0.9	1.0	1.1
<b>Heavy Industry</b>	<b>1.7</b>	<b>1.5</b>	<b>1.3</b>	<b>1.0</b>	<b>1.1</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>
Mining	1.2	1.2	1.2	1.0	1.0	0.7	0.8	0.9
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.4	0.3	0.0	0.0	0.0	0.0	0.0	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 & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Buildings</b>	<b>1.2</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>0.8</b>	<b>1.1</b>	<b>1.2</b>	<b>1.1</b>
Service Industry	0.3	0.4	0.4	0.4	0.3	0.7	0.7	0.7
Residential	0.8	0.4	0.5	0.6	0.5	0.4	0.5	0.4
<b>Agriculture</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
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	0.1	0.0	0.0	0.0
Animal Production	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Waste</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>
Solid Waste	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	-	-	-	-	-	-	-	-
<b>Coal Production</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.1</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>
Light Manufacturing	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1
Construction	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Forest Resources	0.0	0.2	0.2	0.2	0.2	0.1	0.2	0.2

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

**Table A12-3 GHG Emissions for Nova Scotia by Canadian Economic Sector, Selected Years**

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>19.8</b>	<b>23.2</b>	<b>20.3</b>	<b>21.0</b>	<b>19.4</b>	<b>18.4</b>	<b>16.5</b>	<b>16.2</b>
<b>Oil and Gas</b>	<b>0.7</b>	<b>1.5</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.4</b>	<b>0.8</b>	<b>0.6</b>
Upstream Oil and Gas	0.0	0.4	0.5	0.7	0.6	0.6	0.8	0.6
Natural Gas Production and Processing	0.0	0.4	0.5	0.7	0.6	0.6	0.8	0.6
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 and Natural Gas Transmission	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	0.7	1.1	0.9	0.9	1.0	0.9	0.0	0.0
Petroleum Refining	0.7	1.1	0.9	0.9	1.0	0.9	-	0.0
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Electricity</b>	<b>6.9</b>	<b>10.6</b>	<b>8.8</b>	<b>8.4</b>	<b>7.6</b>	<b>7.5</b>	<b>7.2</b>	<b>6.7</b>
<b>Transportation</b>	<b>4.6</b>	<b>5.8</b>	<b>5.1</b>	<b>5.7</b>	<b>5.3</b>	<b>4.9</b>	<b>4.4</b>	<b>4.6</b>
Passenger Transport	2.8	3.0	2.7	3.0	3.0	2.7	2.4	2.5
Cars, Light Trucks and Motorcycles	2.6	2.8	2.5	2.8	2.8	2.4	2.2	2.3
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	1.7	2.7	2.2	2.6	2.2	2.1	1.9	2.0
Heavy Duty Trucks, Rail	1.1	1.8	1.7	2.0	1.8	1.8	1.6	1.7
Domestic Aviation and Marine	0.6	0.9	0.5	0.5	0.4	0.3	0.3	0.3
Other: Recreational, Commercial and Residential	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Heavy Industry</b>	<b>0.9</b>	<b>0.8</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.4</b>	<b>0.5</b>
Mining	0.1	0.1	0.1	0.1	0.1	0.1	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	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1
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	0.3	0.3	0.3	0.3
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0
<b>Buildings</b>	<b>3.0</b>	<b>2.8</b>	<b>2.7</b>	<b>3.1</b>	<b>2.6</b>	<b>2.5</b>	<b>2.2</b>	<b>2.3</b>
Service Industry	0.8	1.3	0.9	1.0	0.8	0.8	0.7	0.8
Residential	2.2	1.4	1.8	2.0	1.8	1.6	1.5	1.5
<b>Agriculture</b>	<b>0.7</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>
On Farm Fuel Use	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1
Crop Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Animal Production	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
<b>Waste</b>	<b>0.9</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
Solid Waste	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Wastewater	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Coal Production</b>	<b>1.6</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>
Light Manufacturing	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Construction	0.1	0.1	0.1	0.1	0.0	0.0	0.0	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

**Table A12–4 GHG Emissions for Prince Edward Island by Canadian Economic Sector, Selected Years**

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>1.9</b>	<b>2.1</b>	<b>2.0</b>	<b>2.2</b>	<b>2.1</b>	<b>1.8</b>	<b>1.8</b>	<b>1.8</b>
<b>Oil and Gas</b>	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upstream Oil and Gas	-	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 and Natural Gas Transmission	-	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	-	-	-	-	-	-	-	-
<b>Electricity</b>	0.1	0.0	0.0	0.0	0.0	0.0	x	x
<b>Transportation</b>	0.6	0.8	0.8	0.9	0.9	0.7	0.8	0.8
Passenger Transport	0.2	0.4	0.4	0.5	0.5	0.4	0.4	0.4
Cars, Light Trucks and Motorcycles	0.2	0.4	0.4	0.5	0.5	0.4	0.4	0.4
Bus, Rail and Domestic Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freight Transport	0.2	0.3	0.3	0.4	0.3	0.2	0.3	0.3
Heavy Duty Trucks, Rail	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Domestic Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Heavy Industry</b>	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 & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Buildings</b>	0.6	0.4	0.4	0.6	0.5	0.4	0.4	0.3
Service Industry	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Residential	0.4	0.3	0.4	0.5	0.4	0.3	0.3	0.2
<b>Agriculture</b>	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
On Farm Fuel Use	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Crop Production	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2
Animal Production	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>Waste</b>	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Solid Waste	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
<b>Coal Production</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Light Manufacturing	0.1	0.1	0.2	0.1	0.2	0.1	x	x
Construction	0.0	0.0	0.0	0.0	0.0	0.0	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

x Indicates data has been suppressed to respect confidentiality.



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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>16.3</b>	<b>20.3</b>	<b>18.6</b>	<b>18.9</b>	<b>17.0</b>	<b>15.0</b>	<b>14.5</b>	<b>14.1</b>
<b>Oil and Gas</b>	<b>1.2</b>	<b>2.5</b>	<b>4.1</b>	<b>3.3</b>	<b>3.3</b>	<b>3.2</b>	<b>2.8</b>	<b>2.6</b>
Upstream Oil and Gas	-	0.0	0.2	0.0	0.0	0.1	0.1	0.0
Natural Gas Production and Processing	-	0.0	0.2	0.0	0.0	0.1	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	-	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 and Natural Gas Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	1.2	2.5	3.9	3.3	3.3	3.1	2.8	2.6
Petroleum Refining	1.2	2.5	3.9	3.3	3.3	3.1	2.8	2.6
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Electricity</b>	<b>6.0</b>	<b>8.1</b>	<b>5.3</b>	<b>4.9</b>	<b>4.1</b>	<b>4.2</b>	<b>4.4</b>	<b>3.8</b>
<b>Transportation</b>	<b>3.9</b>	<b>5.1</b>	<b>4.9</b>	<b>5.9</b>	<b>5.0</b>	<b>4.1</b>	<b>3.9</b>	<b>4.0</b>
Passenger Transport	2.2	2.5	2.3	2.6	2.5	2.1	1.9	2.0
Cars, Light Trucks and Motorcycles	2.1	2.3	2.2	2.5	2.4	2.0	1.8	1.9
Bus, Rail and Domestic Aviation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	1.5	2.5	2.5	3.1	2.4	1.9	1.9	1.8
Heavy Duty Trucks, Rail	1.2	2.1	2.1	2.6	2.0	1.6	1.6	1.5
Domestic Aviation and Marine	0.3	0.4	0.4	0.5	0.3	0.3	0.3	0.3
Other: Recreational, Commercial and Residential	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
<b>Heavy Industry</b>	<b>1.7</b>	<b>1.3</b>	<b>1.0</b>	<b>1.2</b>	<b>1.1</b>	<b>0.9</b>	<b>0.8</b>	<b>0.9</b>
Mining	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1
Smelting and Refining (Non Ferrous Metals)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Pulp and Paper	1.3	0.7	0.5	0.5	0.5	0.5	0.4	0.4
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chemicals & Fertilizers	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1
<b>Buildings</b>	<b>1.7</b>	<b>1.5</b>	<b>1.5</b>	<b>1.9</b>	<b>1.8</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>
Service Industry	0.6	0.7	0.6	0.9	1.0	0.5	0.4	0.5
Residential	1.2	0.8	0.9	1.0	0.9	0.6	0.6	0.8
<b>Agriculture</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
On Farm Fuel Use	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1
Crop Production	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Animal Production	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Waste</b>	<b>0.7</b>	<b>0.8</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>
Solid Waste	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
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
<b>Coal Production</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>
Light Manufacturing	0.2	0.4	0.3	0.2	0.2	0.3	0.2	0.2
Construction	0.1	0.0	0.1	0.1	0.0	0.0	0.0	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>89.0</b>	<b>88.9</b>	<b>82.0</b>	<b>83.9</b>	<b>81.1</b>	<b>82.3</b>	<b>80.0</b>	<b>80.1</b>
<b>Oil and Gas</b>	<b>3.9</b>	<b>4.4</b>	<b>3.1</b>	<b>2.8</b>	<b>2.8</b>	<b>2.7</b>	<b>2.7</b>	<b>2.8</b>
Upstream Oil and Gas	0.2	0.3	0.1	0.2	0.2	0.3	0.3	0.3
Natural Gas Production and Processing	-	-	-	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 and Natural Gas Transmission	0.2	0.3	0.1	0.1	0.2	0.3	0.3	0.3
Downstream Oil and Gas	3.7	4.1	3.0	2.7	2.6	2.5	2.3	2.5
Petroleum Refining	3.6	4.0	2.9	2.6	2.5	2.4	2.2	2.4
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Electricity</b>	<b>1.5</b>	<b>0.7</b>	<b>0.5</b>	<b>0.4</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>
<b>Transportation</b>	<b>24.5</b>	<b>31.3</b>	<b>32.6</b>	<b>33.2</b>	<b>33.0</b>	<b>32.6</b>	<b>30.9</b>	<b>31.2</b>
Passenger Transport	16.7	19.4	18.9	19.3	19.0	18.7	17.7	18.1
Cars, Light Trucks and Motorcycles	15.9	18.7	18.2	18.5	18.1	17.8	16.9	17.3
Bus, Rail and Domestic Aviation	0.8	0.8	0.7	0.8	0.9	0.9	0.8	0.8
Freight Transport	5.8	10.4	12.1	12.0	12.5	12.3	11.5	11.5
Heavy Duty Trucks, Rail	4.3	9.0	10.6	11.0	11.6	11.3	10.7	10.6
Domestic Aviation and Marine	1.6	1.4	1.4	1.0	0.9	1.0	0.8	0.8
Other: Recreational, Commercial and Residential	2.0	1.4	1.6	1.8	1.5	1.6	1.6	1.7
<b>Heavy Industry</b>	<b>25.0</b>	<b>19.6</b>	<b>16.1</b>	<b>17.5</b>	<b>16.6</b>	<b>17.4</b>	<b>17.4</b>	<b>15.8</b>
Mining	2.2	1.6	2.1	1.4	1.5	2.0	1.8	1.8
Smelting and Refining (Non Ferrous Metals)	12.9	9.8	7.6	8.1	7.6	7.8	7.3	6.8
Pulp and Paper	4.6	2.8	1.5	1.5	1.4	1.6	1.2	1.1
Iron and Steel	1.2	0.9	0.7	1.9	1.5	2.1	2.2	1.2
Cement	2.5	2.5	2.3	2.3	2.5	2.2	2.2	2.3
Lime & Gypsum	0.5	0.9	0.7	0.9	0.8	0.7	0.8	0.7
Chemicals & Fertilizers	1.2	1.1	1.2	1.4	1.2	1.1	1.8	1.8
<b>Buildings</b>	<b>12.7</b>	<b>13.1</b>	<b>11.1</b>	<b>11.2</b>	<b>9.8</b>	<b>10.2</b>	<b>10.9</b>	<b>11.3</b>
Service Industry	4.4	6.4	6.0	6.3	5.2	5.6	6.1	6.5
Residential	8.3	6.8	5.1	4.9	4.6	4.6	4.7	4.8
<b>Agriculture</b>	<b>8.8</b>	<b>8.8</b>	<b>8.7</b>	<b>8.7</b>	<b>8.9</b>	<b>8.7</b>	<b>8.7</b>	<b>9.0</b>
On Farm Fuel Use	1.2	1.0	1.0	1.1	1.0	0.9	0.9	1.0
Crop Production	1.9	1.8	2.2	2.2	2.6	2.4	2.5	2.7
Animal Production	5.7	5.9	5.5	5.4	5.3	5.3	5.3	5.3
<b>Waste</b>	<b>7.0</b>	<b>6.8</b>	<b>5.4</b>	<b>5.1</b>	<b>4.7</b>	<b>5.1</b>	<b>5.1</b>	<b>5.1</b>
Solid Waste	6.3	6.3	4.9	4.6	4.3	4.7	4.7	4.7
Wastewater	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Waste Incineration	0.4	0.3	0.3	0.3	0.1	0.1	0.1	0.1
<b>Coal Production</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>5.5</b>	<b>4.2</b>	<b>4.6</b>	<b>5.0</b>	<b>4.8</b>	<b>5.0</b>	<b>4.2</b>	<b>4.7</b>
Light Manufacturing	3.7	2.9	2.8	3.1	3.2	3.6	2.9	3.2
Construction	1.5	1.1	1.4	1.6	1.3	1.1	1.0	1.1
Forest Resources	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>181.3</b>	<b>204.4</b>	<b>175.5</b>	<b>174.6</b>	<b>171.4</b>	<b>170.8</b>	<b>168.5</b>	<b>166.2</b>
<b>Oil and Gas</b>	<b>10.3</b>	<b>11.8</b>	<b>9.5</b>	<b>9.1</b>	<b>10.2</b>	<b>10.3</b>	<b>10.8</b>	<b>10.3</b>
Upstream Oil and Gas	3.3	4.0	1.8	1.7	1.7	1.7	2.3	2.2
Natural Gas Production and Processing	0.3	0.4	0.5	0.3	0.4	0.2	0.2	0.2
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 and Natural Gas Transmission	3.0	3.6	1.3	1.4	1.3	1.5	2.1	2.1
Downstream Oil and Gas	7.0	7.9	7.7	7.4	8.5	8.5	8.5	8.0
Petroleum Refining	6.6	7.3	7.1	6.9	8.0	8.0	8.0	7.5
Natural Gas Distribution	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.5
<b>Electricity</b>	<b>25.7</b>	<b>30.8</b>	<b>17.4</b>	<b>12.3</b>	<b>12.4</b>	<b>9.0</b>	<b>5.0</b>	<b>5.2</b>
<b>Transportation</b>	<b>41.0</b>	<b>56.7</b>	<b>55.9</b>	<b>55.4</b>	<b>53.6</b>	<b>56.1</b>	<b>54.2</b>	<b>55.0</b>
Passenger Transport	31.0	38.1	37.1	36.0	33.9	35.8	34.7	35.3
Cars, Light Trucks and Motorcycles	29.0	35.9	35.1	34.0	31.6	33.5	32.5	33.1
Bus, Rail and Domestic Aviation	2.0	2.1	2.0	2.0	2.2	2.3	2.2	2.2
Freight Transport	8.6	17.5	17.7	18.4	18.8	19.3	18.6	18.7
Heavy Duty Trucks, Rail	7.2	16.2	16.3	17.3	17.5	17.8	17.0	17.4
Domestic Aviation and Marine	1.4	1.2	1.4	1.1	1.3	1.5	1.6	1.2
Other: Recreational, Commercial and Residential	1.4	1.2	1.1	0.9	0.9	0.9	0.9	1.0
<b>Heavy Industry</b>	<b>43.2</b>	<b>35.2</b>	<b>28.5</b>	<b>30.6</b>	<b>31.3</b>	<b>28.9</b>	<b>30.0</b>	<b>29.1</b>
Mining	1.1	1.0	1.1	1.3	1.4	1.4	1.4	1.5
Smelting and Refining (Non Ferrous Metals)	1.5	1.9	0.9	0.9	1.0	0.9	0.7	1.0
Pulp and Paper	3.2	2.1	1.6	2.2	1.9	2.0	1.8	1.6
Iron and Steel	15.0	15.1	13.3	14.6	14.8	12.5	13.7	12.1
Cement	4.5	6.4	4.6	4.5	4.8	4.4	4.4	4.5
Lime & Gypsum	1.7	1.7	1.1	1.2	1.2	1.0	1.1	1.0
Chemicals & Fertilizers	16.2	7.1	5.8	5.8	6.4	6.7	6.8	7.4
<b>Buildings</b>	<b>27.8</b>	<b>35.9</b>	<b>32.8</b>	<b>35.3</b>	<b>32.7</b>	<b>35.6</b>	<b>38.5</b>	<b>36.8</b>
Service Industry	9.6	15.1	13.6	14.6	14.2	15.1	16.3	15.5
Residential	18.2	20.8	19.1	20.8	18.5	20.5	22.3	21.3
<b>Agriculture</b>	<b>12.7</b>	<b>12.6</b>	<b>12.7</b>	<b>12.8</b>	<b>12.6</b>	<b>12.9</b>	<b>12.4</b>	<b>12.3</b>
On Farm Fuel Use	2.1	2.4	2.3	2.9	2.9	2.8	2.6	2.6
Crop Production	3.1	2.7	4.0	3.6	3.4	3.8	3.6	3.3
Animal Production	7.4	7.5	6.4	6.3	6.3	6.3	6.3	6.3
<b>Waste</b>	<b>7.4</b>	<b>9.3</b>	<b>8.4</b>	<b>8.7</b>	<b>8.6</b>	<b>8.5</b>	<b>8.5</b>	<b>8.6</b>
Solid Waste	6.9	8.7	7.8	8.1	8.1	7.9	7.9	8.0
Wastewater	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Waste Incineration	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Coal Production</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>13.2</b>	<b>11.9</b>	<b>10.3</b>	<b>10.5</b>	<b>9.9</b>	<b>9.5</b>	<b>9.0</b>	<b>8.9</b>
Light Manufacturing	9.9	8.0	6.6	6.8	6.7	6.5	6.1	5.7
Construction	2.9	3.3	3.2	3.2	2.7	2.6	2.5	2.7
Forest Resources	0.4	0.6	0.5	0.5	0.4	0.5	0.4	0.5

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>18.6</b>	<b>20.6</b>	<b>19.6</b>	<b>19.4</b>	<b>20.6</b>	<b>21.3</b>	<b>21.2</b>	<b>20.8</b>
<b>Oil and Gas</b>	<b>1.3</b>	<b>0.8</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>
Upstream Oil and Gas	1.3	0.8	0.3	0.4	0.4	0.5	0.7	0.7
Natural Gas Production and Processing	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Conventional Oil Production	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3
Conventional Light Oil Production	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	1.2	0.6	0.0	0.1	0.0	0.1	0.3	0.3
Downstream Oil and Gas	0.0	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
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Electricity</b>	<b>0.4</b>	<b>0.3</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
<b>Transportation</b>	<b>5.1</b>	<b>5.5</b>	<b>6.0</b>	<b>6.1</b>	<b>7.2</b>	<b>7.0</b>	<b>7.1</b>	<b>6.9</b>
Passenger Transport	2.3	3.0	3.1	3.1	3.7	3.8	3.7	3.6
Cars, Light Trucks and Motorcycles	1.9	2.5	2.7	2.7	3.2	3.3	3.3	3.1
Bus, Rail and Domestic Aviation	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.4
Freight Transport	1.4	1.9	2.3	2.7	3.0	2.8	3.0	2.8
Heavy Duty Trucks, Rail	1.3	1.8	2.3	2.6	2.9	2.7	2.9	2.7
Domestic Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	1.4	0.6	0.6	0.4	0.5	0.5	0.5	0.5
<b>Heavy Industry</b>	<b>1.3</b>	<b>1.5</b>	<b>1.3</b>	<b>1.2</b>	<b>1.1</b>	<b>1.3</b>	<b>1.2</b>	<b>1.2</b>
Mining	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Smelting and Refining (Non Ferrous Metals)	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.0
Pulp and Paper	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Cement	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chemicals & Fertilizers	0.3	0.9	0.8	0.9	0.8	0.9	0.8	0.8
<b>Buildings</b>	<b>3.1</b>	<b>2.7</b>	<b>2.6</b>	<b>2.7</b>	<b>2.5</b>	<b>2.9</b>	<b>2.9</b>	<b>2.6</b>
Service Industry	1.4	1.6	1.6	1.6	1.4	1.6	1.7	1.5
Residential	1.7	1.1	1.0	1.1	1.1	1.3	1.3	1.1
<b>Agriculture</b>	<b>6.0</b>	<b>8.0</b>	<b>7.4</b>	<b>6.9</b>	<b>7.3</b>	<b>7.7</b>	<b>7.3</b>	<b>7.5</b>
On Farm Fuel Use	1.2	1.6	1.1	1.2	1.3	1.1	1.1	1.0
Crop Production	2.2	2.0	2.6	2.2	2.5	3.1	2.7	3.0
Animal Production	2.6	4.5	3.7	3.5	3.5	3.5	3.5	3.5
<b>Waste</b>	<b>0.8</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>
Solid Waste	0.7	1.0	1.1	1.1	1.1	1.0	1.0	1.0
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	0.0
<b>Coal Production</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>0.7</b>	<b>0.8</b>	<b>0.6</b>
Light Manufacturing	0.4	0.5	0.6	0.6	0.7	0.5	0.5	0.4
Construction	0.2	0.2	0.2	0.2	0.2	0.2	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>45.2</b>	<b>69.5</b>	<b>69.9</b>	<b>69.3</b>	<b>71.6</b>	<b>73.7</b>	<b>75.0</b>	<b>75.0</b>
<b>Oil and Gas</b>	<b>12.1</b>	<b>24.9</b>	<b>22.2</b>	<b>21.6</b>	<b>22.1</b>	<b>22.6</b>	<b>24.7</b>	<b>24.1</b>
Upstream Oil and Gas	10.9	23.3	20.3	19.9	20.2	20.7	22.7	22.0
Natural Gas Production and Processing	2.1	4.1	3.7	3.6	3.4	3.5	3.7	3.7
Conventional Oil Production	6.4	14.8	12.1	11.7	11.9	12.4	13.8	13.6
Conventional Light Oil Production	1.7	2.6	3.9	3.9	4.0	4.3	4.8	4.8
Conventional Heavy Oil Production	4.6	12.2	8.3	7.8	7.9	8.1	9.0	8.7
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	0.0	2.1	2.0	2.2	2.4	2.3	2.4	2.3
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	0.0	2.1	2.0	2.2	2.4	2.3	2.4	2.3
Oil and Natural Gas Transmission	2.4	2.3	2.5	2.4	2.5	2.5	2.8	2.5
Downstream Oil and Gas	1.2	1.6	1.8	1.7	1.9	1.9	2.0	2.1
Petroleum Refining	0.7	1.4	1.6	1.5	1.7	1.7	1.8	1.8
Natural Gas Distribution	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>Electricity</b>	<b>11.1</b>	<b>15.0</b>	<b>15.4</b>	<b>14.4</b>	<b>14.9</b>	<b>14.2</b>	<b>14.4</b>	<b>14.6</b>
<b>Transportation</b>	<b>5.3</b>	<b>6.2</b>	<b>8.9</b>	<b>8.4</b>	<b>9.3</b>	<b>10.2</b>	<b>9.9</b>	<b>10.2</b>
Passenger Transport	2.7	3.3	4.3	3.9	4.5	4.8	4.3	4.5
Cars, Light Trucks and Motorcycles	2.5	3.1	4.1	3.7	4.3	4.5	4.1	4.3
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	1.6	2.5	3.9	4.0	4.3	5.0	5.0	5.1
Heavy Duty Trucks, Rail	1.5	2.5	3.9	4.0	4.3	5.0	5.0	5.1
Domestic Aviation and Marine	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	1.0	0.5	0.6	0.4	0.5	0.5	0.5	0.6
<b>Heavy Industry</b>	<b>1.6</b>	<b>2.2</b>	<b>2.8</b>	<b>4.1</b>	<b>3.9</b>	<b>3.5</b>	<b>3.3</b>	<b>3.2</b>
Mining	1.0	1.3	2.1	3.2	3.0	2.5	2.5	2.4
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Iron and Steel	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Cement	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.2	0.6	0.5	0.7	0.7	0.8	0.5	0.6
<b>Buildings</b>	<b>3.1</b>	<b>3.3</b>	<b>3.5</b>	<b>3.3</b>	<b>3.1</b>	<b>3.2</b>	<b>3.3</b>	<b>3.1</b>
Service Industry	1.0	1.6	1.5	1.5	1.3	1.4	1.4	1.3
Residential	2.1	1.6	2.0	1.8	1.8	1.9	1.9	1.8
<b>Agriculture</b>	<b>10.6</b>	<b>16.6</b>	<b>15.4</b>	<b>15.8</b>	<b>16.6</b>	<b>18.1</b>	<b>17.6</b>	<b>17.9</b>
On Farm Fuel Use	2.7	4.0	4.5	4.6	4.5	5.0	5.2	5.1
Crop Production	3.5	4.7	4.5	4.9	5.8	6.8	6.2	6.6
Animal Production	4.3	8.0	6.4	6.3	6.3	6.3	6.2	6.2
<b>Waste</b>	<b>0.8</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>
Solid Waste	0.7	0.9	1.0	1.0	1.0	1.0	1.1	1.1
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
<b>Coal Production</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.6</b>	<b>0.3</b>	<b>0.6</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.8</b>	<b>0.7</b>
Light Manufacturing	0.5	0.2	0.4	0.5	0.5	0.4	0.6	0.5
Construction	0.1	0.1	0.2	0.2	0.1	0.2	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>175.3</b>	<b>232.8</b>	<b>241.1</b>	<b>245.7</b>	<b>259.6</b>	<b>272.2</b>	<b>275.7</b>	<b>274.1</b>
<b>Oil and Gas</b>	<b>69.1</b>	<b>97.3</b>	<b>103.4</b>	<b>105.4</b>	<b>116.7</b>	<b>126.9</b>	<b>130.0</b>	<b>132.3</b>
Upstream Oil and Gas	65.5	92.6	99.1	101.0	111.9	121.5	124.5	126.8
Natural Gas Production and Processing	29.2	43.3	33.6	32.2	36.7	40.5	39.7	40.0
Conventional Oil Production	17.0	12.9	12.3	13.3	15.3	16.5	16.5	14.8
Conventional Light Oil Production	9.5	8.2	6.6	7.1	8.6	9.4	9.7	8.5
Conventional Heavy Oil Production	7.5	4.8	5.7	6.2	6.7	7.1	6.9	6.2
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	15.4	32.5	51.1	53.2	57.5	61.3	65.1	68.6
Mining and Extraction	4.5	9.6	14.3	14.4	14.7	15.9	17.2	18.1
In-situ	4.8	11.3	20.0	21.7	25.1	27.9	29.9	33.7
Upgrading	6.1	11.6	16.7	17.0	17.7	17.5	18.1	16.8
Oil and Natural Gas Transmission	3.9	4.0	2.1	2.3	2.5	3.2	3.1	3.4
Downstream Oil and Gas	3.6	4.7	4.3	4.4	4.8	5.4	5.4	5.6
Petroleum Refining	3.2	4.4	4.1	4.2	4.6	5.2	5.3	5.4
Natural Gas Distribution	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
<b>Electricity</b>	<b>39.9</b>	<b>49.3</b>	<b>46.5</b>	<b>46.6</b>	<b>43.9</b>	<b>45.2</b>	<b>46.4</b>	<b>46.1</b>
<b>Transportation</b>	<b>17.0</b>	<b>25.2</b>	<b>30.8</b>	<b>30.4</b>	<b>32.3</b>	<b>34.0</b>	<b>34.8</b>	<b>32.5</b>
Passenger Transport	9.5	10.6	11.1	10.3	11.1	11.9	12.4	11.8
Cars, Light Trucks and Motorcycles	8.5	9.3	9.8	9.1	9.7	10.4	10.9	10.3
Bus, Rail and Domestic Aviation	1.0	1.3	1.3	1.3	1.5	1.6	1.5	1.5
Freight Transport	5.9	13.6	18.6	19.2	20.3	21.2	21.4	19.8
Heavy Duty Trucks, Rail	5.7	13.4	18.5	19.0	20.1	21.0	21.2	19.6
Domestic Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other: Recreational, Commercial and Residential	1.5	0.9	1.0	0.9	0.9	0.9	1.0	0.9
<b>Heavy Industry</b>	<b>12.3</b>	<b>16.7</b>	<b>15.9</b>	<b>17.3</b>	<b>17.1</b>	<b>17.8</b>	<b>17.2</b>	<b>17.0</b>
Mining	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.2
Smelting and Refining (Non Ferrous Metals)	0.4	0.6	0.8	0.8	0.0	0.8	0.7	0.8
Pulp and Paper	0.5	0.8	0.7	0.7	0.8	0.8	0.8	0.7
Iron and Steel	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cement	1.1	1.8	1.7	1.7	1.6	1.5	1.4	1.5
Lime & Gypsum	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Chemicals & Fertilizers	9.8	12.8	12.0	13.4	14.1	14.1	13.6	13.5
<b>Buildings</b>	<b>12.1</b>	<b>16.1</b>	<b>17.9</b>	<b>19.1</b>	<b>22.8</b>	<b>20.3</b>	<b>19.7</b>	<b>19.3</b>
Service Industry	5.3	8.5	9.5	10.2	14.0	11.5	10.4	10.8
Residential	6.9	7.7	8.4	8.9	8.8	8.9	9.3	8.4
<b>Agriculture</b>	<b>17.2</b>	<b>23.3</b>	<b>21.4</b>	<b>21.3</b>	<b>21.5</b>	<b>22.0</b>	<b>21.9</b>	<b>21.5</b>
On Farm Fuel Use	3.2	4.0	4.2	4.0	3.7	3.7	3.7	3.3
Crop Production	3.7	4.0	4.7	5.1	5.5	5.9	5.8	5.9
Animal Production	10.2	15.4	12.5	12.2	12.3	12.4	12.4	12.3
<b>Waste</b>	<b>1.4</b>	<b>2.1</b>	<b>2.0</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>	<b>2.3</b>
Solid Waste	1.3	2.0	1.9	1.9	2.0	2.1	2.1	2.2
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
<b>Coal Production</b>	<b>0.7</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.6</b>	<b>0.4</b>	<b>0.4</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>5.6</b>	<b>2.2</b>	<b>2.6</b>	<b>2.9</b>	<b>2.7</b>	<b>3.1</b>	<b>3.2</b>	<b>2.7</b>
Light Manufacturing	4.7	1.3	2.0	2.2	2.0	2.4	2.4	1.9
Construction	0.8	0.8	0.5	0.6	0.6	0.6	0.6	0.7
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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>51.9</b>	<b>63.9</b>	<b>59.4</b>	<b>59.9</b>	<b>61.1</b>	<b>61.8</b>	<b>61.2</b>	<b>60.9</b>
<b>Oil and Gas</b>	<b>7.5</b>	<b>11.6</b>	<b>12.8</b>	<b>14.1</b>	<b>14.2</b>	<b>14.7</b>	<b>14.6</b>	<b>13.7</b>
Upstream Oil and Gas	6.1	11.0	11.9	13.4	13.4	14.0	13.9	12.9
Natural Gas Production and Processing	3.9	8.9	10.4	11.7	11.8	12.0	12.0	10.9
Conventional Oil Production	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6
Conventional Light Oil Production	0.7	0.6	0.5	0.6	0.6	0.6	0.6	0.6
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	1.5	1.4	1.1	1.1	1.0	1.4	1.2	1.5
Downstream Oil and Gas	1.5	0.6	0.8	0.7	0.8	0.7	0.7	0.8
Petroleum Refining	1.3	0.5	0.7	0.6	0.7	0.6	0.6	0.7
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Electricity</b>	<b>0.9</b>	<b>1.0</b>	<b>1.0</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>
<b>Transportation</b>	<b>15.9</b>	<b>22.0</b>	<b>21.4</b>	<b>20.3</b>	<b>21.7</b>	<b>22.1</b>	<b>22.0</b>	<b>22.7</b>
Passenger Transport	9.4	11.1	10.2	9.6	9.9	10.2	10.3	10.7
Cars, Light Trucks and Motorcycles	8.2	9.6	9.1	8.5	8.7	8.9	9.1	9.4
Bus, Rail and Domestic Aviation	1.2	1.5	1.1	1.1	1.2	1.3	1.3	1.3
Freight Transport	6.1	10.6	10.9	10.5	11.5	11.6	11.4	11.7
Heavy Duty Trucks, Rail	4.8	7.9	8.1	8.1	8.7	9.3	9.3	9.8
Domestic Aviation and Marine	1.2	2.7	2.8	2.4	2.8	2.3	2.1	1.9
Other: Recreational, Commercial and Residential	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
<b>Heavy Industry</b>	<b>8.7</b>	<b>7.1</b>	<b>5.7</b>	<b>5.8</b>	<b>5.8</b>	<b>5.5</b>	<b>5.8</b>	<b>6.0</b>
Mining	0.5	0.3	0.3	0.2	0.3	0.4	0.4	0.5
Smelting and Refining (Non Ferrous Metals)	2.0	1.7	1.4	1.4	1.4	1.3	1.0	1.2
Pulp and Paper	4.1	1.9	2.0	1.8	1.9	1.8	2.0	1.8
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	1.0	2.0	1.4	1.6	1.5	1.5	1.8	1.9
Lime & Gypsum	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2
Chemicals & Fertilizers	0.9	0.9	0.4	0.4	0.3	0.3	0.3	0.3
<b>Buildings</b>	<b>7.5</b>	<b>8.4</b>	<b>7.3</b>	<b>8.3</b>	<b>8.0</b>	<b>7.8</b>	<b>7.6</b>	<b>7.3</b>
Service Industry	3.0	3.6	3.3	3.5	3.6	3.5	3.4	3.2
Residential	4.6	4.7	3.9	4.7	4.4	4.4	4.2	4.2
<b>Agriculture</b>	<b>3.0</b>	<b>3.2</b>	<b>2.8</b>	<b>2.7</b>	<b>2.8</b>	<b>2.9</b>	<b>2.8</b>	<b>2.9</b>
On Farm Fuel Use	0.6	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Crop Production	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3
Animal Production	2.0	2.5	2.0	1.9	2.0	2.0	2.0	2.0
<b>Waste</b>	<b>4.1</b>	<b>4.9</b>	<b>4.6</b>	<b>4.6</b>	<b>4.4</b>	<b>4.3</b>	<b>4.3</b>	<b>4.3</b>
Solid Waste	4.0	4.7	4.4	4.4	4.2	4.1	4.1	4.1
Wastewater	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Waste Incineration	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Coal Production</b>	<b>1.9</b>	<b>1.8</b>	<b>2.0</b>	<b>1.9</b>	<b>2.0</b>	<b>2.0</b>	<b>1.9</b>	<b>1.7</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>2.3</b>	<b>3.9</b>	<b>1.9</b>	<b>1.8</b>	<b>2.0</b>	<b>2.1</b>	<b>1.9</b>	<b>2.0</b>
Light Manufacturing	1.4	3.1	1.3	1.3	1.5	1.6	1.3	1.5
Construction	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4
Forest Resources	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

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

	1990	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>0.5</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.3</b>	<b>0.3</b>
<b>Oil and Gas</b>	<b>0.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
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 and Natural Gas Transmission	-	-	-	-	-	-	-	-
Downstream Oil and Gas	-	-	-	-	-	-	-	-
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
<b>Electricity</b>	<b>0.1</b>	<b>0.0</b>						
<b>Transportation</b>	<b>0.3</b>	<b>0.2</b>						
Passenger Transport	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Cars, Light Trucks and Motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus, Rail and Domestic Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freight Transport	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Heavy Duty Trucks, Rail	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Heavy Industry</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
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
Pulp and Paper	0.0	-	-	0.0	0.0	-	0.0	0.0
Iron and Steel	0.0	-	-	0.0	0.0	-	0.0	0.0
Cement	0.0	-	-	0.0	0.0	-	0.0	0.0
Lime & Gypsum	0.0	-	-	0.0	0.0	-	0.0	0.0
Chemicals & Fertilizers	0.0	-	-	0.0	0.0	0.0	0.0	0.0
<b>Buildings</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>
Service Industry	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0
Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Agriculture</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
On Farm Fuel Use	0.0	0.0	-	-	-	-	-	-
Crop Production	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-
<b>Waste</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Solid Waste	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	0.0
<b>Coal Production</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.



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

	1999	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>1.2</b>	<b>1.6</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.4</b>	<b>1.3</b>	<b>1.4</b>
<b>Oil and Gas</b>	<b>0.1</b>	<b>0.2</b>						
Upstream Oil and Gas	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Natural Gas Production and Processing	0.0	0.1	0.2	0.1	0.2	0.2	0.1	0.1
Conventional Oil Production	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	-	-	-	-	-	-	-	-
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 and Natural Gas 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	-	-	0.0	-	-	-	-	-
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Electricity</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>x</b>	<b>x</b>
<b>Transportation</b>	<b>0.5</b>	<b>0.8</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>
Passenger Transport	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
Cars, Light Trucks and Motorcycles	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Bus, Rail and Domestic Aviation	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	0.3	0.6	0.4	0.5	0.5	0.5	0.6	0.7
Heavy Duty Trucks, Rail	0.3	0.5	0.4	0.5	0.5	0.5	0.6	0.7
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.1	0.0	x	x	0.0	0.0	0.0	0.0
<b>Heavy Industry</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.0</b>	<b>0.1</b>
Mining	0.2	0.2	0.2	0.2	0.3	0.2	0.0	0.1
Smelting and Refining (Non Ferrous Metals)	-	0.0	0.0	-	-	-	-	0.0
Pulp and Paper	-	0.0	0.0	-	-	-	-	0.0
Iron and Steel	-	0.0	0.0	-	-	-	-	0.0
Cement	-	0.0	0.0	-	-	-	-	0.0
Lime & Gypsum	-	0.0	-	-	-	-	-	0.0
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Buildings</b>	<b>0.3</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
Service Industry	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Residential	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Agriculture</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
On Farm Fuel Use	0.0	0.0	-	-	-	-	-	-
Crop Production	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-
<b>Waste</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Solid Waste	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	0.0
<b>Coal Production</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Light Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	x	x
Construction	0.0	0.0	0.0	0.0	0.0	0.0	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

x Indicates data has been suppressed to respect confidentiality.

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

	1999	2005	2010	2011	2012	2013	2014	2015
	<i>Mt CO<sub>2</sub> eq</i>							
<b>GHG TOTAL</b>	<b>0.3</b>	<b>0.5</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.6</b>
<b>Oil and Gas</b>	-	x	x	x	x	0.0	0.0	0.0
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 and Natural Gas Transmission	-	x	x	x	x	-	-	-
Downstream Oil and Gas	-	-	-	-	-	-	-	-
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
<b>Electricity</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>x</b>	<b>x</b>	<b>0.1</b>	<b>x</b>	<b>x</b>
<b>Transportation</b>	<b>0.1</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.4</b>
Passenger Transport	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cars, Light Trucks and Motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus, Rail and Domestic Aviation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.3
Heavy Duty Trucks, Rail	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Other: Recreational, Commercial and Residential	0.0	0.1	x	x	0.1	0.1	0.1	0.1
<b>Heavy Industry</b>	<b>0.1</b>	<b>0.0</b>						
Mining	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Smelting and Refining (Non Ferrous Metals)	-	-	-	-	-	-	-	-
Pulp and Paper	-	-	-	-	-	-	-	-
Iron and Steel	-	-	-	-	-	-	-	-
Cement	-	-	-	-	-	-	-	-
Lime & Gypsum	-	-	-	-	-	-	-	-
Chemicals & Fertilizers	0.0	-	-	0.0	0.0	0.0	0.0	0.0
<b>Buildings</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
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
<b>Agriculture</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
On Farm Fuel Use	-	-	-	-	-	-	-	-
Crop Production	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-
<b>Waste</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Solid Waste	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
<b>Coal Production</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>x</b>	<b>x</b>
Light Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	x	x
Construction	0.0	0.0	0.0	0.0	0.0	0.0	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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

x Indicates data has been suppressed to respect confidentiality.



**Table A12-15 GHG Emissions for Nunavut and Northwest Territories by Canadian Economic Sector, Selected Years**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	<i>Mt CO<sub>2</sub> eq</i>								
<b>GHG TOTAL</b>	<b>1.7</b>	<b>1.6</b>	<b>1.4</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>1.9</b>	<b>1.7</b>	<b>1.6</b>
<b>Oil and Gas</b>	<b>0.4</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>
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	-	-	-	-	-	-	-	-	-
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining and Extraction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
In-situ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upgrading	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil and Natural Gas 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	-	-	-	-	-	-	-	-	-
<b>Electricity</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>
<b>Transportation</b>	<b>0.6</b>	<b>0.5</b>	<b>0.4</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.8</b>	<b>0.7</b>	<b>0.8</b>
Passenger Transport	0.2	0.2	0.2	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	0.0
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3
Heavy Duty Trucks, Rail	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2
<b>Heavy Industry</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>
Mining	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
Pulp and Paper	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
Cement	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Buildings</b>	<b>0.4</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.6</b>	<b>0.6</b>	<b>0.3</b>
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
<b>Agriculture</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
On Farm Fuel Use	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Crop Production	-	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-	-
<b>Waste</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Solid Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Coal Production</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Light Manufacturing, Construction &amp; Forest Resources</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
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.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

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

- Indicates no emissions.

0.0 Indicates emissions of less than 0.05 Mt CO<sub>2</sub> eq; truncated due to rounding.

# Annex 13

## 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 and provincial 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<sub>6</sub>) emissions associated with switchgear and other electrical equipment, which is accounted for in the Industrial Processes and Product Use 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, and can be either public or private generators. 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.

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 57-003-X), in the publication *Electric Power Generation, Transmission and Distribution (EPGTD)* (Statistics Canada 57-202-X) and online via CANSIM (Tables 127-0006, 127-0007 and 127-0008).

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,<sup>1</sup> while generation data are from CANSIM (2005–2013) and the EPGTD publication (1990–2004).

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<sup>1</sup> Occasionally, Statistics Canada revises some of its historic data, which can affect the values provided in Table A13-1 to Table A13-14.

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 in transmission and distribution are subtracted from overall total electricity generation, while SF<sub>6</sub> emissions associated with equipment used in electricity transmission and distribution are added to overall total GHG emissions. The electric energy losses in transmission and distribution 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 CANSIM 127-0008. Likewise, the SF<sub>6</sub> emission values are based on the electric utility sector's share of total SF<sub>6</sub> 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.

**Table A13-1 Electricity Generation and GHG Emission Details for Canada<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
						<i>kt CO<sub>2</sub> equivalent</i>			
<b>Combustion</b>	<b>94 300</b>	<b>130 000</b>	<b>122 000</b>	<b>101 000</b>	<b>94 000</b>	<b>91 200</b>	<b>87 600</b>	<b>84 700</b>	<b>83 600</b>
Coal	80 200	106 000	95 000	77 400	68 200	63 000	63 700	61 200	61 000
Natural Gas	2 720	13 800	15 400	18 600	21 700	23 900	19 300	18 600	17 700
Other Fuels <sup>4</sup>	11 300	9 400	11 300	4 690	4 130	4 260	4 550	4 930	4 950
<b>Other Emissions<sup>5</sup></b>	<b>–</b>	<b>27</b>	<b>52</b>	<b>54</b>	<b>61</b>	<b>83</b>	<b>63</b>	<b>73</b>	<b>87</b>
<b>Overall Total<sup>6,7</sup></b>	<b>94 300</b>	<b>130 000</b>	<b>122 000</b>	<b>101 000</b>	<b>94 100</b>	<b>91 300</b>	<b>87 600</b>	<b>84 700</b>	<b>83 700</b>
						<b>Electricity Generation<sup>8,9</sup></b>			
						<i>GWh</i>			
<b>Combustion</b>	<b>101 000</b>	<b>146 000</b>	<b>140 000</b>	<b>117 000</b>	<b>119 000</b>	<b>107 000</b>	<b>104 000</b>	<b>106 000</b>	<b>108 000</b>
Coal	82 200	106 000	93 900	74 300	70 200	60 200	60 900	61 900	61 600
Natural Gas	4 140	26 600	29 800	33 600	41 000	39 100	35 600	36 200	38 500
Other Fuels	14 800	13 400	16 700	8 650	7 670	7 460	7 900	8 000	8 280
Refined Petroleum Products	14 700	10 600	10 800	3 010	2 310	2 320	2 160	2 820	3 480
Biomass	14	1 830	1 780	2 310	2 150	1 990	2 050	1 760	1 770
Other	91	960	4 100	3 300	3 200	3 100	3 700	3 400	3 000
<b>Steam from Waste Heat</b>	<b>–</b>	<b>–</b>	<b>32</b>	<b>7 090</b>	<b>6 490</b>	<b>7 530</b>	<b>7 110</b>	<b>7 360</b>	<b>7 530</b>
<b>Nuclear</b>	<b>68 800</b>	<b>68 700</b>	<b>86 800</b>	<b>85 500</b>	<b>88 300</b>	<b>89 500</b>	<b>97 600</b>	<b>101 200</b>	<b>95 700</b>
<b>Hydro</b>	<b>263 000</b>	<b>323 000</b>	<b>327 000</b>	<b>321 000</b>	<b>342 000</b>	<b>345 000</b>	<b>357 000</b>	<b>348 000</b>	<b>346 000</b>
<b>Other Renewables<sup>10</sup></b>	<b>26</b>	<b>264</b>	<b>1 580</b>	<b>8 780</b>	<b>10 370</b>	<b>11 500</b>	<b>11 400</b>	<b>12 900</b>	<b>17 100</b>
<b>Other Generation<sup>11</sup></b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>2 980</b>	<b>2 510</b>	<b>2 720</b>	<b>2 440</b>	<b>2 240</b>	<b>4 730</b>
<b>Overall Total<sup>7</sup></b>	<b>433 000</b>	<b>539 000</b>	<b>556 000</b>	<b>542 000</b>	<b>568 000</b>	<b>563 000</b>	<b>580 000</b>	<b>578 000</b>	<b>580 000</b>
						<b>Greenhouse Gas Intensity<sup>12</sup></b>			
						<i>g GHG / kWh electricity generated</i>			
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	<b>220</b>	<b>240</b>	<b>220</b>	<b>180</b>	<b>160</b>	<b>160</b>	<b>150</b>	<b>150</b>	<b>140</b>
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	<b>0.004</b>	<b>0.009</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	<b>0.004</b>	<b>0.005</b>	<b>0.004</b>	<b>0.004</b>	<b>0.003</b>	<b>0.003</b>	<b>0.003</b>	<b>0.003</b>	<b>0.003</b>
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	<b>220</b>	<b>240</b>	<b>220</b>	<b>190</b>	<b>170</b>	<b>160</b>	<b>150</b>	<b>150</b>	<b>140</b>
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	<b>31 000</b>	<b>42 000</b>	<b>37 000</b>	<b>52 000</b>	<b>57 000</b>	<b>46 000</b>	<b>41 000</b>	<b>29 000</b>	<b>29 000<sup>17</sup></b>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	<b>200</b>	<b>200</b>	<b>160</b>	<b>180</b>	<b>140</b>	<b>190</b>	<b>220</b>	<b>130</b>	<b>190</b>
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>240</b>	<b>260</b>	<b>230</b>	<b>210</b>	<b>180</b>	<b>180</b>	<b>160</b>	<b>150</b>	<b>152</b>

**Notes:**

- Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
- Preliminary data.
- Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
- 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.
- GHG emissions from on-site combustion of fuel not directly related to electricity generation.
- GHG emissions from the flooding of land for hydro dams are not included.
- Totals may not add up to overall total due to rounding.
- Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
- Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
- Other Renewables - includes electricity generation by wind, tidal and solar.
- NAICS category 221119, Other Electric Power Generation.
- Intensity values have been rounded so as to present the estimated level of accuracy.
- Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
- Includes transmission line losses, metering differences and other losses.
- The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
- Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
- Since 2015 unallocated energy data was not available, the 2014 value was used.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1

**Table A13–2 Electricity Generation and GHG Emission Details for Newfoundland and Labrador<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	1 650	823	819	691	865	851	867	1 206	1 319
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels <sup>4</sup>	1 650	823	819	691	865	851	867	1 206	1 319
<b>Other Emissions<sup>5</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>6,7</sup></b>	<b>1 650</b>	<b>823</b>	<b>819</b>	<b>691</b>	<b>865</b>	<b>851</b>	<b>867</b>	<b>1 206</b>	<b>1 319</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	2 090	1 020	1 360	916	1 009	970	1 090	1 470	1 560
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 020	1 360	916	1 009	970	1 090	1 470	1 560
<b>Steam from Waste Heat</b>	–	–	–	–	–	–	–	–	–
<b>Nuclear</b>	–	–	–	–	–	–	–	–	–
<b>Hydro</b>	34 300	41 800	38 900	39 400	39 100	41 300	40 500	38 200	38 800
<b>Other Renewables<sup>10</sup></b>	0	–	–	183	198	195	192	177	277
<b>Other Generation<sup>11</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	<b>36 400</b>	<b>42 800</b>	<b>40 300</b>	<b>40 500</b>	<b>40 300</b>	<b>42 500</b>	<b>41 800</b>	<b>39 800</b>	<b>40 600</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	45	19	20	17	21	20	21	30	32
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.0006	0.0002	0.0002	0.0002	0.0004	0.0003	0.0003	0.0004	0.0005
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.001	0.0005	0.0	0.0	0.001	0.001	0.0	0.001	0.001
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	45	19	20	17	21	20	21	30	32
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	990	1 300	810	1 300	1 300	1 300	1 400	1 200	800
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	0.94	0.92	0.50	0.54	0.83	1.0	1.0	1.3	3.4
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>46</b>	<b>20</b>	<b>21</b>	<b>18</b>	<b>22</b>	<b>21</b>	<b>21</b>	<b>31</b>	<b>33</b>

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1

**Table A13–3 Electricity Generation and GHG Emission Details for Prince Edward Island<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	104	53.0	4.76	1.59	1.23	10.8	3.9	4.3	16.5
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels <sup>4</sup>	104	53.0	4.76	1.59	1.23	10.8	3.9	4.3	16.5
<b>Other Emissions<sup>5</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>6,7</sup></b>	104	53.0	4.76	1.59	1.23	10.8	3.9	4.3	16.5
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	81.1	48.1	6.31	3.78	4.81	14.5	8.2	7.1	12.2
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	81.1	48.1	6.31	3.78	4.81	14.5	8.2	7.1	12.2
<b>Steam from Waste Heat</b>	–	–	–	–	–	–	–	–	–
<b>Nuclear</b>	–	–	–	–	–	–	–	–	–
<b>Hydro</b>	–	–	–	–	–	–	–	–	–
<b>Other Renewables<sup>10</sup></b>	–	–	40.1	458	488	468	499	611	830
<b>Other Generation<sup>11</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	81.1	48.1	46.4	461	492	482	507	618	842
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	1,300	1,100	100	3.4	2.5	22	8	7	20
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.02	0.01	0.001	0.00004	0.00006	0.0005	0.0002	0.0001	0.0008
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.03	0.02	0.002	0.0001	0.0001	0.0004	0.0001	0.0001	0.0003
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	1 300	1 100	100	3.4	2.5	22	8	7	20
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	unk	unk	unk	8.6	21	20	20	33	16
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	0	0	–	–	0	0	0	0	0
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	*	*	*	*	*	*	*	*	*

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

unk Indicates unknown as appropriate data were unavailable

\* Due to the high level of imports from New Brunswick, values for New Brunswick are more indicative of GHG consumption intensity.

**Table A13–4 Electricity Generation and GHG Emission Details for Nova Scotia<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	<b>6 870</b>	<b>9 440</b>	<b>10 600</b>	<b>8 730</b>	<b>8 400</b>	<b>7 600</b>	<b>7 490</b>	<b>7 140</b>	<b>6 720</b>
Coal	x	8 160	5 280	6 290	6 040	5 090	5 060	4 960	4 630
Natural Gas	–	–	x	x	x	x	x	760	690
Other Fuels <sup>4</sup>	x	1 280	x	x	x	x	x	1 420	1 400
<b>Other Emissions<sup>5</sup></b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>
<b>Overall Total<sup>6,7</sup></b>	<b>6 870</b>	<b>9 440</b>	<b>10 600</b>	<b>8 730</b>	<b>8 400</b>	<b>7 600</b>	<b>7 490</b>	<b>7 140</b>	<b>6 720</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	<b>8 440</b>	<b>10 500</b>	<b>11 100</b>	<b>10 300</b>	<b>9 500</b>	<b>9 210</b>	<b>8 770</b>	<b>8 560</b>	<b>9 340</b>
Coal	6 020	8 850	6 770	6 790	6 020	5 390	5 500	5 550	6 360
Natural Gas	–	–	181	2 270	2 430	2 260	1 370	1 470	1 300
Other Fuels	2 430	1 610	4 110	1 270	1 050	1 560	1 890	1 550	1 680
<b>Steam from Waste Heat</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>
<b>Nuclear</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>
<b>Hydro</b>	<b>1 120</b>	<b>887</b>	<b>1 040</b>	<b>969</b>	<b>1 070</b>	<b>806</b>	<b>964</b>	<b>1 096</b>	<b>1 009</b>
<b>Other Renewables<sup>10</sup></b>	<b>26.1</b>	<b>0</b>	<b>113</b>	<b>414</b>	<b>809</b>	<b>827</b>	<b>780</b>	<b>764</b>	<b>820</b>
<b>Other Generation<sup>11</sup></b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>–</b>
<b>Overall Total<sup>7</sup></b>	<b>9 590</b>	<b>11 300</b>	<b>12 200</b>	<b>11 700</b>	<b>11 400</b>	<b>10 800</b>	<b>10 500</b>	<b>10 400</b>	<b>11 200</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	<b>710</b>	<b>830</b>	<b>860</b>	<b>740</b>	<b>730</b>	<b>700</b>	<b>710</b>	<b>680</b>	<b>600</b>
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	<b>0.007</b>	<b>0.009</b>	<b>0.02</b>	<b>0.04</b>	<b>0.04</b>	<b>0.04</b>	<b>0.03</b>	<b>0.03</b>	<b>0.02</b>
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	<b>720</b>	<b>830</b>	<b>870</b>	<b>750</b>	<b>740</b>	<b>700</b>	<b>710</b>	<b>680</b>	<b>600</b>
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	<b>580</b>	<b>830</b>	<b>770</b>	<b>670</b>	<b>640</b>	<b>1 200</b>	<b>600</b>	<b>600<sup>17</sup></b>	<b>1 000</b>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	<b>23</b>	<b>23</b>	<b>29</b>	<b>27</b>	<b>33</b>	<b>22</b>	<b>39</b>	<b>33</b>	<b>33</b>
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>770</b>	<b>900</b>	<b>930</b>	<b>790</b>	<b>790</b>	<b>790</b>	<b>760</b>	<b>730</b>	<b>670</b>

**Notes:**

- Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
- Preliminary data.
- Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
- 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.
- GHG emissions from on-site combustion of fuel not directly related to electricity generation.
- GHG emissions from the flooding of land for hydro dams are not included.
- Totals may not add up to overall total due to rounding.
- Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
- Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
- Other Renewables - includes electricity generation by wind, tidal and solar.
- NAICS category 221119, Other Electric Power Generation.
- Intensity values have been rounded so as to present the estimated level of accuracy.
- Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
- Includes transmission line losses, metering differences and other losses.
- The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
- Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
- Since 2014 unallocated energy data was not available, the 2013 value was used.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations

**Table A13-5 Electricity Generation and GHG Emission Details for New Brunswick<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	<b>6 010</b>	<b>8 970</b>	<b>8 060</b>	<b>5 340</b>	<b>4 920</b>	<b>4 060</b>	<b>4 190</b>	<b>4 390</b>	<b>3 780</b>
Coal	1 170	3 130	2 900	2 080	x	x	x	1 930	1 410
Natural Gas	-	-	x	x	x	x	x	1 040	1 040
Other Fuels <sup>4</sup>	4 840	5 840	x	x	1 620	1 330	1 150	1 410	1 330
<b>Other Emissions<sup>5</sup></b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Overall Total<sup>6,7</sup></b>	<b>6 010</b>	<b>8 970</b>	<b>8 060</b>	<b>5 340</b>	<b>4 920</b>	<b>4 060</b>	<b>4 190</b>	<b>4 390</b>	<b>3 780</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	<b>7 630</b>	<b>11 000</b>	<b>12 100</b>	<b>6 220</b>	<b>6 040</b>	<b>5 160</b>	<b>5 310</b>	<b>5 740</b>	<b>4 800</b>
Coal	1 270	3 820	2 920	2 080	2 340	1 900	2 250	2 560	1 660
Natural Gas	-	-	1 970	1 840	1 960	1 780	1 770	1 710	1 580
Other Fuels	6 360	7 210	7 210	2 300	1 740	1 490	1 290	1 460	1 560
<b>Steam from Waste Heat</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>681</b>	<b>666</b>	<b>551</b>	<b>581</b>	<b>859</b>	<b>747</b>
<b>Nuclear</b>	<b>5 340</b>	<b>3 960</b>	<b>4 380</b>	<b>-</b>	<b>-</b>	<b>414</b>	<b>4 481</b>	<b>5 012</b>	<b>4 277</b>
<b>Hydro</b>	<b>3 460</b>	<b>3 220</b>	<b>3 820</b>	<b>3 330</b>	<b>3 840</b>	<b>2 860</b>	<b>3 400</b>	<b>2 960</b>	<b>2 610</b>
<b>Other Renewables<sup>10</sup></b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>389</b>	<b>693</b>	<b>733</b>	<b>737</b>	<b>786</b>	<b>1 009</b>
<b>Other Generation<sup>11</sup></b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Overall Total<sup>7</sup></b>	<b>16 400</b>	<b>18 200</b>	<b>20 300</b>	<b>10 600</b>	<b>11 200</b>	<b>9 700</b>	<b>14 500</b>	<b>15 400</b>	<b>13 400</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	<b>360</b>	<b>490</b>	<b>390</b>	<b>500</b>	<b>440</b>	<b>420</b>	<b>290</b>	<b>280</b>	<b>280</b>
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	<b>0.004</b>	<b>0.005</b>	<b>0.01</b>	<b>0.03</b>	<b>0.03</b>	<b>0.03</b>	<b>0.02</b>	<b>0.02</b>	<b>0.02</b>
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	<b>0.007</b>	<b>0.009</b>	<b>0.007</b>	<b>0.008</b>	<b>0.007</b>	<b>0.007</b>	<b>0.004</b>	<b>0.004</b>	<b>0.005</b>
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	<b>370</b>	<b>490</b>	<b>400</b>	<b>500</b>	<b>440</b>	<b>420</b>	<b>290</b>	<b>290</b>	<b>280</b>
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	<b>990</b>	<b>1 300</b>	<b>1 100</b>	<b>390</b>	<b>160</b>	<b>13617</b>	<b>10217</b>	<b>7617</b>	<b>48</b>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	<b>0.71</b>	<b>0.70</b>	<b>-</b>	<b>0.35</b>	<b>0.61</b>	<b>0.53</b>	<b>0.82</b>	<b>0.58</b>	<b>0.83</b>
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>390</b>	<b>530</b>	<b>420</b>	<b>520</b>	<b>440</b>	<b>424</b>	<b>275</b>	<b>287</b>	<b>280</b>

Notes:

- Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
- Preliminary data.
- Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
- 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.
- GHG emissions from on-site combustion of fuel not directly related to electricity generation.
- GHG emissions from the flooding of land for hydro dams are not included.
- Totals may not add up to overall total due to rounding.
- Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
- Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
- Other Renewables - includes electricity generation by wind, tidal and solar.
- NAICS category 221119, Other Electric Power Generation.
- Intensity values have been rounded so as to present the estimated level of accuracy.
- Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
- Includes transmission line losses, metering differences and other losses.
- The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
- Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
- For years where unallocated energy data was not available, values were interpolated.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations



**Table A13-6 Electricity Generation and GHG Emission Details for Quebec<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	1 500	569	617	430	405	488	371	249	208
Coal	-	-	-	-	-	-	-	-	-
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels <sup>4</sup>	x	x	x	x	x	x	x	x	x
<b>Other Emissions<sup>5</sup></b>	-	2.5	4.7	-	-	-	-	-	-
<b>Overall Total<sup>6,7</sup></b>	1 500	572	622	430	405	488	371	249	208
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	1 980	1 150	1 390	1 510	1 360	1 260	1 140	1 010	960
Coal	-	-	-	-	-	-	-	-	-
Natural Gas	-	191	212	200	198	191	14	14	0
Other Fuels	1 980	961	1 170	1 310	1 170	1 070	1 130	1 000	960
<b>Steam from Waste Heat</b>	-	-	-	-	-	-	-	-	-
<b>Nuclear</b>	4 070	4 890	4 480	3 550	3 530	4 210	0	0	0
<b>Hydro</b>	112 000	153 000	155 000	161 000	170 000	171 000	182 000	177 000	175 000
<b>Other Renewables<sup>10</sup></b>	-	173	416	1 550	1 000	1 011	1 031	1 010	1 983
<b>Other Generation<sup>11</sup></b>	-	-	-	-	-	-	-	-	-
<b>Overall Total<sup>7</sup></b>	118 000	160 000	161 000	168 000	176 000	178 000	184 000	179 000	178 000
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	13	3.5	3.7	2.5	2.3	2.7	2.0	1.4	1.1
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.0004	0.0005	0.0009	0.0004	0.0002	0.0004	0.0002	0.0001	0.0
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.0003	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	13	3.6	3.9	2.6	2.3	2.7	2.0	1.4	1.2
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	7 300	13 000	9 100	13 000	11 000	12 000	12 000	13 000	18 000
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	37	36	30	31	30	54	67	17	74
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	14	4.1	4.3	3.0	2.6	3.3	2.5	1.6	1.8

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations

**Table A13-7 Electricity Generation and GHG Emission Details for Ontario<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	25 600	41 900	32 300	18 600	13 800	13 900	10 100	6 000	6 200
Coal	24 400	36 500	25 900	11 100	3 800	4 020	2 960	70	0
Natural Gas	x	x	x	x	x	x	7 040	5 810	6 130
Other Fuels <sup>4</sup>	x	x	x	x	x	x	60	130	80
<b>Other Emissions<sup>5</sup></b>	–	0.77	1.4	0.23	0.23	–	–	–	–
<b>Overall Total<sup>6,7</sup></b>	<b>25 600</b>	<b>41 900</b>	<b>32 300</b>	<b>18 600</b>	<b>13 800</b>	<b>13 900</b>	<b>10 100</b>	<b>6 000</b>	<b>6 200</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	29 200	52 200	40 900	27 200	23 100	22 400	17 500	15 200	17 600
Coal	27 800	40 800	29 400	12 300	3 900	4 100	2 850	80	0
Natural Gas	3.18	10 200	10 000	14 100	18 500	17 600	13 900	14 300	16 900
Other Fuels	1 430	1 140	1 440	864	782	703	722	821	758
<b>Steam from Waste Heat</b>	–	–	–	3 630	3 500	4 250	3 330	3 110	3 740
<b>Nuclear</b>	59 400	59 800	78 000	82 000	84 800	84 900	93 100	96 200	91 400
<b>Hydro</b>	38 700	36 600	34 600	31 800	34 600	33 000	36 900	38 200	35 100
<b>Other Renewables<sup>10</sup></b>	–	1.22	26.0	3 190	3 420	4 320	4 240	3 660	4 850
<b>Other Generation<sup>11</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	<b>127 000</b>	<b>149 000</b>	<b>153 000</b>	<b>148 000</b>	<b>149 000</b>	<b>149 000</b>	<b>155 000</b>	<b>156 000</b>	<b>154 000</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	200	280	210	120	91	92	64	38	40
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.002	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.003	0.005	0.004	0.003	0.002	0.002	0.002	0.001	0.001
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	200	280	210	130	93	93	65	38	40
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	10 000	12 000	12 000	15 000	16 000	15 000	22 000	9 000	9 000 <sup>17</sup>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	76	75	50	59	38	56	64	43	56
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>220</b>	<b>310</b>	<b>230</b>	<b>140</b>	<b>100</b>	<b>100</b>	<b>80</b>	<b>40</b>	<b>43</b>

Notes:

- Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
- Preliminary data.
- Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
- 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.
- GHG emissions from on-site combustion of fuel not directly related to electricity generation.
- GHG emissions from the flooding of land for hydro dams are not included.
- Totals may not add up to overall total due to rounding.
- Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
- Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
- Other Renewables - includes electricity generation by wind, tidal and solar.
- NAICS category 221119, Other Electric Power Generation.
- Intensity values have been rounded so as to present the estimated level of accuracy.
- Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
- Includes transmission line losses, metering differences and other losses.
- The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
- Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
- Since 2015 unallocated energy data was not available, the 2014 value was used.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations



**Table A13–8 Electricity Generation and GHG Emission Details for Manitoba<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	<b>442</b>	<b>825</b>	<b>275</b>	<b>66.5</b>	<b>98</b>	<b>78.6</b>	<b>87.2</b>	<b>91.9</b>	<b>100.3</b>
Coal	x	x	x	x	x	x	x	x	x
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels <sup>4</sup>	50.9	12.2	15.8	11.5	12.9	12.9	1.7	1.7	14.9
<b>Other Emissions<sup>5</sup></b>	<b>–</b>	<b>4.8</b>	<b>8.8</b>	<b>12</b>	<b>12</b>	<b>21</b>	<b>16</b>	<b>17</b>	<b>21</b>
<b>Overall Total<sup>6,7</sup></b>	<b>442</b>	<b>830</b>	<b>284</b>	<b>78</b>	<b>110</b>	<b>99</b>	<b>103</b>	<b>108</b>	<b>121</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	<b>399</b>	<b>881</b>	<b>447</b>	<b>84</b>	<b>106</b>	<b>94</b>	<b>91</b>	<b>96</b>	<b>107</b>
Coal	375	869	421	44.4	49.7	51.5	65.4	68.9	63.4
Natural Gas	0.904	–	10.6	22.9	41.1	27.4	24.0	25.2	29.4
Other Fuels	22.4	12.4	15.1	17.0	15.3	15.2	1.5	1.6	14.4
<b>Steam from Waste Heat</b>	<b>–</b>								
<b>Nuclear</b>	<b>–</b>								
<b>Hydro</b>	<b>19 800</b>	<b>31 500</b>	<b>36 400</b>	<b>33 300</b>	<b>34 200</b>	<b>32 200</b>	<b>35 300</b>	<b>34 500</b>	<b>34 800</b>
<b>Other Renewables<sup>10</sup></b>	<b>–</b>	<b>–</b>	<b>53.4</b>	<b>343</b>	<b>747</b>	<b>877</b>	<b>868</b>	<b>911</b>	<b>1 050</b>
<b>Other Generation<sup>11</sup></b>	<b>–</b>								
<b>Overall Total<sup>7</sup></b>	<b>20 200</b>	<b>32 400</b>	<b>36 900</b>	<b>33 700</b>	<b>35 100</b>	<b>33 200</b>	<b>36 300</b>	<b>35 500</b>	<b>35 900</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	<b>22</b>	<b>25</b>	<b>7.6</b>	<b>2.3</b>	<b>3.1</b>	<b>3.0</b>	<b>2.8</b>	<b>3.0</b>	<b>3.3</b>
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	<b>0.0005</b>	<b>0.0004</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0004</b>	<b>0.0002</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	<b>0.001</b>	<b>0.001</b>	<b>0.0002</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	<b>22</b>	<b>26</b>	<b>7.7</b>	<b>2.3</b>	<b>3.1</b>	<b>3.0</b>	<b>2.8</b>	<b>3.1</b>	<b>3.4</b>
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	<b>2 100</b>	<b>3 750</b>	<b>1 900</b>	<b>4 600</b>	<b>4 600</b>	<b>3 600</b>	<b>3 800</b>	<b>3 900</b>	<b>5 400</b>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	<b>4.3</b>	<b>4.2</b>	<b>4.0</b>	<b>4.3</b>	<b>6.0</b>	<b>1.3</b>	<b>1.2</b>	<b>.9</b>	<b>1.0</b>
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>25</b>	<b>29</b>	<b>8.2</b>	<b>2.8</b>	<b>3.8</b>	<b>3.4</b>	<b>3.2</b>	<b>3.5</b>	<b>4.0</b>

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations



**Table A13–9 Electricity Generation and GHG Emission Details for Saskatchewan<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	<b>11 100</b>	<b>14 500</b>	<b>15 300</b>	<b>16 200</b>	<b>15 600</b>	<b>16 100</b>	<b>15 100</b>	<b>15 200</b>	<b>15 300</b>
Coal	x	x	x	x	x	x	x	x	x
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels <sup>4</sup>	6.77	10.9	4.50	0.280	7.20	6.64	0.28	6.37	9.13
<b>Other Emissions<sup>5</sup></b>	<b>–</b>	<b>10</b>	<b>18</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>35</b>	<b>35</b>	<b>40</b>
<b>Overall Total<sup>6,7</sup></b>	<b>11 100</b>	<b>14 500</b>	<b>15 300</b>	<b>16 200</b>	<b>15 600</b>	<b>16 200</b>	<b>15 100</b>	<b>15 200</b>	<b>15 300</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	<b>9 660</b>	<b>14 100</b>	<b>14 800</b>	<b>15 100</b>	<b>13 600</b>	<b>13 900</b>	<b>15 300</b>	<b>14 000</b>	<b>17 900</b>
Coal	9 340	11 400	12 200	12 100	11 600	11 400	11 800	10 200	12 100
Natural Gas	308	2 660	2 610	3 040	2 000	2 490	3 510	3 750	5 800
Other Fuels	8.78	12.5	12.0	17.7	10.0	9.30	12.42	9.40	13.44
Steam from Waste Heat	–	–	–	628	342	458	878	777	1 188
Nuclear	–	–	–	–	–	–	–	–	–
Hydro	4 210	3 050	4 570	3 870	4 640	4 240	4 450	4 710	3 430
Other Renewables <sup>10</sup>	–	–	91.9	507	608	655	640	615	620
Other Generation <sup>11</sup>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	<b>13 900</b>	<b>17 100</b>	<b>19 500</b>	<b>20 100</b>	<b>19 200</b>	<b>19 300</b>	<b>21 300</b>	<b>20 100</b>	<b>23 100</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
CO <sub>2</sub> intensity (g CO <sub>2</sub> / kWh)	800	840	780	800	810	830	710	750	660
CH <sub>4</sub> intensity (g CH <sub>4</sub> / kWh)	0.02	0.03	0.03	0.04	0.04	0.05	0.04	0.04	0.04
N <sub>2</sub> O intensity (g N <sub>2</sub> O / kWh)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Generation Intensity (g CO <sub>2</sub> eq / kWh) <sup>7</sup>	800	850	780	800	810	840	710	760	660
Unallocated Energy (GWh) <sup>13,14</sup>	1 300	1 700	1 400	1 300	1 000	1 100	1 900	3 200	3 900
SF <sub>6</sub> Emissions (kt CO <sub>2</sub> eq) <sup>15</sup>	1.8	1.7	1.3	1.3	1.2	0.75	0.91	0.42	0.73
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>890</b>	<b>940</b>	<b>840</b>	<b>860</b>	<b>860</b>	<b>890</b>	<b>780</b>	<b>900</b>	<b>800</b>

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations



**Table A13–10 Electricity Generation and GHG Emission Details for Alberta<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	39 900	50 400	52 200	49 200	49 000	47 200	48 400	49 400	49 000
Coal	x	x	x	x	x	x	x	x	x
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels <sup>4</sup>	11.9	301	68.4	18.3	20.8	18.7	18.5	17.0	17.6
<b>Other Emissions<sup>5</sup></b>	–	5.7	10	5.6	13	23	6	14	20
<b>Overall Total<sup>6,7</sup></b>	<b>39 900</b>	<b>50 400</b>	<b>52 200</b>	<b>49 200</b>	<b>49 000</b>	<b>47 200</b>	<b>48 400</b>	<b>49 400</b>	<b>49 000</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	39 900	51 300	54 200	51 700	62 100	52 000	53 200	58 000	54 100
Coal	37 300	40 700	42 200	41 000	46 300	37 300	38 500	43 400	41 500
Natural Gas	2 510	10 200	11 600	10 200	15 200	14 100	14 100	14 100	12 100
Other Fuels	21.6	443	424	501	542	630	630	550	504
<b>Steam from Waste Heat</b>	–	–	32.4	1 500	1 890	2 240	2 230	2 570	1 820
<b>Nuclear</b>	–	–	–	–	–	–	–	–	–
<b>Hydro</b>	2 060	1 760	2 240	1 480	1 970	2 570	1 990	1 820	1 730
<b>Other Renewables<sup>10</sup></b>	–	88.9	837	1 630	2 220	2 290	2 260	3 520	4 090
<b>Other Generation<sup>11</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	<b>41 900</b>	<b>53 200</b>	<b>57 300</b>	<b>56 400</b>	<b>68 200</b>	<b>59 100</b>	<b>59 700</b>	<b>65 900</b>	<b>61 700</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	950	940	900	870	710	790	810	740	790
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.02	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	950	950	910	870	720	800	810	750	790
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	3 400	4 100	4 900	9 800	17 400	8 400	–	9 900	10 390 <sup>17</sup>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	1.6	1.6	0.43	1.01	1.16	3.1	2.4	3.1	3.2
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>1 000</b>	<b>1 000</b>	<b>1 000</b>	<b>1 100</b>	<b>1 000</b>	<b>930</b>	<b>810</b>	<b>880</b>	<b>950</b>

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
17. For years where unallocated energy data was not available, values were extrapolated from earlier years.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations

**Table A13–11 Electricity Generation and GHG Emission Details for British Columbia<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	807	1 940	1 330	1 230	775	698	853	800	746
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	x	x	539	517	447
Other Fuels <sup>4</sup>	x	x	x	x	x	x	314	283	300
<b>Other Emissions<sup>5</sup></b>	–	2.5	4.6	6.0	6.5	7.2	6.7	7.4	7.2
<b>Overall Total<sup>6,7</sup></b>	807	1 940	1 340	1 230	780	705	860	808	754
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	1 390	3 930	3 820	3 050	1 760	1 510	1 820	1 740	1 650
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 350	3 140	1 850	610	712	892	890	761
Other Fuels	79.4	585	689	1 210	1 150	798	926	846	886
<b>Steam from Waste Heat</b>	–	–	–	651	83.9	27.6	80.2	45.6	27.7
<b>Nuclear</b>	–	–	–	–	–	–	–	–	–
<b>Hydro</b>	46 400	50 800	50 300	45 000	51 700	55 800	50 500	49 000	53 200
<b>Other Renewables<sup>10</sup></b>	–	–	–	123	187	158	152	849	1 555
<b>Other Generation<sup>11</sup></b>	–	–	–	2 980	2 510	2 720	2 440	2 240	2 160
<b>Overall Total<sup>7</sup></b>	47 800	54 700	54 100	51 800	56 300	60 200	55 000	53 900	58 600
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	17	35	24	23	13	11.4	15.3	14.7	12.6
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.004	0.009	0.007	0.007	0.004	0.003	0.003	0.003	0.003
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.0006	0.001	0.0015	0.0015	0.0011	0.0007	0.0009	0.0008	0.0007
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	17	35	25	24	14	11.7	15.6	15.0	12.9
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	2 200	2 300	2 100	1 900	810	900	–	3 900	22 200
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	57	56	48	59	27	47	42	25	20
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	19	38	27	26	15	12.7	16.4	16.7	21.2

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations



**Table A13–12 Electricity Generation and GHG Emission Details for Yukon<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	94.4	22.3	23.1	18.8	27.8	18.6	17.7	17.2	18.3
Coal	94.4	–	–	–	–	–	–	–	–
Natural Gas	94.4	–	–	–	–	–	–	–	–
Other Fuels <sup>4</sup>	94.4	22.3	23.1	18.8	27.8	18.6	17.7	17.2	18.3
<b>Other Emissions<sup>5</sup></b>	94.4	–	–	–	–	–	–	–	–
<b>Overall Total<sup>6,7</sup></b>	94.4	22.3	23.1	18.8	27.8	18.6	17.7	17.2	18.3
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	62.1	36.7	22.4	25.0	36.9	24.4	23.3	22.7	25.5
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	62.1	36.7	22.4	25.0	36.9	24.4	23.3	22.7	24.2
<b>Steam from Waste Heat</b>	–	–	–	–	–	–	–	–	–
<b>Nuclear</b>	–	–	–	–	–	–	–	–	–
<b>Hydro</b>	423	261	320	380	388	430	425	411	422
<b>Other Renewables<sup>10</sup></b>	–	0.388	0.890	0	0.402	0.445	0.277	0.334	0.650
<b>Other Generation<sup>11</sup></b>	–	–	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	485	298	344	405	425	455	449	434	448
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	190	72	64	45	63	39	38	38	39
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	0.009	0.004	0.003	0.002	0.003	0.002	0.002	0.002	0.002
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	190	75	67	47	66	41	39	40	41
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	47	24	45	33	51	58	55	17	47
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	–	–	–	–	–	–	–	–	–
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	220	81	77	51	74	47	45	41	46

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
4. 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.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
10. Other Renewables - includes electricity generation by wind, tidal and solar.
11. NAICS category 221119, Other Electric Power Generation.
12. Intensity values have been rounded so as to present the estimated level of accuracy.
13. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
14. Includes transmission line losses, metering differences and other losses.
15. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
16. Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
17. For years where unallocated energy data was not available, values were extrapolated from earlier years.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1

**Table A13–13 Electricity Generation and GHG Emission Details for Northwest Territories<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	<b>163</b>	<b>109</b>	<b>94</b>	<b>67</b>	<b>66</b>	<b>65</b>	<b>67</b>	<b>87</b>	<b>124</b>
Coal	x	x	x	x	x	x	–	–	–
Natural Gas	x	x	x	x	x	x	3.66	4.82	6.75
Other Fuels <sup>4</sup>	x	x	x	x	x	x	63	82	118
<b>Other Emissions<sup>5</sup></b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>–</b>	<b>–</b>	<b>–</b>
<b>Overall Total<sup>6,7</sup></b>	<b>163</b>	<b>111</b>	<b>99</b>	<b>67</b>	<b>66</b>	<b>65</b>	<b>67</b>	<b>87</b>	<b>124</b>
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	<b>227</b>	<b>195</b>	<b>78</b>	<b>85</b>	<b>83</b>	<b>83</b>	<b>84</b>	<b>109</b>	<b>157</b>
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	15.8	23.3	27.5	23.7	5.63	5.77	7.53	10.78
Other Fuels	227	179	54	58	59	77	79	102	146
<b>Steam from Waste Heat</b>	<b>–</b>								
<b>Nuclear</b>	<b>–</b>								
<b>Hydro</b>	<b>226</b>	<b>247</b>	<b>259</b>	<b>254</b>	<b>260</b>	<b>253</b>	<b>263</b>	<b>234</b>	<b>164</b>
<b>Other Renewables<sup>10</sup></b>	<b>–</b>								
<b>Other Generation<sup>11</sup></b>	<b>–</b>								
<b>Overall Total<sup>7</sup></b>	<b>453</b>	<b>442</b>	<b>337</b>	<b>339</b>	<b>343</b>	<b>336</b>	<b>347</b>	<b>343</b>	<b>321</b>
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	<b>350</b>	<b>240</b>	<b>280</b>	<b>190</b>	<b>180</b>	<b>190</b>	<b>180</b>	<b>240</b>	<b>370</b>
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	<b>0.02</b>	<b>0.01</b>	<b>0.03</b>	<b>0.02</b>	<b>0.02</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.02</b>
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	<b>0.05</b>	<b>0.03</b>	<b>0.03</b>	<b>0.02</b>	<b>0.02</b>	<b>0.03</b>	<b>0.03</b>	<b>0.03</b>	<b>0.05</b>
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	<b>360</b>	<b>250</b>	<b>290</b>	<b>200</b>	<b>190</b>	<b>190</b>	<b>190</b>	<b>250</b>	<b>390</b>
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	<b>21</b>	<b>21</b>	<b>19</b>	<b>21</b>	<b>23</b>	<b>10</b>	<b>17</b>	<b>58</b>	<b>74</b>
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	<b>–</b>								
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	<b>380</b>	<b>260</b>	<b>310</b>	<b>210</b>	<b>210</b>	<b>200</b>	<b>200</b>	<b>300</b>	<b>500</b>

Notes:

- Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation. For 1990 and 2000 this includes Nunavut.
- Preliminary data.
- Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
- 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.
- GHG emissions from on-site combustion of fuel not directly related to electricity generation.
- GHG emissions from the flooding of land for hydro dams are not included.
- Totals may not add up to overall total due to rounding.
- Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
- Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
- Other Renewables - includes electricity generation by wind, tidal and solar.
- NAICS category 221119, Other Electric Power Generation.
- Intensity values have been rounded so as to present the estimated level of accuracy.
- Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIB (1990-2004).
- Includes transmission line losses, metering differences and other losses.
- The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
- Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.

- Indicates no emissions or no electricity generation
- 0 Indicates emissions or electricity generation value less than 0.1
- x Indicates data not shown due to statistical limitations



**Table A13–14 Electricity Generation and GHG Emission Details for the Nunavut<sup>1</sup>**

	1990	2000	2005	2010	2011	2012	2013	2014	2015 <sup>2</sup>
<b>Greenhouse Gas Emissions<sup>3</sup></b>									
<i>kt CO<sub>2</sub> equivalent</i>									
<b>Combustion</b>	*	*	x	x	x	x	72	123	118
Coal	*	*	x	x	x	x	–	–	–
Natural Gas	*	*	x	x	x	x	–	–	–
Other Fuels <sup>4</sup>	*	*	x	x	x	x	72	123	118
<b>Other Emissions<sup>5</sup></b>	*	*	x	x	x	x	–	–	–
<b>Overall Total<sup>6,7</sup></b>	*	*	x	x	x	x	72	123	118
<b>Electricity Generation<sup>8,9</sup></b>									
<i>GWh</i>									
<b>Combustion</b>	*	*	142	162	98	98	98	158	157
Coal	*	*	–	–	–	–	–	–	–
Natural Gas	*	*	–	–	–	–	–	–	–
Other Fuels	*	*	142	162	98	98	98	158	157
<b>Steam from Waste Heat</b>	*	*	–	–	–	–	–	–	–
<b>Nuclear</b>	*	*	–	–	–	–	–	–	–
<b>Hydro</b>	*	*	–	–	–	–	–	–	–
<b>Other Renewables<sup>10</sup></b>	*	*	–	–	–	–	–	–	–
<b>Other Generation<sup>11</sup></b>	*	*	–	–	–	–	–	–	–
<b>Overall Total<sup>7</sup></b>	*	*	142	162	98	98	98	158	157
<b>Greenhouse Gas Intensity<sup>12</sup></b>									
<i>g GHG / kWh electricity generated</i>									
<b>CO<sub>2</sub> intensity (g CO<sub>2</sub> / kWh)</b>	*	*	x	x	x	x	700	750	720
<b>CH<sub>4</sub> intensity (g CH<sub>4</sub> / kWh)</b>	*	*	x	x	x	x	0.0	0.0	0.0
<b>N<sub>2</sub>O intensity (g N<sub>2</sub>O / kWh)</b>	*	*	x	x	x	x	0.0	0.0	0.0
<b>Generation Intensity (g CO<sub>2</sub> eq / kWh)<sup>7</sup></b>	*	*	x	x	x	x	730	780	750
<b>Unallocated Energy (GWh)<sup>13,14</sup></b>	*	*	7	3	2	2	2	–6	14
<b>SF<sub>6</sub> Emissions (kt CO<sub>2</sub> eq)<sup>15</sup></b>	*	*	–	–	–	–	–	–	–
<b>Consumption Intensity (g CO<sub>2</sub> eq / kWh)<sup>16</sup></b>	*	*	920	790	790	790	750	750	830

Notes:

- Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 - Electric Power Generation.
- Preliminary data.
- Emissions based on data taken from the *Report on Energy Supply and Demand in Canada*, Catalogue No. 57-003-X, Statistics Canada with the exception of coal data for 2014, which was taken from CANSIM Table 127-0004.
- 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.
- GHG emissions from on-site combustion of fuel not directly related to electricity generation.
- GHG emissions from the flooding of land for hydro dams are not included.
- Totals may not add up to overall total due to rounding.
- Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2015).
- Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-X, Statistics Canada (for 1990-2004).
- Other Renewables - includes electricity generation by wind, tidal and solar.
- NAICS category 221119, Other Electric Power Generation.
- Intensity values have been rounded so as to present the estimated level of accuracy.
- Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2015) or Cat. No. 57-202-XIBIB (1990-2004).
- Includes transmission line losses, metering differences and other losses.
- The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF<sub>6</sub>).
- Consumption intensity values are impacted by unallocated energy and SF<sub>6</sub> transmission emissions.
- For years where unallocated energy data was not available, values were extrapolated from earlier years.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

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

x Indicates data not shown due to statistical limitations

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## Annex 8, Rounding Protocol

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