ANNEX 8A.2

REPORTING TABLES

Year of the Inventory	
Contact Name	
Country	
Organisation	
Address	
Phone	
Fax	
e-mail	

Contents

Summary and Short Summary Tables

Sectoral and Background Tables

Energy Sector Tables

IPPU Sector Tables

AFOLU Sector Tables

Waste Sector Tables

Cross-Sectoral table

Emission trend tables by gas

Uncertainly and Key Categories

Table A Summary Table (1 of 6) (Updated)

Categories		Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors(3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
		(Gg)			CO_2 equivalents (Gg)					(Gg)	(Gg)			
Total National Emissions and Removals														
1 ENERGY														
1A	**Fuel Combustion Activities**													
1A1	Energy Industries													
1A2	Manufacturing Industries and Construction													
1A3	Transport													
1A4	Other Sectors													
1A5	Non-Specified													
1B	**Fugitive Emissions from Fuels**													
1B1	Solid Fuels													
1B2	Oil and Natural Gas													
1B3	Other Emissions from Energy Production													
1C	**Carbon Dioxide Transport and Storage**													
1C1	Transport of CO_2													
1C2	Injection and Storage													

Table A Summary Table (2 of 6) (Updated) (Continued)

Categories	Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors (3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
	(Gg)			CO_2 equivalents (Gg)					(Gg)	(Gg)			
2 INDUSTRIAL PROCESSES AND PRODUCT USE													
2A Mineral Industry													
2A1 Cement Production													
2A2 Lime Production													
2A3 Glass Production													
2A4 Other Process Uses of Carbonates													
2A5 Other (please specify)													
2B Chemical Industry													
2B1 Ammonia Production													
2B2 Nitric Acid Production													
2B3 Adipic Acid Production													
2B4 Caprolactam, Glyoxal and Glyoxylic Acid Production													
2B5 Carbide Production													
2B6 Titanium Dioxide Production													
2B7 Soda Ash Production													
2B8 Petrochemical and Carbon Black Production													
2B9 Fluorochemical Production													
2B10 Hydrogen Production													
2B11 Other (please specify)													

Table A Summary Table (3 of 6) (Updated) (Continued)

Categories		Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors (3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
		(Gg)			CO_2 equivalents (Gg)						(Gg)			
2C	**Metal Industry**													
2C1	Iron and Steel Production													
2C2	Ferroalloys Production													
2C3	Aluminium Production													
2C4	Magnesium Production													
2C5	Lead Production													
2C6	Zinc Production													
2C7	Rare Earths Production													
2C8	Other (please specify)													
2D	**Non-Energy Products from Fuels and Solvent Use**													
2D1	Lubricant Use													
2D2	Paraffin Wax Use													
2D3	Solvent Use													
2D4	Other (please specify)													
2E	**Electronics Industry**													
2E1	Integrated Circuit or Semiconductor													
2E2	Displays													
2E3	Photovoltaics													
2E4	Microelectromechanical systems (MEMS)													
2E5	Other (please specify)													

Table A Summary Table (4 of 6) (Updated) (Continued)

Categories		Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors (3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
		(Gg)			CO_2 equivalents (Gg)					(Gg)	(Gg)			
2F	**Product Uses as Substitutes for Ozone Depleting Substances**													
2F1	Refrigeration and Air Conditioning													
2F2	Foam Blowing Agents													
2F3	Fire Protection													
2F4	Aerosols													
2F5	Solvents													
2F6	Other Applications													
2G	**Other Product Manufacture and Use**													
2G1	Electrical Equipment													
2G2	Halogenated Gases from Other Product Uses													
2G3	N_2O from Product Uses													
2G4	Other (please specify)													
2H	**Other (please specify)**													
2H1	Pulp and Paper Industry													
2H2	Food and Beverages Industry													
2H3	Other (please specify)													

Table A Summary Table (5 of 6) (Updated) (Continued)

Categories	Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors (3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
	(Gg)			CO_2 equivalents (Gg)					(Gg)	(Gg)			
3 AGRICULTURE, FORESTRY AND OTHER LAND USE													
3A Livestock													
3A1 Enteric Fermentation													
3A2 Manure Management													
3B Land													
3B1 Forest Land													
3B2 Cropland													
3B3 Grassland													
3B4 Wetlands													
3B5 Settlements													
3B6 Other Land													
3C Aggregate Sources and Non-CO_2 Emissions Sources on Land													
3C1 Biomass Burning													
3C2 Liming													
3C3 Urea Application													
3C4 Direct N_2O Emissions from Managed Soils													
3C5 Indirect N_2O Emissions from Managed Soils													
3C6 Indirect N_2O Emissions from Manure Management													
3C7 Rice cultivation													
3C8 Other (please specify)													
3D Other													
3D1 Harvested Wood Products													
3D2 Other (please specify)													

Table A Summary Table (6 of 6) (Updated) (Continued)

Categories	Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors (3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
	(Gg)			CO_2 equivalents (Gg)					(Gg)	(Gg)			
4 WASTE													
4A Solid Waste Disposal													
4B Biological Treatment of Solid Waste													
4C Incineration and Open Burning of Waste													
4D Wastewater Treatment and Discharge													
4E Other (please specify)													
5 OTHER													
5A Indirect N_2O Emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH_3													
5B Other (please specify)													
Memo items (5)													
International Bunkers													
International Aviation (International Bunkers)													
International Water-borne Transport (International Bunkers)													
Multilateral Operations													

(1) CO_2 net emissions (emissions minus removals)

(2) Total amount of CO_2 captured for long-term storage is to be reported separately for domestic storage and for export in the documentation box.

(3) The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this column. Such gases should be reported in the column 'Other halogenated gases without CO_2 equivalent conversion factors'.

(4) When this column is used, gases should be listed separately (in IPPU Background Tables and Table 2.11) and the name of the gas should be given in the documentation box.

(5) Emissions that are not included in the national total should be reported as memo items.

* Cells to report emissions of NO_x, CO, NMVOC and SO_2 have not been shaded although the physical potential for emissions is lacking for some categories.

Documentation box:

Table B Short Summary Table (1 of 2) (Updated)

Categories		Net CO_2 (1) (2)	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated gases with CO_2 equivalent conversion factors (3)	Other halogenated gases without CO_2 equivalent conversion factors (4)	NO_x	CO	NMVOCs	SO_2
		(Gg)			CO_2 equivalents (Gg)					(Gg)	(Gg)			
Total National Emissions and Removals														
1 ENERGY														
1A	Fuel Combustion Activities													
1B	Fugitive Emissions from Fuels													
1C	Carbon Dioxide Transport and Storage													
2 INDUSTRIAL PROCESSES AND PRODUCT USE														
2A	Mineral Industry													
2B	Chemical Industry													
2C	Metal Industry													
2D	Non-Energy Products from Fuels and Solvent Use													
2E	Electronics Industry													
2F	Product Uses as Substitutes for Ozone Depleting Substances													
2G	Other Product Manufacture and Use													
2H	Other													
3 AGRICULTURE, FORESTRY AND OTHER LAND USE														
3A	Livestock													
3B	Land													
3C	Aggregate Sources and Non-CO_2 Emissions Sources on Land													
3D	Other													
4 WASTE														
4A	Solid Waste Disposal													
4B	Biological Treatment of Solid Waste													

(1) CO_2 net emissions (emissions minus removals)

(2) Total amount of CO_2 captured for long-term storage is to be reported separately for domestic storage and for export in the documentation box.

(3) The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this column. Such gases should be reported in the column 'Other halogenated gases without CO_2 equivalent conversion factors'.

(4) When this column is used, gases should be listed separately in IPPU Background Tables and Table 2.11 and the name of the gas should be given in the documentation box.

(5) Emissions that are not included in the national total should be reported as memo items.

* Cells to report emissions of NO_x, CO, NMVOC and SO_2 have not been shaded although the physical potential for emissions is lacking for some categories.

Documentation box:

Table 1 Energy Sectoral Table (1 of 3) (Updated)

Categories			CO_2	CH_4	N_2O	NO_x	CO	NMVOCs	SO_2
			(Gg)						
1 ENERGY									
1A		**Fuel Combustion Activities**							
1A1		**Energy Industries**							
1A1	a	Main Activity Electricity and Heat Production							
1A1	ai	Electricity Generation							
1A1	aii	Combined Heat and Power Generation (CHP)							
1A1	aiii	Heat Plants							
1A1	b	Petroleum Refining							
1A1	c	Manufacture of Solid Fuels and Other Energy Industries							
1A1	ci	Manufacture of Solid Fuels							
1A1	cii	Other Energy Industries							
1A2		**Manufacturing Industries and Construction**							
1A2	a	Iron and Steel							
1A2	b	Non-Ferrous Metals							
1A2	c	Chemicals							
1A2	d	Pulp, Paper and Print							
1A2	e	Food Processing, Beverages and Tobacco							
1A2	f	Non-Metallic Minerals							
1A2	g	Transport Equipment							
1A2	h	Machinery							
1A2	i	Mining (excluding fuels) and Quarrying							
1A2	j	Wood and Wood Products							
1A2	k	Construction							
1A2	l	Textile and Leather							
1A2	m	Non-specified Industry							
1A3		**Transport**							
1A3	a	Civil Aviation							
1A3	ai	International Aviation (International Bunkers) (1)							
1A3	aii	Domestic Aviation							
1A3	b	Road Transportation							

1A3	bi	Cars							
1A3	bi	Passenger Cars with 3-way Catalysts							
1A3	bi2	Passenger Cars without 3-way Catalysts							
1A3	bii	Light-duty Trucks							
1A3	bii1	Light-duty Trucks with 3-way Catalysts							
1A3	bii2	Light-duty Trucks without 3-way Catalysts							
1A3	biii	Heavy-duty Trucks and Buses							
1A3	biv	Motorcycles							
1A3	bv	Evaporative Emissions from Vehicles							
1A3	bvi	Urea-based Catalysts							
1A3	c	Railways							
1A3	d	Water-borne Navigation							
1A3	di	International Water-borne Navigation (International Bunkers) (1)							
1A3	dii	Domestic Water-borne Navigation							
1A3	e	Other Transportation							
1A3	ei	Pipeline Transport							
1A3	eii	Off-road							
1A4		**Other Sectors**							
1A4	a	Commercial/Institutional							
1A4	b	Residential							

Table 1 Energy Sectoral Table (2 of 3) (Updated) (Continued)

Categories			CO_2	CH_4	N_2O	NO_x	CO	NMVOCs	SO_2
			(Gg)						
1A4	c	Agriculture/Forestry/Fishing/Fish Farms							
1A4	ci	Stationary							
1A4	cii	Off-road Vehicles and Other Machinery							
1A4	ciii	Fishing (mobile combustion)							
1A5		**Non-Specified**							
1A5	a	Stationary							
1A5	b	Mobile							
1A5	bi	Mobile (aviation component)							
1A5	bii	Mobile (water-borne component)							
1A5	biii	Mobile (other)							
1A5	c	Multilateral Operations (1) (2)							
1B		**Fugitive Emissions from Fuels**							
1B1		**Solid Fuel**							
1B1	a	Coal Mining and Handling							
1B1	ai	Underground Mines							
1B1	ai1	Mining							
1B1	ai2	Post-mining Seam Gas Emissions							
1B1	ai3	Abandoned Underground Mines							
1B1	ai4	Flaring of Drained Methane or Conversion of Methane to CO_2							
1B1	aii	Surface Mines							
1B1	aii1	Mining							
1B1	aii2	Post-mining Seam Gas Emissions							
1B1	aii3	Abandoned Surface Mines							
1B1	aiii	Coal Exploration							
1B1	b	Uncontrolled Combustion, and Burning Coal Dumps							
1B1	c	Fuel Transformation							
1B1	ci	Charcoal and Biochar Production							
1B1	cii	Coke Production							
1B1	ciii	Solid to Solid Fuel Production							
1B1	civ	Gasification Transformation							

1B2		**Oil and Natural Gas**							
1B2	a	Oil							
1B2	ai	Exploration							
1B2	aii	Production and Upgrading							
1B2	aiii	Transport							
1B2	aiv	Refining							
1B2	av	Distribution of Oil Products							
1B2	avi	Others							
1B2	avii	Abandoned Oil Wells							
1B2	b	Natural Gas							
1B2	bi	Exploration							
1B2	bii	Production and Gathering							
1B2	biii	Processing							
1B2	biv	Transmission and Storage							
1B2	bv	Distribution							
1B2	bvi	Gas Post-Meter							
1B2	bvii	Others							
1B2	bviii	Abandoned Gas Wells							
1B3		**Other Emissions from Energy Production**							
1C		**Carbon Dioxide Transport and Storage**							
1C1		**Transport of CO_2**							
1C1	a	Pipelines							
1C1	b	Ships							
1C1	c	Other (Please specify)							
1C2		**Injection and Storage**							
1C2	a	Injection							
1C2	b	Storage							

Table 1 Energy Sectoral Table (3 of 3) (Updated) (Continued)

Categories	CO_2	CH_4	N_2O	NO_x	CO	NMVOCs	SO_2
	(Gg)						
Memo items (3)							
International Bunkers							
International Aviation (International Bunkers)							
International Water-borne Transport (International Bunkers)							
Multilateral Operations							
Information items							
CO_2 from Biomass Combustion for Energy Production							

(1) To be reported as a memo item, and not part of the national inventory.

(2) Multilateral operations pursuant to the Charter of the United Nations: including emissions from fuel delivered to the military in the country and delivered to the military of other countries.

(3) Emissions that are not included in the national total should be reported as memos.

* Cells to report emissions of NO_x, CO, NMVOC and SO_2 have not been shaded although the physical potential for emissions is lacking for some categories.

Documentation box:

Table 1.1 Energy Background Table: 1A1-1A2 (1 of 2)

Categories	Activity (TJ)						Emissions (Gg)																				Information item[2] (Gg)	
							Solid			Liquid			Gas			Other fossil fuel			Peat[1]			Biomass		Total			CO_2 amount captured[3]	Biomass
	Solid	Liquid	Gas	Other fossil fuel	Peat	Bio-mass	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CO_2 emitted
1A Fuel Combustion Activities																												
1A1 Energy Industries																												
1A1a Main Activity Electricity and Heat Production																												
1A1ai Electricity Generation																												
1A1aii Combined Heat and Power Generation (CHP)																												
1A1aiii Heat Plants																												
1A1b Petroleum Refining																												
1A1c Manufacture of Solid Fuels and Other Energy Industries																												
1A1ci Manufacture of Solid Fuels																												
1A1cii Other Energy Industries																												
1A2 Manufacturing Industries and Construction																												
1A2a Iron and Steel																												
1A2b Non-Ferrous Metals																												
1A2c Chemicals																												
1A2d Pulp, Paper and Print																												
1A2e Food Processing, Beverages and Tobacco																												
1A2f Non-Metallic Minerals																												
1A2g Transport Equipment																												

Table 1.1 Energy Background Table: 1A1-1A2 (2 of 2) (Continued)

Categories	Activity (TJ)						Emissions (Gg)																				Information item[2] (Gg)	
							Solid			Liquid			Gas			Other fossil fuel			Peat[1]			Biomass		Total			CO_2 Amount captured [3]	Biomass
	Solid	Liquid	Gas	Other fossil fuel	Peat	Bio-mass	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CO_2 emitted
1A2h Machinery																												
1A2i Mining and Quarrying																												
1A2j Wood and Wood Products																												
1A2k Construction																												
1A2l Textile and Leather																												
1A2m Non-specified Industry																												

(1) Although peat is not strictly speaking a fossil fuel, the CO_2 emissions from combustion of peat are included in the national emissions as for fossil fuels. See Chapter 1 of Energy Volume, page 1.15.

(2) Information items that are not themselves emissions, therefore not included in the national total. The carbon should be converted to carbon dioxide. It is subtracted in the CO_2 emission columns (net emissions). Only CO_2 captured for permanent storage in geological reservoirs should be subtracted.

(3) Enter the amount of CO_2 captured as a negative number since this amount is subtracted from total CO_2 produced.

Documentation box:

Table 1.2 Energy Background Table: 1A3-1A5 (1 of 2)

Category		Activity (TJ)						Emissions (Gg)																		Total emissions (Gg)		
								Solid			Liquid			Gas			Other fossil fuel			Peat[1]			Biomass					
		Solid	Liquid	Gas	Other fossil fuel	Peat	Bio-mass	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CH_4	N_2O	CO_2	CH_4	N_2O
1A3	**Transport**																											
1A3a	Civil Aviation																											
1A3ai	International Aviation (International Bunkers) [2]																											
1A3aii	Domestic Aviation																											
1A3b	Road Transportation																											
1A3bi	Cars																											
1A3bi1	Passenger Cars with 3-way catalysts																											
1A3bi2	Passenger Cars without 3-way Catalysts																											
1A3bii	Light-duty Trucks																											
1A3bii1	Light-duty Trucks with 3-way Catalysts																											
1A3bii2	Light-duty Trucks without 3-way Catalysts																											
1A3biii	Heavy-duty Trucks and Buses																											
1A3biv	Motorcycles																											
1A3bv	Evaporative Emissions from Vehicles																											
1A3bvi	Urea based Catalyst [3]																											
1A3c	Railways																											
1A3d	Water-borne Navigation																											
1A3di	International Water-borne Navigation (International Bunkers) [2]																											
1A3dii	Domestic Water-borne Transport																											
1A3e	Other Transportation																											
1A3ei	Pipeline Transport																											
1A3eii	Off-road																											
1A4	**Other Sectors**																											
1A4a	Commercial/Institutional																											
1A4b	Residential																											
14Ac	Agriculture/Forestry/Fishing/Fish Farms																											
1A4ci	Stationary																											
1A4cii	Off-road Vehicles and Other Machinery																											
1A4ciii	Fishing (mobile combustion)																											

Table 1.2 Energy Background Table: 1A3-1A5 (2 of 2) (Continued)

Category	Activity (TJ)						Emissions (Gg)																		Total emissions (Gg)		
							Solid			Liquid			Gas			Other fossil fuel			Peat[1]			Biomass					
	Solid	Liquid	Gas	Other fossil fuel	Peat	Bio-mass	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CH_4	N_2O	CO_2	CH_4	N_2O
1A5 Non-Specified																											
1A5a Stationary																											
1A5b Mobile																											
1A5bi Mobile (aviation component)																											
1A5bii Mobile (water-borne component)																											
1A5biii Mobile (other)																											
1A5c Multilateral Operation																											
Memo items [4]																											
International Bunkers																											
International Aviation (International Bunkers)																											
International Water-borne Transport (International Bunkers)																											
Multilateral Operations [5]																											

(1) Although peat is not strictly speaking a fossil fuel, the CO_2 emissions from combustion of peat are included in the national emissions as for fossil fuels. See Chapter 1 of Energy Volume, page 1.15.

(2) To be reported as a memo item, and not part of the national inventory.

(3) Report the amount of urea-based additive used and its purity in the documentation box.

(4) Emissions that are not included in the national total should be reported as memo items.

(5) Multilateral operations pursuant to the Charter of the United Nations: including emissions from fuel delivered to the military in the country and delivered to the military of other countries.

Documentation box:

Table 1.3 Energy Background Table: 1B (Updated)

Category		Activity Data			Emissions (Gg)			Information item: Amount captured (2) (Gg)
		Description	Unit (1)	Value	CO_2	CH_4	N_2O	CO_2
1B Fugitive Emissions from Fuels								
1B1 Solid Fuel								
1B1a	Coal Mining and Handling							
1B1ai	Underground Mines	Coal produced	ktonnes					
1B1ai1	Mining	Coal produced	ktonnes					
1B1ai2	Post mining Seam Gas Emissions	Coal produced	ktonnes					
1B1ai3	Abandoned Underground Mines	Number of mines	number					
1B1ai4	Flaring of Drained Methane or Conversion of CH_4 to CO_2	Gas flared	10^6 Sm^3					
1B1aii	Surface Mines							
1B1aii1	Mining	Coal produced	ktonnes					
1B1aii2	Post-mining Seam Gas Emissions	Coal produced	ktonnes					
1B1aii3	Abandoned Surface Mines	Surface area mined	m^2					
1B1aiii	Coal Exploration	Augmentation of coal resource	ktonnes					
1B1b	Uncontrolled Combustion, and Burning Coal Dumps	Solid fuel combusted	ktonnes					
1B1c	Fuel Transformation	Solid fuel transformed	ktonnes					
1B1ci	Charcoal and Biochar Production	Charcoal and biochar produced	tonnes of dry matter					
1B1cii	Coke Production	Coke produced	kg					
1B1ciii	Solid to Solid Fuel Production	Wood pellets produced	MJ					
1B1civ	Gasification Transformation	Feedstock	TJ					
1B2 Oil and Natural Gas								
1B2a	Oil							
1B2ai	Exploration	Oil wells drilled or oil well count, or oil produced	Number, number, 10^3 m^3					
1B2aii	Production and Upgrading	Oil produced or oil wells	10^3 m^3, number					
1B2aiii	Transport	Crude oil transported	10^3 m^3					
1B2aiv	Refining	Refinery crude oil throughput	10^3 m^3					
1B2av	Distribution of Oil Products	Amount distributed	10^3 m^3					
1B2avi	Others							
1B2avii	Abandoned oil wells	Number of abandoned oil wells	number					
1B2b	Natural Gas							
1B2bi	Exploration	Gas wells drilled or gas well count, or gas produced number wells drilled	Number, number, 10^6 m^3					
1B2bii	Production and Gathering	Gas produced or gas wells	10^6 m^3, number					
1B2biii	Processing	Amount of gas processed at facilities	10^6 m^3					
1B2biv	Transmission and Storage	Amount of gas consumed	10^6 m^3					
1B2bv	Distribution	Amount of gas distributed or length of pipeline	10^6 m^3 , kilometres					
1B2bvi	Gas Post-Meter	Natural gas vehicles, appliances, and/or non-residential or commercial gas consumed	Number, number, 10^6 m^3					
1B2bvii	Other							
1B2bviii	Abandoned gas wells	Number of abandoned gas wells	number					
1B3 Other Emissions from Energy Production								

(1) The units given here are the most commonly used for respective activity data. For convenience and/or consistency, they can be converted into appropriate energy units.

(2) The amount of CO_2 captured is given for information purposes; it is subtracted in the CO_2 emission columns (net emissions).

Table 1.4a Energy Background Table: 1C CO_2 Transport, Injection and Storage

Category	Activity (Gg)		Annual mass of fugitive CO_2 emissions to the atmosphere or sea bed (Gg) [2]
	Annual mass of CO_2 transported	Annual mass of CO_2 injected [1]	
1C1 Transport of CO_2			
1C1a Pipelines			
1C1b Ships			
1C1c Other (please specify)			
1C2 Injection and Storage [3]			
1C2a Injection			
1C2b Storage			
1C3 Other			

(1) Excluding recycled CO_2 for enhanced recovery.

(2) Corrected for baseline background fluxes.

(3) Fugitive emissions during above ground operations such as processing and CO_2 recycling during enhanced oil and gas recovery operations should be reported as fugitive emissions from oil and natural gas and reported under the appropriate categories for that sector.

Documentation box:

Table 1.4b Energy Background Table: 1C CO_2 Transport, Injection and Storage – Overview

Category (1)	CO_2 (Gg)
Total amount captured for storage (A)	
Total amount of import for storage (B)	
Total amount of export for storage (C)	
Total amount of CO_2 injected at storage sites (D)	
Total amount of leakage during transport (E1) category 1C1	
Total amount of leakage during injection (E2) category 1C2a	
Total amount of leakage from storage sites (E3) category 1C2b	
Total leakage (E4 = E1 + E2 + E3))	
Capture + imports (F = A + B)	
Injection + leakage + exports (G = D + E4 + C)	
Discrepancy (F – G)	

(1) Once captured, there is no differentiated treatment between biogenic carbon and fossil carbon. Emissions and storage of both biogenic and fossil carbons will be estimated and reported.

Documentation box:

Table 1.5 Energy Background Table: Reference Approach (1 of 1)

Fuel Types			Production	Import	Export	Inter-national bunkers	Stock change	Apparent consum-ption	Conversion factor	Apparent consum-ption	Carbon emission factor	Carbon content	Carbon content	Excluded carbon	Net carbon emission	Fraction of carbon oxidised	Actual carbon emission	CO_2 emission
			(Unit)	(Unit)	(Unit)	(Unit)	(Unit)	(Unit)	(TJ/Unit)	(TJ)	(tC/TJ)	(t C)	(Gg C)	(Gg C)	(Gg C)		(Gg C)	(Gg CO_2)
Liquid Fossil	Primary Fuels	Crude Oil																
		Orimulsion																
		Natural Gas Liquids																
	Secondary Fuels	Gasoline																
		Jet Kerosene																
		Other Kerosene																
		Shale Oil																
		Gas / Diesel Oil																
		Residual Fuel Oil																
		LPG																
		Ethane																
		Naphtha																
		Bitumen																
		Lubricants																
		Petroleum Coke																
		Refinery Feedstocks																
		Other Oil																
Liquid Fossil Totals																		
Solid Fossil	Primary Fuels	Anthracite[1]																
		Coking Coal																
		Other Bit. Coal																
		Sub-bit. Coal																
		Lignite																
		Oil Shale and Tar Sands																
	Secondary Fuels	BKB & Patent Fuel																
		Coke Oven/Gas Coke																
		Coal Tar																
Solid Fossil Totals																		
Gaseous Fossil	Natural Gas (Dry)																	
Other Fossil Fuels																		
Peat[2]																		
Total																		

(1) If anthracite is not separately available, include with Other Bituminous Coal.

(2) Although peat is not strictly speaking a fossil fuel, the CO_2 emissions from combustion of peat are included in the national emissions as for fossil fuels. See Chapter 1 of Energy Volume, page 1.15.

Documentation box:

Table 2 IPPU Sectoral Table (1 of 2) (See Volume 3, Chapter 1, Table 1.1) (Updated)

Category		CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated compounds with CO_2 equivalent conversion factors [1]	Other halogenated compounds without CO_2 equivalent conversion factors [2]	NO_x	CO	NMVOCs	SO_2
		(Gg)			CO_2 equivalents (Gg)						(Gg)			
2 INDUSTRIAL PROCESSES AND PRODUCT USE														
2A	**Mineral Industry**													
2A1	Cement Production													
2A2	Lime Production													
2A3	Glass Production													
2A4	Other Process Uses of Carbonates													
2A4a	Ceramics													
2A4b	Other Uses of Soda Ash													
2A4c	Non Metallurgical Magnesia Production													
2A4d	Other (please specify) [3]													
2A5	Other (please specify) [3]													
2B	**Chemical Industry**													
2B1	Ammonia Production													
2B2	Nitric Acid Production													
2B3	Adipic Acid Production													
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production													
2B5	Carbide Production													
2B6	Titanium Dioxide Production													
2B7	Soda Ash Production													
2B8	Petrochemical and Carbon Black Production													
2B8a	Methanol													
2B8b	Ethylene													
2B8c	Ethylene Dichloride and Vinyl Chloride Monomer													
2B8d	Ethylene Oxide													
2B8e	Acrylonitrile													
2B8f	Carbon Black													
2B9	Fluorochemical Production													
2B9a	HCFC-22 Production													
2B9b	HFC Production (specify HFC(s) produced)													
2B9c	PFC Production (specify PFC(s) produced)													
2B9d	SF_6 Production													
2B9e	NF_3 Production													
2B9f	Fluoropolymer Production (specify fluoropolymer produced)													
2B9g	Other Fluorochemical Production (specify other fluorochemical produced)													
2B10	Hydrogen Production													
2B11	Other (please specify) [3]													
2C	**Metal Industry**													
2C1	Iron and Steel Production													
2C2	Ferroalloys Production													
2C3	Aluminium Production													
2C4	Magnesium Production [4]													
2C5	Lead Production													
2C6	Zinc Production													
2C7	Rare Earths Production													
2C8	Other (please specify) [3]													
2D	**Non-Energy Products from Fuels and Solvent Use** [5]													
2D1	Lubricant Use													
2D2	Paraffin Wax Use													

2D3	Solvent Use[6]													
2D4	Other (please specify) [3], [7]													
2E	**Electronics Industry**													
2E1	Integrated Circuit or Semiconductor [8]													
2E2	Displays [8]													
2E3	Photovoltaics[8]													
2E4	Microelectromechanical systems (MEMS)													
2E5	Other (please specify) [3]													
2F	**Product Uses as Substitutes for Ozone Depleting Substances**													
2F1	Refrigeration and Air Conditioning													
2F1a	Refrigeration and Stationary Air Conditioning													

Table 2 IPPU Sectoral Table (2 of 2) (Updated) (Continued)

Category	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Other halogenated compounds with CO_2 equivalent conversion factors (1)	Other halogenated compounds without CO_2 equivalent conversion factors (2)	NO_x	CO	NMVOCs	SO_2
	(Gg)			CO_2 equivalents (Gg)						(Gg)			
2F1b Mobile Air Conditioning													
2F2 Foam Blowing Agents													
2F3 Fire Protection													
2F4 Aerosols													
2F5 Solvents													
2F6 Other Applications (3)													
2G Other Product Manufacture and Use													
2G1 Electrical Equipment													
2G1a Manufacture of Electrical Equipment													
2G1b Use of Electrical Equipment													
2G1c Disposal of Electrical Equipment													
2G2 SF_6 and PFCs from Other Product Uses													
2G2a Military Applications													
2G2b Accelerators													
2G2c Waterproofing of Electronic Circuits													
2G2d Other (please specify)(3)													
2G3 N_2O from Product Uses													
2G3a Medical Applications													
2G3b Propellant for Pressure and Aerosol Products													
2G3c Other (please specify)(3)													
2G4 Other (please specify)(3)													
2H Other													
2H1 Pulp and Paper Industry													
2H2 Food and Beverages Industry													
2H3 Other (please specify) (3)													

(1) This column includes other halogenated compounds for which CO_2 equivalent conversation factors are available, including, for example, hydrofluoroethers (HFEs) and perfluoropolyethers (PFPEs) used for temperature control, device testing, cleaning substrate surfaces and other parts, and soldering during electronics manufacturing and other processes. Halogenated gases for which a CO_2 equivalent conversion factor is not available should not be included in this column. Such gases should be reported in the column "Other halogenated gases without CO_2 equivalent conversion factors".

(2) This column includes other halogenated compounds for which CO_2 equivalent conversation factors are NOT available, including, for example, perfluoroamines and perfluoroalkyl morpholines used for temperature control, device testing, cleaning substrate surfaces and other parts, and soldering during electronics manufacturing and other processes. When this column is used, gases should be listed separately (in IPPU background tables and Table 2.11) and the name of the gas should be given in the documentation box. Insert additional columns if necessary.

(3) Insert additional rows if needed.

(4) Small amounts of CO_2 used as a diluent for SF_6 and emitted during magnesium processing is considered insignificant and is usually counted elsewhere. The "Other halogenated gases" here mainly comprise fluorinated ketones.

(5) Emissions from feedstock uses in petrochemical industry should be addressed in 2B8 (Petrochemical and Carbon Black Production). Emissions from some product uses should be allocated to each industry source category (e.g., CO_2 from carbon anodes and electrodes → 2C (Metal Industry)).

(6) Only NMVOC emissions and no direct GHGs are relevant to this category.

(7) Emissions from asphalt production, and paving of roads and roofing are included here.

(8) "Other halogenated compounds" may include, for example, c-C_4F_8O and the HFEs, PFPEs, perfluoroamines and perfluoroalkyl morpholines discussed in notes (1) and (2). Specific compounds to be reported here include (but are not limited to) those listed with and without GWPs in Table 6.5 of Volume 3 and throughout Chapter 6 of Volume 3.

* Cells to report emissions of NO_x, CO, NMVOC and SO_2 have not been shaded although the physical potential for emissions is lacking for some categories.

Documentation box:

Table 2.1 IPPU Background Table: 2A Mineral Industry, 2B (2B1-2B8, 2B10-2B11) Chemical Industry - CO_2, CH_4 and N_2O (Updated)

Categories	Activity data			Emissions						
	Production/Consumption quantity			CO_2 (Gg)			CH_4 (Gg)		N_2O (Gg)	
	Description (1)	Quantity	Unit (2)	Emissions (3)	Information item Captured and Stored (4)	(memo) Other Reduction (5)	Emissions (3)	Information item Reduction (6)	Emissions (3)	Information item Reduction (6)
2A Mineral Industry										
2A1 Cement production										
2A2 Lime production										
2A3 Glass Production										
2A4 Other Process Uses of Carbonates(7)										
2A4a Ceramics										
2A4b Other Uses of Soda Ash										
2A4c Non Metallurgical Magnesia Production										
2A4d Other										
2A5 Other (please specify) (8)										
2B Chemical Industry										
2B1 Ammonia Production										
2B2 Nitric Acid Production										
2B3 Adipic Acid Production										
2B4 Caprolactam, Glyoxal and Glyoxylic Acid Production										
2B5 Carbide Production										
2B6 Titanium Dioxide Production										
2B7 Soda Ash Production										
2B8 Petrochemical and Carbon Black Production										
2B8a Methanol										
2B8b Ethylene										
2B8c Ethylene Dichloride and Vinyl Chloride Monomer										
2B8d Ethylene Oxide										
2B8e Acrylonitrile										
2B8f Carbon Black										
2B10 Hydrogen Production										
2B11 Other (please specify) (8)										

(1) Where the options for activity data, e.g., cement or clinker or carbonates for estimating the emissions from Cement Production, specify the activity data used in order to make the choice of emission factor more transparent.

(2) Unit of activity data should be specified.

(3) Enter the reported emissions (adjusted with captured and/or reduced amount).

(4) Where generated CO_2 is captured for injection into a storage, the captured amount should be reported here. These data are provided as the additional information. They are not emissions, therefore should not be included in the national total.

(5) Where reduction of generated CO_2 except for capture and storage occurs (e.g., re-conversion to carbonates) and its amount is available, it should be reported here.

(6) Enter the quantities of reduction of generated gas (emission recovery, destruction, etc.)

(7) Report here only the emissions from carbonate uses not covered in other categories.

(8) Insert additional rows if necessary.

Note: Where information is confidential the entries should provide notation key “C” but there should be a note indicating this in the documentation box below. Also, more specific information could be provided in the documentation box.

Documentation box:

Table 2.2 IPPU Background Table: 2B (2B9, 2B11) Chemical Industry HFCs, PFCs, SF_6, NF_3 and other halogenated gases (Updated)

Categories		HFC-23	HFC-32	HFC-41	HFC-125	HFC-134	HFC-134a	HFC-143	HFC-143a	HFC-152	HFC-152a	HFC-161	HFC-227ea	HFC-236cb	HFC-236ea	HFC-236fa	HFC-245ca	HFC-245fa	HFC-365mfc	HFC-43-10mee	Other HFCs (2) (please specify)	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	c-C_4F_8 perfluorocyclobutane)	C_4F_8 (perfluoromethyl cyclopropane)	C_5F_{12}	C_6F_{14}	Other PFCs (2) (please specify)	Total PFCs	SF_6	NF_3	Other halogenated gases (2) (please specify)
CO_2 equivalent conversion factors(1) [Source of the factor:]																																		
Emissions in original mass unit (tonne)																																		
2B9	Fluorochemical Production																																	
2B9a	HCFC-22 Production																																	
2B9b	HFC Production (specify HFC(s) produced)																																	
2B9c	PFC Production (specify PFC(s) produced)																																	
2B9d	SF_6 Production																																	
2B9e	NF_3 Production																																	
2B9f	Fluoropolymer Production (specify fluoropolymer produced)																																	
2B9g	Other Fluorochemical Production (specify other fluorochemical produced)																																	
2B11	Other (please specify)																																	
Emissions in CO_2 equivalent unit (Gg-CO_2)																																		
2B9	Fluorochemical Production																																	
2B9a	HCFC-22 Production																																	
2B9b	HFC Production (specify HFC(s) produced)																																	
2B9c	PFC Production (specify PFC(s) produced)																																	
2B9d	SF_6 Production																																	
2B9e	NF_3 Production																																	
2B9f	Fluoropolymer Production (specify fluoropolymer produced)																																	
2B9g	Other Fluorochemical Production (specify other fluorochemical produced)																																	
2B11	Other (please specify)																																	

(1) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. The source of the factors must be specified in the bracket.

(2) Insert additional columns if necessary. The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this table. Such gases should be reported in Table 2.11 IPPU background table: Greenhouse Gases without CO_2 equivalent conversion factors.

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the documentation box below.

Documentation box:

Table 2.3 IPPU Background Table: 2C Metal Industry CO_2, CH_4 and N_2O (Updated)

Categories	Activity Data			Emissions						
	Production/Consumption quantity			CO_2 (Gg)			CH_4 (Gg)		N_2O (Gg)	
	Description (1)	Quantity	Unit (2)	Emissions (3)	(information) Captured and Stored (4)	(information) Other Reduction (5)	Emissions (3)	(information) Reduction (6)	Emissions (3)	(information) Reduction (6)
2C Metal Industry										
2C1 Iron and Steel Production										
2C2 Ferroalloys Production										
2C3 Aluminium Production										
2C4 Magnesium Production										
2C5 Lead Production										
2C6 Zinc Production										
2C7 Rare Earths Production										
2C8 Other (please specify) (7)										

(1) Where the options for activity data, e.g. steel production or process materials consumption for estimating the emissions from Iron and Steel Production, specify the activity data used in order to make the choice of emission factor more transparent.

(2) Unit of activity data should be specified.

(3) Enter the reported emissions (adjusted with captured and/or reduced amount).

(4) Where generated CO_2 is captured for injection into a storage, the captured amount should be reported here. These data are provided as the additional information. They are not emissions, therefore should not be included in the national total.

(5) Where reduction of generated CO_2 except for capture and storage occurs and its amount is available, it should be reported here.

(6) Enter the quantities of reduction of generated gas (emission recovery, destruction, etc.).

(7) Insert additional rows if necessary.

Note: Where information is confidential the entries should provide notation key “C” but there should be a note indicating this in the documentation box below. Also, More specific information (e.g. data on virgin and recycled steel production) could be provided in the documentation box.

Documentation box:

Table 2.4 IPPU Background Table: 2C (2C3, 2C4, 2C7, 2C8) Metal Industry HFCs, PFCs, SF_6 and other halogenated gases (Updated)

Categories	HFC-134a	Other HFCs (2) (please specify)	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Other PFCs (2) (please specify)	Total PFCs	SF_6	Other halogenated gases (2) (please specify)
CO_2 equivalent conversion factors (1) [Source of the factor:]														
Emissions in original mass unit (tonne)														
2C3 Aluminium Production (3)														
(information) Reduced amount (4)														
2C4 Magnesium Production (3)														
(information) Reduced amount (4)														
2C7 Rare Earths Production														
(information) Reduced amount (4)														
2C8 Other Metals (please specify) (5)														
(information) Reduced amount (4)														
Emissions in CO_2 equivalent unit (Gg-CO_2)														
2C3 Aluminium Production														
2C4 Magnesium Production														
2C7 Rare Earths Production														
2C8 Other (please specify) (5)														

(1) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. The source of the factors must be specified in the bracket.

(2) Insert additional columns if necessary. The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this table. Such gases should be reported in Table 2.11 IPPU background table: Greenhouse Gases without CO_2 equivalent conversion factors.

(3) Enter the reported emissions (adjusted with captured and/or reduced amount).

(4) Enter the quantities of reduction of generated gas (emission recovery, destruction, etc.).

(5) Insert additional rows if necessary.

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the documentation box below.

Documentation box:

Table 2.5 IPPU Background Table: 2D Non-Energy Products from Fuels and Solvent Use CO_2, CH_4 and N_2O

Categories	Activity Data			Emissions		
	Production/Consumption quantity			CO_2	CH_4	N_2O
	Description	Quantity	Unit	(Gg)	(Gg)	(Gg)
2D Non-Energy Products from Fuels and Solvent Use						
2D1 Lubricant Use	Lubricant consumption		tonne			
2D2 Paraffin Wax Use	Wax consumption		tonne			
2D3 Solvent Use						
2D4 Other						
Product (please specify)						
Product (please specify)						
Product (please specify) (1)						

(1) Insert additional rows if necessary.

Documentation box:

Table 2.6 IPPU Background Table: 2E Electronics Industry HFCs, PFCs, SF_6, NF_3 and other halogenated gases (Updated)

Categories	CO_2 (2)	N_2O (2)	HFC-23	HFC-32	Other HFCs (3) (please specify)	Total HFCs	CF_4	C_2F_6	C_3F_8	c-C_4F_8	Other PFCs (3) (please specify)	Total PFCs	SF_6	NF_3	Other halogenated gases (3) (please specify)
CO_2 equivalent conversion factors (1) [Source of the factor:]															
Emissions in original mass unit (tonne)															
2E Electronics Industry															
2E1 Integrated Circuit or Semiconductor															
2E2 Displays															
2E3 Photovoltaics															
2E4 Microelectromechanical systems (MEMS)															
2E5 Other (please specify) (4)															
Emissions in CO_2 equivalent unit (Gg-CO_2)															
2E Electronics Industry															
2E1 Integrated Circuit or Semiconductor															
2E2 Displays															
2E3 Photovoltaics															
2E4 Microelectromechanical systems (MEMS)															
2E5 Other (please specify) (3)															

(1) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. The source of the factors must be specified in the bracket.

(2) Emissions may occur but no methodological guidance is provided in these Guidelines.

(3) Insert additional columns if necessary. The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this table. Such gases should be reported in Table 2.11 IPPU background table: Greenhouse gases without CO_2 equivalent conversion factors.

(4) Insert additional rows if necessary.

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the documentation box below.

Documentation box:

Table 2.7 IPPU Background Table: 2F Product Uses as Substitutes for Ozone Depleting Substances HFCs, PFCs and other halogenated gases (Updated)

Categories	CO_2 [2]	HFC-23	HFC-32	HFC-125	HFC-134a	HFC-143a	HFC-152a	HFC-227ea	HFC-236fa	HFC-245fa	HFC-365mfc	HFC-43-10mee	Other HFCs [3] (please specify)	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	Other PFCs [3] (please specify)	Total PFCs	Other halogenated gases [3] (please specify)
CO_2 equivalent conversion factors[1] [Source of the factor:]																					
Emissions in original mass unit (tonne)																					
2F Product Uses as Substitutes for Ozone Depleting Substances																					
2F1 Refrigeration and Air Conditioning																					
2F1a Refrigeration and Stationary Air Conditioning																					
2F1b Mobile Air Conditioning																					
2F2 Foam Blowing Agents																					
2F3 Fire Protection																					
2F4 Aerosols																					
2F5 Solvents																					
2F6 Other Applications[4]																					
Emissions in CO_2 equivalent unit (Gg-CO_2)																					
2F Product Uses as Substitutes for Ozone Depleting Substances																					
2F1 Refrigeration and Air Conditioning																					
2F1a Refrigeration and Stationary Air Conditioning																					
2F1b Mobile Air Conditioning																					
2F2 Foam Blowing Agents																					
2F3 Fire Protection																					
2F4 Aerosol																					
2F5 Solvents																					
2F6 Other Applications[4]																					

(1) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. The source of the factors must be specified in the bracket.

(2) Emissions may occur but no methodological guidance is provided in these Guidelines.

(3) Insert additional columns if necessary. For example, additional halogenated compounds with GWPs include HFC-1234yf, HFC-1234ze(E), and HCFC-1233zd(E). The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this table. Such gases should be reported in Table 2.11 IPPU background table: Greenhouse gases without CO_2 equivalent conversion factors.

(4) Insert additional rows if necessary.

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the documentation box below.

Documentation box:

Table 2.8 IPPU Background Table: 2G (2G1, 2G2, 2G4) Other Product Manufacture and Use – PFCs, SF_6 and other halogenated gases (Updated)

Categories	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Other PFCs (2) (please specify)	Total PFCs	HFC-23	SF_6	Other halogenated gases (2) (please specify)
CO_2 equivalent conversion factors(1) [Source of the factor:]												
Emissions in original mass unit (tonne)												
2G Other Product Manufacture and Use												
2G1 Electrical Equipment												
2G1a Manufacture of Electrical Equipment (3)												
(information) Reduced amount (4)												
2G1b Use of Electrical Equipment (3)												
(information) Reduced amount (4)												
2G1c. Disposal of Electrical Equipment (3)												
(information) Reduced amount (4)												
2G2 SF_6 and PFCs from Other Product Uses												
2G2a Military Applications (3)												
(information) Reduced amount (4)												
2G2b Accelerators (3)												
University and Research Particle Accelerators (3)												
(information) Reduced amount (4)												
Industrial and Medical Particle Accelerators (3)												
(information) Reduced amount (4)												
2G2c Waterproofing of Electronic Circuits												
(information) Reduced amount (4)												
2G2d Other (please specify) (3), (5)												
(information) Reduced amount (4), (5)												
2G4 Other (please specify) (3), (5), (6)												
(information) Reduced amount (4) , (5), (6)												
Emissions in CO_2 equivalent unit (Gg-CO_2)												
2G Other Product Manufacture and Use												
2G1 Electrical Equipment												
2G1a Manufacture of Electrical Equipment												
2G1b Use of Electrical Equipment												
2G1c Disposal of Electrical Equipment												
2G2 SF_6 and PFCs from Other Product Uses												
2G2a Military Applications (AWACS)												
2G2b Accelerators												
University and Research Particle Accelerators												
Industrial and Medical Particle Accelerators												
2G2c Waterproofing of Electronic Circuits												
2G2d Other (please specify) (5)												
2G4 Other (please specify) (5), (6)												

(1) Typically, global warming potential (100 year time horizon) identified in the IPCC Assessment Report can be used. The source of the factors must be specified in the bracket.

(2) Insert additional columns if necessary. The other halogenated gases for which the CO_2 equivalent conversion factor is not available should not be included in this table. Such gases should be reported in Table 2.11 IPPU background table: Greenhouse gases without CO_2 equivalent conversion factors.

(3) Enter the reported emissions (adjusted with captured and/or reduced amount).

(4) Enter the quantities of reduction of generated gas (emission recovery, destruction, etc.)

(5) Insert additional rows if necessary.

(6) If HFCs with CO_2 equivalent conversion factor are estimated, include them in the column for "Other halogenated gases".

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the documentation box below.

Documentation box:

Table 2.9 IPPU Background Table: 2G (2G3, 2G4) Other Product Manufacture and Use - N_2O, CO_2, CH_4

Categories	Activity Data			Emissions					
				N_2O (Gg)		CO_2 (Gg)		CH_4 (Gg)	
	Description	Quantity	Unit	Emissions [1]	(information) Reduction [2]	Emissions [1]	(information) Reduction [2]	Emissions [1]	(information) Reduction [2]
2G3 N_2O from Product Uses									
2G3a Medical Applications	N_2O supplied		tonne						
2G3b Propellant for Pressure and Aerosol Products	N_2O supplied		tonne						
2G3c Other (please specify) [3]	N_2O supplied		tonne						
2G4 Other (please specify) [3]									

(1) Enter the reported emissions (adjusted with captured and/or reduced amount).

(2) Enter the quantities of reduction of generated gas (emission recovery, destruction, etc.)

(3) Insert additional rows if necessary.

Documentation box:

Table 2.10 IPPU Background Table: 2H Other

Categories		Activity Data		Emissions					
				CO_2 (Gg)		CH_4 (Gg)		N_2O (Gg)	
		Quantity	Unit	Emissions [1]	(information) Reduction [2]	Emissions [1]	(information) Reduction [2]	Emissions [1]	(information) Reduction [2]
2H	**Other**								
2H1	Pulp and Paper Industry								
2H2	Food and Beverages Industry								
2H3	Other (please specify) [3]								

(1) Enter the reported emissions (adjusted with captured and/or reduced amount).

(2) Enter the quantities of reduction of generated gas (emission recovery, destruction, etc.).

(3) Insert additional rows if necessary.

Documentation box:

Table 2.11 IPPU Background Table: Greenhouse gases without CO_2 equivalent conversion factors (Updated)

Categories		(please specify)	(please specify)	(please specify)	(please specify)	(please specify) (1)
Emissions in original mass unit (tonne)						
Total						
2B Chemical Industry						
2B9	Fluorochemical Production					
2B11	Other (please specify) (2)					
2C Metal Industry						
2C4	Magnesium Production					
2C7	Other (please specify) (2)					
2E Electronics Industry						
2E1	Integrated Circuit or Semiconductor					
2E2	Displays					
2E3	Photovoltaics					
2E4	Microelectromechanical systems (MEMS)					
2E5	Other (please specify) (2)					
2F Product Uses as Substitutes for Ozone Depleting Substances						
2F1	Refrigeration and Air Conditioning					
2F1a	Refrigeration and Stationary Air Conditioning					
2F1b	Mobile Air Conditioning					
2F2	Foam Blowing Agents					
2F3	Fire Protection					
2F4	Aerosols					
2F5	Solvents					
2F6	Other Applications (please specify) (2)					
2G. Other Product Uses						
2G1	Electrical Equipment					
2G1a	Manufacture of Electrical Equipment					
2G1b	Use of Electrical Equipment					
2G1c	Disposal of Electrical Equipment					
2G2	SF_6 and PFCs from Other Product Uses					
2G2a	Military Applications (AWACS)					
2G2b	Accelerators					
2G2c	Waterproofing of electronic circuits					
2G2d	Other (please specify)(2)					
2G4	Other (please specify)(2)					

(1) Insert additional columns if necessary. The gases for which the CO_2 equivalent conversion factor is available should not be included in this table. Such gases should be reported in the respective sectoral background tables and included in national totals.

(2) Insert additional rows if necessary.

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the documentation box below.

Documentation box:

Table 2.12 IPPU Background Table: Allocation of CO_2 emissions from Non-Energy Use of fossil fuels: IPPU and other sectors [See also section 1.4 of Volume 3] (Updated)

Category	Reported in year: ……..				Notes
	Primary NEU fuel (1)	Other NEU fuel(s) (1)	Emissions Amount Reported in IPPU Sector CO_2 (2) (Gg)	In case reported elsewhere: Sub-category in 1A where these emissions are (partly) reported	
2 Industrial Processes and Product Use					
2A Mineral Industry					
(Please specify the sub-category)	(Coal, ..)				4
2B Chemical Industry					
2B1 Ammonia Production	Natural gas	Oil, coal			
2B5 Carbide Production	Pet coke	Oil			
2B6 Titanium Dioxide Production	Coal				
2B8 Petrochemical and Carbon Black Production					
2B8a Methanol	Natural gas	Coal, oil			5
2B8b Ethylene	Naphtha	Gas oil; butane, ethane, propane, LPG			5
2B8f Carbon Black	Natural gas	Oil, coke oven gas			
2B10 Hydrogen Production	Natural gas	LPG, naphtha, coal, methanol, biomass and waste			
2B11 Other					
2C Metal Industry					
2C1 Iron and Steel Production	Coke	Coal, pet coke (carbon electrode)			6
2C2 Ferroalloys Production	(Carbon electrode)	Coke, coal			7
2C3 Aluminium Production	(Carbon electrode)	Coke, coal			7
2C5 Lead Production	Coke				
2C6 Zinc Production	Coke				
2C7 Other	(Carbon electrode)	Coke, coal			
2D Non-Energy Products from Fuels and Solvent Use					
2D1 Lubricant Use	Lubricants	Greases			
2D2 Paraffin Wax Use	Waxes				
2D3 Solvent Use	(Mineral turpentine)	Coal tars and oils			8
2D4 Other					9
2H Other					
2H1 Pulp and Paper Industry					
2H2 Food and Beverages Industry	Coke				
2H3 Other					
1 ENERGY					
1A Fuel Combustion Activities			**Reported in Sector 1A (3)**		
1A1a Main Activity Electricity and Heat Production	(BF gas)	(Chemical off-gases)			10
1A1b Petroleum Refining					
1A1c Manufacture of Solid Fuels and Other Energy Industries	BF gas				
1A2 Manufacturing Industries and Construction	(BF gas)	(Lubricants, chemical off-gases))			

(1) The columns 'Primary NEU fuel' and 'Other NEU fuel' should be completed with the actual fuel types used.

(2) These are the same emissions reported in the sectoral background table (also the same emissions notation keys NE, NO, IE, where applicable). If (partly) reported elsewhere, a reference to that other source category should be added in the next column.

(3) Report here only the CO_2 emissions from combustion of waste gases produced from industrial processes but used for fuel combustion in other economic sectors and reported in the Energy sector.(e.g. from combustion of blast furnace gas or chemical off-gases transferred offsite to another source category).

(4) For example, powdered anthracite coal may be used in Glass Production (2A3).

(5) In cases where the production of off-gases (i.e. byproduct gases) is fully accounted for in the energy statistics, the combustion of these gases may be used to calculate and report CO_2 emissions from the feedstock losses. Part of these off-gases may be combusted off-site (i.e. in a sector other than the petrochemical industry) and should thus be accounted for separately as fuel combustion in the Energy Sector.

(6) Part of the blast furnace gas produced from coke used in blast furnaces may be combusted off-site (i.e. in a sector other than the iron and steel industry) and should thus be accounted for separately as fuel combustion in the Energy Sector.

(7) Carbon electrodes are generally manufactured from coke, coal or tar either on-site by the users themselves or separately by anode production plants and then sold to users domestically and/or exported. If anodes are also imported and/or exported, there is no direct correspondence between fuels used for anode production and the amounts of anodes used in the country.

(8) Mineral turpentines are often used as solvent, possibly blended with other liquids. Aromatics derived from coal oils may also be used as solvents.

(9) Emissions from asphalt production, paving of roads and roofing should be reported under 2D4. However, bitumen - and other oil as diluent or 'road oil' - used for this activity does not result in CO_2 emissions.

(10) CO_2 from blast furnace gas and chemical off-gases should be reported here only when utilised in public power or heat production.

Documentation box:

Table 3 AFOLU Sectoral Table (1 of 2) (Updated)

Categories	Net CO_2 emissions/ removals	Emissions				
		CH_4	N_2O	NO_x	CO	NMVOCs
	(Gg)					
3 AFOLU						
3A Livestock						
3A1 Enteric Fermentation						
3A1a Cattle						
3A1ai Dairy Cows						
3A1aii Other Cattle						
3A1b Buffalo						
3A1c Sheep						
3A1d Goats						
3A1e Camels						
3A1f Horses						
3A1g Mules and Asses						
3A1h Swine						
3A1j Other (please specify)						
3A2 Manure Management (1)						
3A2a Cattle						
3A2ai Dairy Cows						
3A2aii Other Cattle						
3A2b Buffalo						
3A2c Sheep						
3A2d Goats						
3A2e Camels						
3A2f Horses						
3A2g Mules and Asses						
3A2h Swine						
3A2i Poultry						
3A2j Other (please specify)						
3A2k Co-digestates (on-farm)						
3A2ki Crop residues						
3A2kii Energy crops						
3A2kiii Other						
3B Land						
3B1 Forest Land						
3B1a Forest Land Remaining Forest Land						
3B1b Land Converted to Forest Land						
3B1bi Cropland Converted to Forest Land						
3B1bii Grassland Converted to Forest Land						
3B1biii Wetlands Converted to Forest Land						
3B1biv Settlements Converted to Forest Land						
3B1bv Other Land Converted to Forest Land						
3B2 Cropland						
3B2a Cropland Remaining Cropland						
3B2b Land Converted to Cropland						
3B2bi Forest Land Converted to Cropland						
3B2bii Grassland Converted to Cropland						
3B2biii Wetlands Converted to Cropland						
3B2biv Settlements Converted to Cropland						
3B2bv Other Land Converted to Cropland						
3B3 Grassland						
3B3a Grassland Remaining Grassland						
3B3b Land Converted to Grassland						
3B3bi Forest Land Converted to Grassland						
3B3bii Cropland Converted to Grassland						
3B3biii Wetlands Converted to Grassland						
3B3biv Settlements Converted to Grassland						
3B3bv Other Land Converted to Grassland						

Table 3 AFOLU Sectoral Table (2 of 2) (Updated) (Continued)

Categories	Net CO_2 emissions/ removals	Emissions				
		CH_4	N_2O	NO_x	CO	NMVOCs
	(Gg)					
3B4 Wetlands						
3B4a Wetlands Remaining Wetlands						
3B4ai Peatlands Remaining Peatlands						
3B4aii Flooded Land Remaining Flooded Land						
3B4b Land Converted to Wetlands						
3B4bi Land Converted for Peat Extraction						
3B4bii Land Converted to Flooded Land						
3B4biii Land Converted to Other Wetlands						
3B5 Settlements						
3B5a Settlements Remaining Settlements						
3B5b Land Converted to Settlements						
3B5bi Forest Land Converted to Settlements						
3B5bii Cropland Converted to Settlements						
3B5biii Grassland Converted to Settlements						
3B5biv Wetlands Converted to Settlements						
3B5bv Other Land Converted to Settlements						
3B6 Other Land						
3B6a Other Land Remaining Other Land						
3B6b Land Converted to Other Land						
3B6bi Forest Land Converted to Other Land						
3B6bii Cropland Converted to Other Land						
3B6biii Grassland Converted to Other Land						
3B6biv Wetlands Converted to Other Land						
3B6bv Settlements Converted to Other Land						
3C Aggregate Sources and Non-CO_2 Emissions Sources on Land [2]						
3C1 Biomass Burning						
3C1a Biomass Burning in Forest Land						
3C1b Biomass Burning in Cropland						
3C1c Biomass Burnings in Grassland						
3C1d Biomass Burnings in All Other Land						
3C2 Liming						
3C3 Urea Fertilization						
3C4 Direct N_2O Emissions from Managed Soils [3]						
3C5 Indirect N_2O Emissions from Managed Soils						
3C6 Indirect N_2O Emissions from Manure Management						
3C7 Rice cultivation						
3C8 Other (please specify)						
3D Other						
3D1 Harvested Wood Products						
3D2 Other (please specify)						

(1) Indirect N_2O emissions are not included here (see category 3C6).

(2) If CO_2 emissions from Biomass Burning are not already included in Table 3.2 (Carbon stock changes background table), they should be reported here.

(3) Countries may report by land categories if they have the information.

* Cells to report emissions of NO_x, CO, and NMVOC have not been shaded although the physical potential for emissions is lacking for some categories.

Documentation box:

Table 3.1 AFOLU Background Table: 3A1 - 3A2 Agriculture/Livestock

Categories		Activity data		Emissions	
				CH_4	N_2O
		(number of animals)		(Gg)	
3A Livestock					
3A1	**Enteric Fermentation**				
3A1a	Cattle				
3A1ai	Dairy Cows				
3A1aii	Other Cattle				
3A1b	Buffalo				
3A1c	Sheep				
3A1d	Goats				
3A1e	Camels				
3A1f	Horses				
3A1g	Mules and Asses				
3A1h	Swine				
3A1j	Other (please specify)				
3A2	**Manure Management** (1,2)				
3A2a	Cattle				
3A2ai	Dairy Cows				
3A2aii	Other Cattle				
3A2b	Buffalo				
3A2c	Sheep				
3A2d	Goats				
3A2e	Camels				
3A2f	Horses				
3A2g	Mules and Asses				
3A2h	Swine				
3A2i	Poultry				
3A2j	Other (please specify)				
		Total dry mass (kg/year)	**Total N (kg N/yr)**		
3A2k	Co-digestates (on-farm)				
3A2ki	Crop residues				
3A2kii	Energy crops				
3A2kiii	Other				

(1) Indirect N_2O emissions are not included here.

(2) Includes inputs from co-digestion of residues and crops used in the production of biogas.

Documentation box:

Table 3.2 AFOLU Background Table: 3B Carbon stock changes in FOLU (1 of 2)

Categories		Activity data		Net carbon stock change and CO_2 emissions									Net CO_2 emissions
				Biomass				Dead organic matter			Soils		
		Total area	Thereof: Area of organic soils	Increase	Decrease	Carbon emitted as CH_4 and CO from fires [1]	Net carbon stock change	Net carbon stock change	Carbon emitted as CH_4 and CO from fires [1]	Net carbon stock change	Net carbon stock change in mineral soils [2]	Carbon loss from drained organic soils	
		(ha)		(Gg C)									(Gg CO_2)
3B Land													
3B1	**Forest Land**												
3B1a	Forest Land Remaining Forest Land												
3B1b	Land Converted to Forest Land												
3B1bi	Cropland Converted to Forest Land												
3B1bii	Grassland Converted to Forest Land												
3B1biii	Wetlands Converted to Forest Land												
3B1biv	Settlements Converted to Forest Land												
3B1bv	Other Land Converted to Forest Land												
3B2	**Cropland**												
3B2a	Cropland Remaining Cropland												
3B2b	Land Converted to Cropland												
3B2bi	Forest Land Converted to Cropland												
3B2bii	Grassland Converted to Cropland												
3B2biii	Wetlands Converted to Cropland												
3B2biv	Settlements Converted to Cropland												
3B2bv	Other Land Converted to Cropland												
3B3	**Grassland**												
3B3a	Grassland Remaining Grassland												
3B3b	Land Converted to Grassland												
3B3bi	Forest Land Converted to Grassland												
3B3bii	Cropland Converted to Grassland												
3B3biii	Wetlands Converted to Grassland												
3B3biv	Settlements Converted to Grassland												
3B3bv	Other Land Converted to Grassland												
3B4	**Wetlands [3]**												
3B5	**Settlements**												

Table 3.2 AFOLU Background Table: 3B Carbon stock changes in FOLU (2 of 2) (Continued)

Categories		Activity data		Net carbon stock change and CO_2 emissions									Net CO_2 emissions
				Biomass				Dead organic matter			Soils		
		Total area	Thereof: Area of organic soils	Increase	Decrease	Carbon emitted as CH_4 and CO from fires (1)	Net carbon stock change	Net carbon stock change	Carbon emitted as CH_4 and CO from fires (1)	Net carbon stock change	Net carbon stock change in mineral soils (2)	Carbon loss from drained organic soils	
		(ha)		(Gg C)									(Gg CO_2)
3B5a	Settlements Remaining Settlements												
3B5b	Land Converted to Settlements												
3B5bi	Forest Land Converted to Settlements												
3B5bii	Cropland Converted to Settlements												
3B5biii	Grassland Converted to Settlements												
3B5biv	Wetlands Converted to Settlements												
3B5bv	Other Land Converted to Settlements												
3B6	**Other Land**												
3B6a	Other Land Remaining Other Land												
3B6b	Land Converted to Other Land												
3B6bi	Forest Land Converted to Other Land												
3B6bii	Cropland Converted to Other Land												
3B6biii	Grassland Converted to Other Land												
3B6biv	Wetlands Converted to Other Land												
3B6bv	Settlements Converted to Other Land												

(1) Where the carbon contained in the emissions of CH_4 and CO is significant part of the sectoral emissions, this should be copied from the corresponding columns in the Sectoral Background Table 3.4. This amount of carbon emitted as CH_4 and CO is then subtracted from carbon stock change to avoid double counting (see Volume 4, Section 2.2.3).

(2) The activity data used for this column correspond to the difference between the column Area and the Area of organic soils.

(3) CO_2 Emissions from Wetlands are reported in a separate background table (Table 3.3) that includes all gases emitted from Wetlands.

Documentation box:

Table 3.3 AFOLU Background Table: Emissions in Wetlands (3B4) (Updated)

Categories	Activity data	Emissions		
	Area	CO_2	CH_4	N_2O
	(ha)	(Gg)		
3B4 Wetlands				
3B4a Wetlands Remaining Wetlands				
3B4ai Peatlands Remaining Peatlands				
3B4aii Flooded Land Remaining Flooded Land				
3B4b Land Converted to Wetlands				
3B4bi Land Converted for Peat Extraction				
3B4bii Land Converted to Flooded Land				
3B4biii Land Converted to Other Wetlands				

Documentation box:

Table 3.4 AFOLU Background Table: Biomass Burning (3C1) (1 of 2)

Categories [1]	Activity data			Emissions							Information item: Carbon emitted as CH_4 and CO [5]	
	Description[2]	Unit	Values	CO_2[3]	CH_4[4]		N_2O	CO[4]		NO_x	Biomass	DOM
					Biomass	DOM		Biomass	DOM			
		(ha or kg dm)		(Gg)							(C Gg)	
3C1 Biomass Burning												
3C1a Biomass Burning in Forest Land												
Controlled Burning												
Wildfires												
3C1b Biomass Burning in Cropland												
Biomass Burning in Cropland Remaining Cropland												
Controlled Burning												
Wildfires												
Biomass burning in Forest Land Converted to Cropland												
Controlled Burning												
Wildfires												
Biomass Burning in Non Forest Land Converted to Cropland												
Controlled Burning												
Wildfires												
3C1c Biomass Burning in Grassland												
Burning in Grassland Remaining Grassland												
Controlled Burning												
Wildfires												
Burning in Forest Land Converted to Grassland												
Controlled Burning												
Wildfires												
Burning in Non Forest Land Converted to Grassland												
Controlled Burning												
Wildfires												
3C1d Biomass Burning in All Other Land												
Biomass Burning in Other Land Remaining All Other Land												
Controlled Burning												
Wildfires												

Table 3.4 AFOLU Background Table: Biomass Burning (3C1) (2 of 2) (Continued)

Categories [1]	Activity data			Emissions							Information item: Carbon emitted as CH_4 and CO [5]	
	Description[2]	Unit	Values	CO_2 [3]	CH_4 [4]		N_2O	CO [4]		NO_x	Biomass	DOM
					Biomass	DOM		Biomass	DOM			
		(ha or kg dm)		(Gg)							(C Gg)	
Biomass Burning in Forest Land Converted to All Other Land												
Controlled Burning												
Wildfires												
Biomass Burning in Non Forest Land Converted to All Other Land												
Controlled Burning												
Wildfires												

(1) Parties should report both Controlled/Prescribed Burning and Wildfires emissions, where appropriate, in a separate manner.

(2) For each land type data should be selected between area burned or biomass burned. Units for area will be in hectare (ha) and for biomass burned in kilogram dry matter (kg dm).

(3) If CO_2 emissions from biomass burning are not already included in Table 3.2 (Carbon stock changes background table), they should be reported here. Carbon stock changes associated with biomass burning should not also be reported in Table 3.2 to avoid double counting.

(4) CH_4 and CO emissions from biomass burning and DOM are reported separately.

(5) Where the carbon contained in the emissions of CH_4 and CO is a significant part of the sectoral emissions this should be transferred to the corresponding columns in the Sectoral Background Table 3.2. This amount of carbon emitted as CH_4 and CO is then subtracted from carbon stock change to avoid double counting. The conversion factors to convert CH_4 and CO to C (as input to Table 3.2) are 12/16 for CH_4 and 12/28 for CO. (see Volume 4, Section 2.2.3).

Documentation box:

Table 3.5 AFOLU Background Table: CO_2 emissions from Liming (3C2)

Categories	Activity data			Emissions
	Limestone $CaCO_3$	Dolomite $CaMg(CO_3)_2$	Total amount of lime applied (2)	CO_2
	(Mg/yr)		(Mg/yr)	(Gg)
3C2 Liming (1)				
Forest Land				
Cropland				
Grassland				
Wetland				
Other Land				
Other				

(1) If countries are not able to separate liming application for different land use categories, they should use the main category "Liming". Also, if a country has data broken down to limestone and dolomite at national level, it can be reported under this category.

(2) A country may report aggregate estimates for total lime applications when data are not available for limestone and dolomite.

Documentation box:

Table 3.6 AFOLU Background Table: CO_2 emissions from Urea Fertilization (3C3)

Categories	Activity data	Emissions
	Total amount of urea applied	CO_2
	(Mg/yr)	(Gg)
3C3 Urea applied (1)		
Forest Land		
Cropland		
Grassland		
Settlements		
Other Land		

(1) If countries are not able to separate urea application for different land use categories, they should use the main category “Urea applied”.

Documentation box:

Table 3.7 AFOLU Background Table: Direct N_2O emissions from Managed Soils (3C4)

Categories [1]	Activity data	Emissions
	Total amount of nitrogen applied	N_2O
	(Gg N/yr)	(Gg)
3C4 Direct N_2O Emissions from Managed Soils		
Inorganic N fertilizer application		
Forest Land		
Cropland		
Grassland		
Settlements		
Other Land		
Organic N applied as fertilizer (manure and organic wastes)		
Forest Land		
Cropland		
Grassland		
Settlements		
Other Land		
Urine and dung N deposited on pasture, range and paddock by grazing animals [2]		
N in crop residues [3]		
	Area	
	(ha)	
N mineralization/immobilization associated with loss/gain of soil organic matter resulting from change of land use or management of mineral soils [3]		
Drainage/management of organic soils (i.e., Histosols)		

(1) Countries will report at the aggregation level if their activity data allows them within each category. If country has disaggregated data by land use, reporting is also possible using this table.

(2) Only for Grassland.

(3) Only for Cropland.

Documentation box:

Table 3.8 AFOLU Background Table: Indirect N_2O emissions from Managed Soils and Manure Management (3C5 and 3C6)

Categories [(1)]	Activity data	Emissions
	Total amount of nitrogen applied / excreted	N_2O
	(Gg N/yr)	(Gg)
3C5 Indirect N_2O emissions from Managed Soils		
From atmospheric deposition of N volatilized from managed soils from agricultural inputs of N (synthetic N fertilizers; organic N applied as fertilizer; urine and dung N deposited on pasture, range and paddock by grazing animals [(2)]		
Forest Land		
Cropland		
Grasslands		
Settlements		
Other Land		
From N leaching/runoff from managed soils (i.e. from synthetic N fertilizers; organic N applied as fertilizer; urine and dung N deposited on pasture, range and paddock by grazing animals [(2)]; N in crop residues [(3)]; and N mineralization/immobilization associated with loss/gain of soil organic matter resulting from change of land use or management of mineral soils [(3)])		
Forest Land		
Cropland		
Grasslands		
Settlements		
Other Land		
3C6 Indirect N_2O emissions from Manure Management		

(1) Countries will report at the aggregation level if their activity data allows them within each category. If country has disaggregated data by land use, reporting is also possible using this table.

(2) Only for Grassland.

(3) Only for Cropland.

Documentation box:

Table 3.9 AFOLU Background Table: Non-CO_2 GHG emissions not included elsewhere (3C7 and 3C8)

Categories	Activity data	Emissions	
		CH_4	N_2O
	(ha)	(Gg)	
3C7 Rice cultivation (1)			
3C8 Other (please specify)			

(1) If a country wishes to report direct N_2O emissions from N fertilizer application to rice field, it should be reported here. Otherwise, in Table 3.7.

Documentation box:

Table 3.10 AFOLU Background Table: Harvested Wood Products (3D1) - Annual carbon HWP contribution to total AFOLU CO_2 removals and emissions and background information

	Variable number										
	1A	1B	2A	2B	3	4	5	6	7	8	9
Inventory year	Annual Change in stock of HWP in use from consumption	Annual Change in stock of HWP in SWDS from consumption	Annual Change in stock of HWP in use produced from domestic harvest	Annual Change in stock of HWP in SWDS produced from domestic harvest	Annual Imports of wood, and paper products + wood fuel, pulp, recovered paper, roundwood/ chips	Annual Exports of wood, and paper products + wood fuel, pulp, recovered paper, roundwood/ chips	Annual Domestic Harvest	Annual release of carbon to the atmosphere from HWP consumption (from fuelwood & products in use and products in SWDS)	Annual release of carbon to the atmosphere from HWP (including fuelwoood) where wood came from domestic harvest (from products in use and products in SWDS)	HWP Contribution to AFOLU CO_2 emissions/ removals	Approach used to estimate HWP Contribution
	$\Delta C_{HWP\ IU\ DC}$	$\Delta C_{HWP\ SWDS\ DC}$	$\Delta C_{HWP\ IU\ DH}$	$\Delta C_{HWP\ SWDS\ DH}$	P_{IM}	P_{EX}	H	$\uparrow C_{HWP\ DC}$	$\uparrow C_{HWP\ DH}$		
	Gg C /yr									Gg CO_2 /yr	
1990											
…..											

Report Col 6 or 7 as needed for the approach used. Col 6 or 7 may be computed using Cols 1 through 5 or by a Tier 3 method. Always report Cols 3, 4, and 5. Report Cols 1A, 1B, 2A, 2B if they are used.

The HWP contribution and approach should be reported in Columns 8 and 9 together with a description of the approach chosen and main assumptions in the Documentation Box

Additional Variables calculated and used should be reported to enhance the transparency of the results. (e.g., CH_4 from SWDS if this was used) Add additional columns if needed.

Note: $\uparrow C_{HWP\ DC} = H + P_{IM} - P_{EX} - \Delta C_{HWP\ IU\ DC} - \Delta C_{HWP\ SWDS\ DC}$ AND $\uparrow C_{HWP\ DH} = H - \Delta C_{HWP\ IU\ DH} - \Delta C_{HWP\ SWDS\ DH}$

Documentation box:

Table 4 Waste Sectoral Table

Categories	CO_2	CH_4	N_2O	NO_x	CO	NMVOC (1)	SO_2
	(Gg)						
4 WASTE							
4A Solid Waste Disposal							
4A1 Managed Waste Disposal Sites							
4A2 Unmanaged Waste Disposal Sites							
4A3 Uncategorised Waste Disposal Sites							
4B Biological Treatment of Solid Waste							
4C Incineration and Open Burning of Waste							
4C1 Waste Incineration							
4C2 Open Burning of Waste							
4D Wastewater Treatment and Discharge							
4D1 Domestic Wastewater Treatment and Discharge							
4D2 Industrial Wastewater Treatment and Discharge							
4E Other (please specify) (2)							

(1) Countries may wish to report emissions of NMVOCs from waste disposal sites and wastewater treatment.

(2) Insert additional rows if necessary.

* Cells to report emissions of NO_x, CO, NMVOC and SO_2 have not been shaded although the physical potential for emissions is lacking for some categories.

Documentation box:

Table 4.1 Waste Background Table: CO_2, CH_4, N_2O emissions (Updated)

Categories	Type of activity data	Unit	Emission factor			Emissions		
			CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
			(Gg/unit activity data)			(Gg)		
4A Solid Waste Disposal (1)								
4A1 Managed Waste Disposal Sites								
4A2 Unmanaged Waste Disposal Sites								
4A3 Uncategorised Waste Disposal Sites								
4B Biological Treatment of Solid Waste								
4C Incineration and Open Burning of Waste (2)								
4C1 Waste Incineration								
4C2 Open Burning of Waste								
4D Wastewater Treatment and Discharge								
4D1 Domestic Wastewater Treatment and Discharge								
CH_4 emissions (3)								
N_2O emissions (4)								
4D2 Industrial Wastewater Treatment and Discharge								
CH_4 emissions (3)								
N_2O emissions (4)								
4E Other (please specify) (5)								

(1) Amount of waste deposited in the SWDS in the inventory year. [mil. tonnes of wet waste/yr] Specification by waste type is encouraged. Emission factor data (parameters used in the calculations) should be reported in FOD parameter sheet or reported separately, when other methods are used.

(2) Waste burned for energy is reported in the Energy Sector under 1A. Information on reporting of waste combustion in the Energy Sector should be given in the documentation box.

(3) Activity data for estimation of CH_4 emissions is total amount of organically degradable material in the wastewater (TOW) [Gg BOD/yr or Gg COD/yr].

(4) Activity data for estimation of N_2O emissions is total amount of nitrogen in wastewater (TN) [Gg N/yr] and total amount of nitrogen in effluent ($N_{EFFLUENT}$) [Gg N/yr]

(5) Insert additional rows if necessary.

Documentation box:

Table 4.2 Waste Background Table: CH_4 recovery (1) (2)

Categories	Unit	CH_4	
	Gg CH_4	Flared (3)	Energy recovery (4)
4A Solid Waste Disposal			
4B Biological Treatment of Solid Waste			
4D Wastewater Treatment and Discharge			
4D1 Domestic Wastewater Treatment and Discharge			
4D2 Industrial Wastewater Treatment and Discharge			
4E Other (please specify) (5)			

(1) The amount of CH_4 recovery should be reported in this table even if the gas is used for energy.
(2) Flaring and energy recovery should be reported separately, if possible.
(3) Default EF for CH_4 and N_2O from flaring is zero. The CO_2 emissions are not reported as the gas is of biogenic origin.
(4) When CH_4 recovered is used for energy, the emissions from the combustion of the gas should be reported in the Energy sector (under 1A). Default EF for CH_4 and N_2O from the combustion of the gas is zero.
(5) Insert additional rows if necessary.

Documentation box:

Table 4.3 Waste Background Table: Long-term storage of carbon Information items

Categories	C [1]
	(Gg)
Information items[2]	
Long-term storage of carbon in waste disposal sites	
Annual change in total long-term storage of carbon stored	
Annual change in long-term storage of carbon in HWP waste [3]	

(1) Report in mass carbon.

(2) These items are listed for information only and will not be added to the totals. The carbon should be converted to carbon dioxide.

(3) Carbon stored in wood, paper, cardboard, garden (yard) and park (equal to the annual change in stock of HWP in SWDS from consumption, reported in Table 3.10, Column 1B).

Documentation box:

Table 5A Cross-sectoral Table: Indirect emissions of N_2O (1)(2)

Categories	Activity data / source emissions		Emissions
	Emissions NH_3	Emissions NO_x	N_2O
	(Gg NH_3)	(Gg NO_2-equivalents)	(Gg N_2O)
1 Energy			
2 Industrial Processes and Product Use			
3 Agriculture, Forestry and Other Land Use			
3C5 Indirect N_2O Emissions from managed soils			
3C6 Indirect N_2O Emissions from manure management			
Other (3) (Please specify)			
4 Waste			
5 Other (Please specify) (4)			

(1) 90 to 99 percent of ammonia emissions originate in the Agriculture Sector. Other emission sources for ammonia are in the Energy Sector (such as combustion, petroleum refining, catalyst cars in the transport sector), in the Industrial Processes and Product Use Sector in particular from production of ammonia, nitric acid, ammonium nitrate and phosphate, urea, and fertilizers), and from metal industry (coke ovens battery operations), and also in the Waste Sector (solid waste disposal and waste incineration).

(2) Indirect N_2O emissions from nitrogen leaching /runoff from managed soils in AFOLU categories are included in Table 3.8.

(3) Any other sources not included in 3C5 and 3C6.

(4) Insert additional rows if necessary.

Documentation box:

Table 6A Trends of CO_2 (1 of 3) (Updated) (Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
Total National Emissions and Removals																					
1 ENERGY																					
1A	**Fuel Combustion Activities**																				
1A1	Energy Industries																				
1A2	Manufacturing Industries and Construction																				
1A3	Transport																				
1A4	Other Sectors																				
1A5	Non-Specified																				
1B	**Fugitive Emissions from Fuels**																				
1B1	Solid Fuels																				
1B2	Oil and Natural Gas																				
1B3	Other Emissions from Energy Production																				
1C	**Carbon Dioxide Transport and Storage**																				
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen Production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvent Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E1	Integrated Circuit or Semiconductor																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				

Table 6A Trends of CO_2 (2 of 3) (Updated) (Continued)

(Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	...
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				
2H1	Pulp and Paper Industry																				
2H2	Food and Beverages Industry																				
2H3	Other (please specify)																				
3 AGRICULTURE, FORESTRY AND OTHER LAND USE																					
3A	**Livestock**																				
3A1	Enteric Fermentation																				
3A2	Manure Management																				
3B	**Land**																				
3B1	Forest Land																				
3B2	Cropland																				
3B3	Grassland																				
3B4	Wetlands																				
3B5	Settlements																				
3B6	Other Land																				
3C	**Aggregate Sources and Non-CO_2 Emissions Sources on Land**																				
3C1	Biomass Burning																				
3C2	Liming																				
3C3	Urea Application																				
3C4	Direct N_2O Emissions from Managed Soils																				
3C5	Indirect N_2O Emissions from Managed Soils																				
3C6	Indirect N_2O Emissions from Manure Management																				
3C7	Rice cultivation																				
3C8	Other (please specify)																				
3D	**Other**																				
3D1	Harvested Wood Products																				
3D2	Other (please specify)																				
4 WASTE																					
4A	**Solid Waste Disposal**																				
4A1	Managed Waste Disposal Sites																				
4A2	Unmanaged Waste Disposal Sites																				
4A3	Uncategorised Waste Disposal Sites																				
4B	**Biological Treatment of Solid Waste**																				
4C	**Incineration and Open Burning of Waste**																				
4C1	Waste Incineration																				
4C2	Open Burning of Waste																				

Table 6A Trends of CO_2 (3 of 3) (Updated) (Continued)

(Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
4D	**Wastewater Treatment and Discharge**																				
4D1	Domestic Wastewater Treatment and Discharge																				
4D2	Industrial Wastewater Treatment and Discharge																				
4E	**Other (please specify)**																				
5 OTHER																					
5A	**Indirect N_2O emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH_3**																				
5B	**Other (please specify)**																				
Memo items																					
International Bunkers																					
	International Aviation (International Bunkers)																				
	International Water-borne Transport (International Bunkers)																				
	Multilateral Operations																				
Information items (1)																					
CO_2 from Biomass Burning for Energy Production																					
CO_2 captured																					
	For domestic storage																				
	For storage in other countries																				
Long-term storage of carbon in waste disposal sites																					
	Annual change in total long-term storage of carbon stored																				
	Annual change in long-term storage of carbon in HWP waste																				
Other (please specify)																					

(1) Here, both emissions and removals can be listed.

Table 6B Trends of CH_4 (1 of 3) (Updated) (Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	...
Total National Emissions and Removals																					
1 ENERGY																					
1A	**Fuel Combustion Activities**																				
1A1	Energy Industries																				
1A2	Manufacturing Industries and Construction																				
1A3	Transport																				
1A4	Other Sectors																				
1A5	Non-Specified																				
1B	**Fugitive Emissions from Fuels**																				
1B1	Solid Fuels																				
1B2	Oil and Natural Gas																				
1B3	Other Emissions from Energy Production																				
1C	**Carbon Dioxide Transport and Storage**																				
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen Production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvent Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E1	Integrated Circuit or Semiconductor																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				

Table 6B Trends of CH_4 (2 of 3) (Updated) (Continued)

(Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Other Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				
2H1	Pulp and Paper Industry																				
2H2	Food and Beverages Industry																				
2H3	Other (please specify)																				
3 AGRICULTURE, FORESTRY AND OTHER LAND USE																					
3A	**Livestock**																				
3A1	Enteric Fermentation																				
3A2	Manure Management																				
3B	**Land**																				
3B1	Forest Land																				
3B2	Cropland																				
3B3	Grassland																				
3B4	Wetlands																				
3B5	Settlements																				
3B6	Other Land																				
3C	**Aggregate Sources and Non-CO_2 Emissions Sources on Land**																				
3C1	Biomass Burning																				
3C2	Liming																				
3C3	Urea Application																				
3C4	Direct N_2O Emissions from Managed Soils																				
3C5	Indirect N_2O Emissions from Managed Soils																				
3C6	Indirect N_2O Emissions from Manure Management																				
3C7	Rice cultivation																				
3C8	Other (please specify)																				
3D	**Other**																				
3D1	Harvested Wood Products																				
3D2	Other (please specify)																				
4 WASTE																					
4A	**Solid Waste Disposal**																				
4A1	Managed Waste Disposal Sites																				
4A2	Unmanaged Waste Disposal Sites																				
4A3	Uncategorised Waste Disposal Sites																				
4B	**Biological Treatment of Solid Waste**																				
4C	**Incineration and Open Burning of Waste**																				
4C1	**Waste Incineration**																				
4C2	**Open Burning of Waste**																				

Table 6B Trends of CH_4 (3 of 3) (Updated) (Continued)

(Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
4D	**Wastewater Treatment and Discharge**																				
4D1	Domestic Wastewater Treatment and Discharge																				
4D2	Industrial Wastewater Treatment and Discharge																				
4E	**Other (please specify)**																				
5 OTHER																					
5A	**Indirect N_2O emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH_3**																				
5B	**Other (please specify)**																				
Memo items																					
International Bunkers																					
	International Aviation (International Bunkers)																				
	International Water-borne Transport (International Bunkers)																				
	Multilateral Operations																				
Information items (1)																					
CO_2 from Biomass Burning for Energy Production																					
CO_2 captured																					
	For domestic storage																				
	For storage in other countries																				
Long-term storage carbon in waste disposal sites																					
	Annual change in total long-term storage of carbon stored																				
	Annual change in long-term storage of carbon in HWP waste																				
Other (please specify)																					

(1) Here, both emissions and removals can be listed.

Table 6C Trends of N_2O (1 of 3) (Updated) (Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
Total National Emissions and Removals																					
1 ENERGY																					
1A	**Fuel Combustion Activities**																				
1A1	Energy Industries																				
1A2	Manufacturing Industries and Construction																				
1A3	Transport																				
1A4	Other Sectors																				
1A5	Non-Specified																				
1B	**Fugitive Emissions from Fuels**																				
1B1	Solid Fuels																				
1B2	Oil and Natural Gas																				
1B3	Other Emissions from Energy Production																				
1C	**Carbon Dioxide Transport and Storage**																				
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen Production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvent Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E1	Integrated Circuit or Semiconductor																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				

Table 6C Trends of N_2O (2 of 3) (Updated) (Continued)

(Gg)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Other Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				
2H1	Pulp and Paper Industry																				
2H2	Food and Beverage Industry																				
2H3	Other (please specify)																				
3 AGRICULTURE, FORESTRY AND OTHER LAND USE																					
3A	**Livestock**																				
3A1	Enteric Fermentation																				
3A2	Manure Management																				
3B	**Land**																				
3B1	Forest land																				
3B2	Cropland																				
3B3	Grassland																				
3B4	Wetlands																				
3B5	Settlements																				
3B6	Other land																				
3C	**Aggregate Sources and non-CO_2 Emissions Sources on Land**																				
3C1	Biomass Burning																				
3C2	Liming																				
3C3	Urea Application																				
3C4	Direct N_2O Emissions from Managed Soils																				
3C5	Indirect N_2O Emissions from Managed Soils																				
3C6	Indirect N_2O Emissions from Manure Management																				
3C7	Rice cultivation																				
3C8	Other (please specify)																				
3D	**Other**																				
3D1	Harvested Wood Products																				
3D2	Other (please specify)																				
4 WASTE																					
4A	**Solid Waste Disposal**																				
4A1	Managed Waste Disposal Sites																				
4A2	Unmanaged Waste Disposal Sites																				
4A3	Uncategorised Waste Disposal Sites																				
4B	**Biological Treatment of Solid Waste**																				
4C	**Incineration and Open Burning of Waste**																				
4C1	Waste Incineration																				
4C2	Open Burning of Waste																				

Table 6C Trends of N_2O (3 of 3) (Updated) (Continued)

(Gg)

Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
4D Wastewater Treatment and Discharge																				
4D1 Domestic Wastewater Treatment and Discharge																				
4D2 Industrial Wastewater Treatment and Discharge																				
4E Other (please specify)																				
5 OTHER																				
5A Indirect N_2O emissions from the Atmospheric Deposition of Nitrogen in NO_x and NH_3																				
5B Other (please specify)																				
Memo items																				
International Bunkers																				
International Aviation (International Bunkers)																				
International Water-borne Transport (International Bunkers)																				
Multilateral Operations																				
Information items (1)																				
CO_2 from Biomass Burning for Energy Production																				
CO_2 captured																				
For domestic storage																				
For storage in other countries																				
Long-term storage of carbon in waste disposal sites																				
Annual change in total long-term storage of carbon stored																				
Annual change in long-term storage of carbon in HWP waste																				
Other (please specify)																				

(1) Here, both emissions and removals can be listed.

Table 6D Trends of HFCs (CO_2 equivalents (Gg)) (Updated)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
Total National Emissions and Removals																					
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen Production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvents Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E1	Integrated Circuit or Semiconductor																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Other Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				

2H1 Pulp and Paper Industry																			
2H2 Food and Beverages Industry																			
2H3 Other (please specify)																			

Table 6E Trends of PFCs (CO_2 equivalents (Gg)) (Updated)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
Total National Emissions and Removals																					
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvent Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Other Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				
2H1	Pulp and Paper Industry																				

2H2 Food and Beverages Industry																			
2H3 Other (please specify)																			

Table 6F Trends of SF_6 (CO_2 equivalents (Gg)) (Updated)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
Total National Emissions and Removals																					
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen Production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvent Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Other Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				
2H1	Pulp and Paper Industry																				

2H2 Food and Beverages Industry																			
2H3 2H3 Other (please specify)																			

Table 6G Trends of other gases [(1)] (Gg) (Updated)

Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	…
Total National Emissions and Removals																					
2 INDUSTRIAL PROCESSES AND PRODUCT USE																					
2A	**Mineral Industry**																				
2A1	Cement Production																				
2A2	Lime Production																				
2A3	Glass Production																				
2A4	Other Process Uses of Carbonates																				
2A5	Other (please specify)																				
2B	**Chemical Industry**																				
2B1	Ammonia Production																				
2B2	Nitric Acid Production																				
2B3	Adipic Acid Production																				
2B4	Caprolactam, Glyoxal and Glyoxylic Acid Production																				
2B5	Carbide Production																				
2B6	Titanium Dioxide Production																				
2B7	Soda Ash Production																				
2B8	Petrochemical and Carbon Black Production																				
2B9	Fluorochemical Production																				
2B10	Hydrogen Production																				
2B11	Other (please specify)																				
2C	**Metal Industry**																				
2C1	Iron and Steel Production																				
2C2	Ferroalloys Production																				
2C3	Aluminium Production																				
2C4	Magnesium Production																				
2C5	Lead Production																				
2C6	Zinc Production																				
2C7	Rare Earths Production																				
2C8	Other (please specify)																				
2D	**Non-Energy Products from Fuels and Solvent Use**																				
2D1	Lubricant Use																				
2D2	Paraffin Wax Use																				
2D3	Solvent Use																				
2D4	Other (please specify)																				
2E	**Electronics Industry**																				
2E1	Integrated Circuit or Semiconductor																				
2E2	Displays																				
2E3	Photovoltaics																				
2E4	Microelectromechanical systems (MEMS)																				
2E5	Other (please specify)																				
2F	**Product Uses as Substitutes for Ozone Depleting Substances**																				
2F1	Refrigeration and Air Conditioning																				
2F2	Foam Blowing Agents																				
2F3	Fire Protection																				
2F4	Aerosols																				
2F5	Solvents																				
2F6	Other Applications (please specify)																				
2G	**Other Product Manufacture and Use**																				
2G1	Electrical Equipment																				
2G2	SF_6 and PFCs from Other Product Uses																				
2G3	N_2O from Other Product Uses																				
2G4	Other (please specify)																				
2H	**Other**																				
2H1	Pulp and Paper Industry																				
2H2	Food and Beverages Industry																				
2H3	Other (please specify)																				

(1) This includes all other GHGs including fluorinated gases.

Table 7A Uncertainties

IPCC category	Gas	Base year emissions /removals	Year *t* emissions /removals	Activity data uncertainty		Emission factor /estimation parameter uncertainty (combined if more than one estimation parameter is used)		Combined uncertainty		Contribution to variance in Year *t*	Inventory trend in national emissions for year *t* increase with respect to base year	Uncertainty introduced into the trend in total national emissions with respect to Base Year		Approach and Comments
		Gg CO_2 equivalent	Gg CO_2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
E.g. 1.A.1. Energy Industries Fuel 1	CO_2													
E.g. 1.A.1. Energy Industries Fuel 2	CO_2													
Etc...	…													
Total														

Table 7B Summary of Key Category analysis

Quantitative method used: Approach 1/Approach 1 and Approach 2

IPCC Category Code	IPCC Category	Greenhouse Gas	Identification criteria (1)	Comments (2)

(1) The notation keys to be used for this column:
L1 = key category according to Approach 1 Level Assessment
L2 = key category according to Approach 2 Level Assessment
T1 = key category according to Approach 1 Trend Assessment
T2 = key category according to Approach 2 Trend Assessment
Q = key category according to qualitative criteria

(2) In the column for comments, reasons for a qualitative assessment can be provided.