TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
Total Energy							
A. Fuel Combustion Activities (Sectoral Approach)							
1. Energy Industries							
a. Public Electricity and Heat Production							
i. Electricity Generation							
ii. Combined Heat and Power Generation							
iii. Heat Plants							
b. Petroleum Refining							
c. Manufacture of Solid Fuels and Other Energy Industries							
2. Manufacturing Industries and Construction							
a. Iron and Steel							
b. Non-Ferrous Metals							
c. Chemicals							
d. Pulp, Paper and Print							
e. Food Processing, Beverages and Tobacco							
f. Non-Metalic Minerals							
g. Transport Equipment							
h. Machinery							
i. Mining (excluding fuels) and Quarrying							
j. Wood and Wood Products							
k. Construction							
l. Textile and Leather							
m. Non-specified Insdustry							
3. Transport							
a. Domestic Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other Transportation							

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fisheries							
5. Other *(as specified in table 1.A(a) sheet 4)*							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining and Handling							
b. Uncontrolled Combustion and Burning Coal Dumps							
c. Solid Fuel Transformation							
d. Other *(as specified in table 1.B.1)*							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
~~c. Venting and Flaring~~							
~~Venting~~							
~~Flaring~~							
c. Other *(as specified in table 1.B.2)*							
3. Other Emissions from Energy Production							
C. CO2 Transport and Storage							
1. Transport of CO2							
2. Injection and Storage							
3. Other							
Memo Items: [(1)]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							
CO_2 captured							
For domestic storage							
For storage in other countries							

[(1)] Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO_2 emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the Energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO_2 emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO_2 emissions are accounted for as a loss of biomass stocks in the Land Use, Land-Use Change and Forestry sector.

Documentation Box:
Parties should provide detailed explanations on the Energy sector in Chapter 3: Energy (CRF sector 1) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY Year
Fuel Combustion Activities - Sectoral Approach Submission
(Sheet 1 of 4) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS (2)				EMISSIONS			
	Consumption		CO_2 (12)	CH_4	N_2O		CO_2		CH_4	N_2O
							Emissions(11)	Amount captured		
	(TJ)	NCV/GCV(1)	(t/TJ)	(kg/TJ)			(Gg)			
1.A. Fuel Combustion										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat(9)										
Biomass						(3)				
1.A.1. Energy Industries										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
a. Public Electricity and Heat Production										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
a.i Electricity Generation										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
a.ii Combined Heat and Power Generation										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
a.iii Heat Plants										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
b. Petroleum Refining										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
c. Manufacture of Solid Fuels and Other Energy Industries										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
c.i. Manufacture of Solid Fuels]										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
c.ii. Other Energy Industries]										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						(3)				
[- combustion emissions related to oil and gas extraction										

Note: All footnotes for this table are given at the end of the table on sheet 4.

Note: For the coverage of fuel categories, refer to the IPCC Guidelines (Volume 1. Reporting Instructions - Common Reporting Framework, section 1.2, p. 1.19). If some derived gases (e.g. gas works, gas, coke oven gas, blast furnace ga
are considered, Parties should provide information on the allocation of these derived gases under the above fuel categories (liquid, solid, gaseous, biomass and other fuels) in the NIR (see also documentation box at the end of sheet 4 of this tabl

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 2 of 4)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS			
	Consumption		CO_2	CH_4	N_2O	CO_2		CH_4	N_2O
						Emissions	Amount captured		
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)		(Gg)			
1.A.2 Manufacturing Industries and Construction									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
a. Iron and Steel									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
b. Non-Ferrous Metals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
c. Chemicals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
d. Pulp, Paper and Print									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
e. Food Processing, Beverages and Tobacco									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
f. Non-Metalic Minerals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
g. Transport Equipment									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
h. Machinery									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
i. Mining (excluding fuels) and Quarrying									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
j. Wood and Wood Products									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
k. Construction									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
l. Textile and Leather									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				
m. Non-specified Industry									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels									
Peat									
Biomass					[3]				

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY Year
Fuel Combustion Activities - Sectoral Approach Submission
(Sheet 3 of 4) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS				
	Consumption		CO_2	CH_4	N_2O	CO_2			CH_4	N_2O
							Emissions	Amount captured		
	(TJ)	NCV/GCV [1]	(t/TJ)	(kg/TJ)			(Gg)			
1.A.3 Transport										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
a. Domestic Aviation										
Aviation Gasoline										
Jet Kerosene										
Biomass										
b. Road Transportation										
Gasoline										
Diesel Oil										
Liquefied Petroleum Gases (LPG)										
Other Liquid Fuels (please specify)										
Gaseous Fuels										
Biomass						[3]				
Other Fossil Fuels *(please specify)*										
c. Railways										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Biomass										
Other Fossil Fuels (*please specify)*										
d. Navigation										
Residual Oil (Residual Fuel Oil)										
Gas/Diesel Oil										
Gasoline										
Other Liquid Fuels *(please specify)*										
Solid Fuels										
Gaseous Fuels										
Biomass										
Other Fuels (*please specify)*										
e. Other Transportation *(please specify)*										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass										
i. Pipeline Transport										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass										
i. Other *(please specify)* [5]										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass										

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 4 of 4)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS				
	Consumption		CO_2	CH_4	N_2O	CO_2			CH_4	N_2O
							Emissions	Amount captured		
	(TJ)	NCV/GCV [1]	(t/TJ)	(kg/TJ)			(Gg)			
1.A.4 Other Sectors										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
a. Commercial/Institutional										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
b. Residential										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
c. Agriculture/Forestry/Fisheries										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
i. Stationary										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass										
ii. Off-Road Vechicles and Other Machinery										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass										
iii. Fishing										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass										
1.A.5 Other ***(Not specified elsewhere)*** [6]										
a. Stationary ***(please specify)***										
[7]										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
b. Mobile ***(please specify)***										
[8]										
Liquid Fuels										
Solid Fuels										
Gaseous Fuels										
Other Fossil Fuels										
Peat										
Biomass						[3]				
Information item(10):										
Waste incineration with energy recovery included as:										
Biomass										
Other Fossil Fuels										
Biofuels included as:										
Biomass										
Liquid Fuels										

[1] If activity data are calculated using net calorific values (NCV) as specified by the IPCC Guidelines, write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.

[2] Accurate estimation of CH_4 and N_2O emissions depends on combustion conditions, technology and control options, which in turn depend on fuel characteristics. Therefore, caution should be used when comparing the implied emission factors across countries.

[3] Although carbon dioxide emissions from biomass are reported in this table, they will not be included in the total CO_2 emissions from fuel combustion. The value for total CO_2 from biomass is recorded in Table1 sheet 2 under the Memo Items.

[4] Use the cell below to list all activities covered under "f. Other".

[5] Use the cell below to list all activities covered under "e. Other transportation".

[6] Include military fuel use under this category.

[7] Use the cell below to list all activities covered under "1.A.5.a Other - stationary".

[8] Use the cell below to list all activities covered under "1.A.5.b Other - mobile".

(9) Although peat is not strictly speaking a fossil fuel, the CO2 emissions from combustion of peat are included in the national emissions as for fossil fuels. See the 2006 IPCC Guidelines, Chapter 1 of Energy Volume, page 1.15.

(10) "Information item" data are included for allow cross-sectoral and cross-fuel checks for AD and emissions. Details on the actual amounts reported for the sub-categories and fuels should be included in the NIR.

[11] Final CO2 emissions after subtracting the amounts of CO2 captured.

[12] The IEFs for CO2 are estimated on the basis of gross emissions, i.e. CO2 emissions + amount captured

Documentation Box:

- Parties should provide detailed explanations on the fuel combustion sub-sector in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- If estimates are based on GCV, use this documentation box to provide reference to the relevant section of the NIR where the information necessary to allow the calculation of the activity data based on NCV can be found.
- If some derived gases (e.g. gas works gas, coke oven gas, blast furnace gas) are considered, use this documentation box to provide a reference to the relevant section of the NIR containing the information on the allocation of these derived gases under the above fuel categories (liquid, soild, gaseous, biomass and other fuels).

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO_2 from Fuel Combustion Activities - Reference Approach (IPCC Worksheet 1-1)
(Sheet 1 of 1)

Year
Submission
Country

FUEL TYPES			Unit	Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor (TJ/Unit)	NCV/ GCV [1]	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidized	Actual CO_2 emissions (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																
		Liquefied Petroleum Gas (LPG)																
		Ethane																
		Naphtha																
		Bitumen																
		Lubricants																
		Petroleum Coke																
		Refinery Feedstocks																
		Other Oil																
Other Liquid Fossil																		
Liquid Fossil Totals																		
Solid Fossil	Primary Fuels	Anthracite [2]																
		Coking Coal																
		Other Bituminous Coal																
		Sub-bituminous Coal																
		Lignite																
		Oil Shale																
		~~Peat~~																
	Secondary Fuels	BKB [3] and Patent Fuel																
		Coke Oven/Gas Coke																
		Coal Tar																
Other Solid Fossil																		
Solid Fossil Totals																		
Gaseous Fossil		Natural Gas (Dry)																
Other Gaseous Fossil																		
Gaseous Fossil Totals																		
Other	Municipal Wastes (non-biomass fraction)																	
	Industrial Wastes																	
	Waste Oils																	
Other Fossil Fuels																		
Peat(4)																		
Total																		
Biomass total																		
		Solid Biomass																
		Liquid Biomass																
		Gas Biomass																

[1] To convert quantities in previous columns to energy units, use net calorific values (NCV) and write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.

[2] If data for Anthracite are not available separately, include with Other Bituminous Coal.

[3] BKB: Brown coal/peat briquettes.

(4) Although peat is not strictly speaking a fossil fuel, the CO2 emissions from combustion of peat are included in the national emissions as for fossil fuels. See the 2006 IPCC Guidelines, Chapter 1 of Energy Volume, page 1.15.

Documentation Box:
Parties should provide detailed explanations on the fuel combustion sub-sector, including information relating to CO2 from the Reference approach, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 1.A(c) COMPARISON OF CO2 EMISSIONS FROM FUEL COMBUSTION

Year

Comparison of CO2 emissions from Fuel Combustion

Submission

(Sheet 1 of 1)

Country

FUEL TYPES	REFERENCE APPROACH			SECTORAL APPROACH [1]		DIFFERENCE [2]	
	Apparent energy consumption [3] (PJ)	Apparent energy consumption (excluding non-energy use, reductants and feedstocks) [4] (PJ)	CO_2 emissions (Gg)	Energy consumption (PJ)	CO_2 emissions (5) (Gg)	Energy consumption (%)	CO_2 emissions (6) (%)
Liquid Fuels (excluding international bunkers)							
Solid Fuels (excluding international bunkers) [5]							
Gaseous Fuels							
Othe Fossil Fuels							
Peat							
Total [5]							

[1] "Sectoral approach" is used to indicate the approach (if different from the Reference approach) used by the Party to estimate CO_2 emissions from fuel combustion as reported in table 1.A(a), sheets 1-4.

[2] Difference in CO_2 emissions estimated by the Reference approach (RA) and the Sectoral approach (SA) (difference = 100% x ((RA-SA)/SA)). For calculating the difference in energy consumption between the two approaches, data as reported in the column "Apparent energy consumption (excluding non-energy use and feedstocks)" are used for the Reference approach.

[3] Apparent energy consumption data shown in this column are as in table 1.A(b).

[4] For the purposes of comparing apparent energy consumption from the Reference approach with energy consumption from the Sectoral approach, Parties should, in this column, subtract from the apparent energy consumption (Reference approach) the energy content corresponding to the fuel quantities used as feedstocks and/or for non-energy purposes, in accordance with the accounting of energy use in the Sectoral approach

[5] ~~Emissions from biomass are not included~~. For the sectoral approach gross emissions (without accounting for CO2 captured) are included in the comparison

(6) In case of discrepancies between the approaches (more than 2 per cent), investigate and document the reasons in the documentation box below consulting section 6.8, Chapter 6, Volume 2 of the 2006 IPCC Guidelines."

Note: The Reporting Instructions of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories require that estimates of CO_2 emissions from fuel combustion, derived using a detailed Sectoral approach, be compared to those from the Reference approach (Worksheet 1-1 of the IPCC Guidelines, Volume 2, Workbook). This comparison is to assist in verifying the Sectoral data.

Documentation Box:

• Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to the comparison of CO_2 emissions calculated using the Sectoral approach with those calculated using the Reference approach, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• If the CO_2 emission estimates from the two approaches differ by more than 2 per cent, Parties should briefly explain the cause of this difference in this documentation box and provide a reference to relevant section of the NIR where this difference is explained in more detail.

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks and Non-Energy Use of Fuels
(Sheet 1 of 1)

Year
Submission
Country

FUEL TYPE	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE	Additional information [a]	
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	Carbon stored in non-energy use of fuels (Gg C)	CO_2 not emitted ($Gg\ CO_2$)	Subtracted from energy sector *(specify source category)*
Naphtha [1]						
Lubricants						
Bitumen						
Coal Oils and Tars (from Coking Coal)						
Natural Gas[1]						
Gas/Diesel Oil [1]						
LPG [1]						
Ethane [1]						
Other *(please specify)*						
Total						
Total amount of C and CO_2 from feedstocks and non-energy use of fuels that is included as emitted CO_2 in the Reference approach						

Option 1:
OLD TABLE

[1] Enter data for those fuels that are used as feedstocks (fuel used as raw materials for manufacture of products such as plastics or fertilizers) or for other non-energy use (fuels not used as fuel or transformed into another fuel (e.g. bitumen for road construction, lubricants)).

[a] The fuel lines continue from the table to the left.

Documentation box:

• Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to feedstocks, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• The above table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feedstocks could continue to use their methodology, but should indicate this in this documentation box and provide a reference to the relevant section of the NIR where further explanation can be found.

Associated CO_2 emissions (Gg)	Allocated under *(Specify source category, e.g. Waste Incineration)*

A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during use of the energy carriers in the industrial production (e.g. fertilizer production), or during use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions, use the above table.

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks, Reductants and other Non-Energy Use of Fuels
(Sheet 1 of 1)

Year
Submission
Country

FUEL TYPE			ACTIVITY DATA AND RELATED INFORMATION	IMPLIED EMISSION FACTOR	CARBON EXCLUDED FROM REFERENCE APPROACH		IMPLIED CARBON STORAGE FRACTION	REPORTED CO2 EMISSIONS	
			Fuel quantity for NEU	Carbon emission factor	Carbon excluded	CO_2 excluded	Carbon fraction stored in NEU products(6)	CO_2 emissions from the NEU reported in the inventory	Reported under: Select category(ies) from the category tree (5)
			(TJ)	(t C/TJ)	(Gg C)	(Gg CO_2)	(%)	(Gg CO_2)	
Liquid Fossil	Primary Fuels	Crude Oil							
		Orimulsion							
		Natural Gas Liquids							
	Secondary Fuels	Gasoline							
		Jet Kerosene							
		Other Kerosene(1)							
		Shale Oil							
		Gas / Diesel Oil(1)							
		Residual Fuel Oil							
		Liquefied Petroleum Gas (LPG)(1)							
		Ethane(1)							
		Naphtha(1)							
		Bitumen							
		Lubricants(2)							
		Petroleum Coke(2)							
		Refinery Feedstocks							
		Other Oil							
		Refinery Gas(1)							
		Paraffin Waxes(2)							
		White Spirit (2)							
Other Liquid Fossil									
Liquid Fossil Totals									
Solid Fossil	Primary Fuels	Anthracite							
		Coking Coal							
		Other Bituminous Coal							
		Sub-bituminous Coal							
		Lignite							
		Oil Shale							
	Secondary Fuels	BKB and Patent Fuel							
		Coke Oven/Gas Coke							
		Coal Tar(4)							
Other Solid Fossil									
Solid Fossil Totals									
Gaseous Fossil		Natural Gas (Dry)(1,3)							
Other Gaseous Fossil									
Gaseous Fossil Totals									
Other	Municipal Wastes (non-biomass fraction)								
	Industrial Wastes								
	Waste Oils								
Other Fossil Fuels									
Other Fossil Fuels Totals									

Option 2: REVISED TABLE

(1) Enter data for those fuels that are used as feedstocks (fuel used as raw materials for manufacture of products such as plastics or fertilizers), reductant or for other non-energy use (fuels not used as fuel or transformed into another fuel (e.g. bitumen for road construction, lubricants)). For other fuels, use notation key NO (not occuring).

(2) Total deliveries.
(3) Deliveries to petrochemical feedstock and blast furnaces.
(4) Refinery gas, paraffin waxes and white spirit are included in "other oil".
(4) Delivereis to chemical industry and construction
(5) If the emissions from the fuel are reported in more than one category, list them in the table and provide further details in the documentation box and in the NIR. For the different NEU of fuels see also table 1.6, page 1.26, chapter 1, volume 3 of the 2006 IPCC Guidelines (same as table 2.1. page T.27, Volume 1).
(6) The fraction of carbon stored when comprated to the CO2 reported in the reference approach.

Documentation box:

• Parties should provide detailed explanations on the fuel consumption for non-energy uses, in the corresponding part of Chapter ...: Cross-sectoral information of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Solid Fuels
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS		EMISSIONS			
				CH_4		CO_2	
	Amount of fuel produced	CH_4 (1)	CO_2	Recovery/Flaring (2)	Emissions (3)	Emissions (7)	Amount captured (8)
	(Mt)	(kg/t)		(Gg)			
1. B. 1. a. Coal Mining and Handling							
i. Underground Mines (4)							
Mining Activities							
Post-Mining Activities							
Abandoned Underground Mines							
ii. Surface Mines (4)							
Mining Activities							
Post-Mining Activities							
1. B. 1. b. Uncontrolled Combustion and Burning Coal Dumps(6)							
1. B. 1. c. Solid Fuel Transformation(9)							
1. B. 1. d. Other *(please specify)* (5)							

(1) The IEFs for CH_4 are estimated on the basis of gross emissions as follows: (CH_4 emissions + amounts of CH_4 flared/recovered) / activity data.

(2) Amounts of CH4 drained (recovered), utilized or flared.

(3) Final CH4 emissions after subtracting the amounts of CH4 utilized or recovered.

(4) In accordance with the IPCC Guidelines, emissions from Mining Activities and Post-Mining Activities are calculated using the activity data of the amount of fuel produced for Underground Mines and Surface Mine

(5) This category is to be used for reporting any other solid-fuel-related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

(6) AD is solid fueld combusted

(7) Net CO2 emissions after subtracting the amounts of CO2 captured

(8) The IEFs for CO2 are estimated on the basis of gross emissions, i.e. CO2 emissions + amount capture

(9) Include emissions from coal and charcoal production under this category.

Note: There are no clear references to the coverage of 1.B.1.b. and 1.B.1.c. in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, indicate this by using notation key IE and making the necessary reference in Table 9 (completeness).

Documentation box:

• Parties should provide detailed explanations on the fugitive emissions from source category 1.B.1 Solid Fuels, in the corresponding part of Chapter 3: Energy (CRF source category 1.B.1) of the NIR. Use this documentation box to provide references

• Regarding data on the amount of fuel produced entered in the above table, specify in this documentation box whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.

• If entries are made for "Recovery/Flaring", indicate in this documentation box whether CH_4 is flared or recovered and provide a reference to the section in the NIR where further details on recovery/flaring can be found.

• If estimates are reported under 1.B.1.b. and 1.B.1.c., use this documentation box to provide information regarding activities covered under these categories and to provide a reference to the section in the NIR where the background information can be found.

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY Year

Fugitive Emissions from Oil, Natural Gas and Other Emissions from Energy Production ~~Sources~~ Submission

(Sheet 1 of 1) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA [1]			IMPLIED EMISSION FACTORS			EMISSIONS			
	Description [1]	Unit [1]	Value	CO_2 (8)	CH_4	N_2O	CO_2		CH_4	N_2O
							Emissions (7)	Amount captured		
				(kg/unit) [2]			(Gg)			
1. B. 2. a. Oil [3]										
i. Venting										
ii. Flaring										
iii. Other										
1. Exploration	(e.g. number of wells drilled)									
2. Production [4]	(e.g. PJ of oil produced)									
3. Transport	(e.g. PJ oil loaded in tankers)									
4. Refining / Storage	(e.g. PJ oil refined)									
5. Distribution of Oil Products	(e.g. PJ oil refined)									
6. Other										
1. B. 2. b. Natural Gas										
i. Venting										
ii. Flaring										
iii. Other										
1. Exploration										
2. Production [4] ~~/ Processing~~	(e.g. PJ gas produced)									
3. Processing										
4. Transmission and Storage	(e.g. PJ gas consumed)									
5. Distribution	(e.g. PJ gas consumed)									
6. Other ~~Leakage~~	(e.g. PJ gas consumed)									
~~*at industrial plants and power stations*~~										
~~*in residential and commercial sectors*~~										
~~**1. B. 2. c. Venting**~~ [5]										
~~i. Oil~~	(e.g. PJ oil produced)									
~~ii. Gas~~	(e.g. PJ gas produced)									
~~iii. Combined~~										
~~**Flaring**~~										
~~i. Oil~~	(e.g. PJ gas consumption)									
~~ii. Gas~~	(e.g. PJ gas consumption)									
~~iii. Combined~~										
1.B.2.d. Other *(please specify)* [6]										
1. B. 3 Other Emissions from Energy Production										
Geothermal Energy Production										
Other (please specify)										

[1] Specify the activity data used in the Description column (see examples). Specify the unit of the activity data in the Unit column using one of the following units: PJ, Tg, 10^6 m^3, 10^6 bbl/yr, km, number of sources (e.g. wells).

[2] The unit of the implied emission factor will depend on the unit of the activity data used, and is therefore not specified in this column.

[3] Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iv, respectively.

[4] If using default emission factors, these categories will include emissions from production other than venting and flaring.

[5] If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for under Venting.

[6] For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

[7] Net CO2 emissions after subtracting the amounts of CO2 captured.

[8] The IEFs for CO2 are estimated on the basis of gross emissions, i.e. CO2 emissions + amount captured

Documentation box:

• Parties should provide detailed explanations on the fugitive emissions from source category 1.B.2 Oil and Natural Gas, in the corresponding part of Chapter 3: Energy (CRF source category 1.B.2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Regarding data on the amount of fuel produced entered in this table, specify in this documentation box whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one type of activity data is used to estimate emissions.

• Venting and Flaring: Parties using the IPCC software could report venting and flaring emissions together, indicating this in this documentation box.

• If estimates are reported under "1.B.2.d Other", use this documentation box to provide information regarding activities covered under this category and to provide a reference to the section in the NIR where background information can be found.

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY
CO2 Transport and Storage
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS
	CO2 transported or injected[1]	CO_2	CO_2[2]
	Gg	Gg/Gg	Gg
1. Transport of CO_2			
a. Pipelines			
b. Ships			
c. Other			
2. Injection and Storage [3]			
a. Injection			
b. Storage			
2. Other			
Information item [4, 5]			
Total amount captured for storage			
Total amount of imports for storage			
Total A			
Total amount of exports for storage			
Total amount of CO2 injected at storage sites			
Total leakage from transport, injection and storage			
Total B			
Discrepancy (A-B) [6]			

NEW TABLE. Option 1

[1] Excluding recycled CO2 for enhanced recovery.

[2] Corrected for baseline background fluxes.

[3] Fugitive emissions durng above ground operations such as processing and CO2 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.

[4] Once captured, there is no differentiated treatment between biogenic carbon and fossil carbon. Emissions and storage of both biogenic and fossil carbon will be estimated and reported.

[5] A check should be made that the mass of CO2 captured does no exceed the mass of CO2 stored plus the fugitive emissions (leakage) reported for the inventory year.

[6] Ideally the value should be zero (see page 5.19, volume 2 of the 2006 IPCC guidelines.

TABLE 1.D SECTORAL BACKGROUND DATA FOR ENERGY
International Bunkers and Multilateral Operations
(Sheet 1 of 1)

Year

Submission

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	(t/TJ)			(Gg)		
Aviation Bunkers							
Jet Kerosene							
Aviation Gasoline/Jet Gasoline							
Lubricants							
Biofuels							
Marine Bunkers							
Gasoline							
Gas/Diesel Oil							
Residual Fuel Oil							
Lubricants							
Coal							
Biofuels							
Other *(please specify)*							
Multilateral Operations [1]							

Additional information

Fuel consumption	Distribution [a] (per cent)	
	Domestic	International
Aviation		
Marine		

[a] For calculating the allocation of fuel consumption, the sums of fuel consumption for domestic navigation and aviation (table 1.A(a)) and for international bunkers (table 1.C) are used.

[1] Parties may choose to report or not report the activity data and implied emission factors for multilateral operations consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines. In any case, Parties should report the emissions from multilateral operations, where available, under the Memo Items section of the Summary tables and in the Sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for information purposes only.

Documentation box:

• Parties should provide detailed explanations on the fuel combustion sub-sector, including international bunker fuels, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Provide in this documentation box a brief explanation on how the consumption of international marine and aviation bunker fuels was estimated and separated from domestic consumption, and include a reference to the section of the NIR where the explanation is provided in more detail.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 1 of 2)

Year

Submission

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]	PFCs[1]	Other FC	SF_6	NF3	NO_x	CO	NMVOC	SO_2
	(Gg)			CO_2 equivalent (Gg)		(Gg)	(Gg)					
Total Industrial Processes												
A. Mineral Industry ~~Products~~												
1. Cement Production												
2. Lime Production												
3. Glass Production												
4. Other Process Uses of Carbonates												
~~3. Limestone and Dolomite Use~~												
~~4. Soda Ash Production and Use~~												
~~5. Asphalt Roofing~~												
~~6. Road Paving with Asphalt~~												
7. Other *(as specified in table 2(I).A-G)*												
B. Chemical Industry												
1. Ammonia Production												
2. Nitric Acid Production												
3. Adipic Acid Production												
4. Caprolactam, Glyoxal and Clyoxylic Acid Production												
5. Carbide Production												
6. Titanium Dioxide Production												
7. Soda Ash Production												
8. Petrochemical and Carbon Black Production												
9. Fluorochemical Production												
10. Other *(as specified in table 2(I).A-G)*												
C. Metal Industry ~~Production~~												
1. Iron and Steel Production												
2. Ferroalloys Production												
3. Aluminium Production												
~~4. SF_6 Used in Aluminium and Magnesium Foundries~~												
4. Magnesium Production												
5. Lead Production												
6. Zinc Production												
5. Other *(as specified in table 2(I).A-G)*												

Note: P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This applies only to source categories where methods exist for both tiers.

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]	PFCs[1]	Other FC	SF_6	NF3	NO_x	CO	NMVOC	SO_2
	(Gg)			CO_2 equivalent (Gg)			(Gg)					
~~D. Other Production~~												
~~1. Pulp and Paper~~												
~~2. Food and Drink[2]~~												
D. Non-Energy Products from Fuels and Solvent Use												
1. Lubricant Use												
2. Paraffin Wax Use												
3. Solvent Use												
4. Other												
~~E. Production of Halocarbons and SF_6~~												
~~1. By-product Emissions~~												
~~Production of HCFC-22~~												
~~Other~~												
~~2. Fugitive Emissions~~												
~~3. Other *(as specified in table 2(II))*~~												
E. Electronics Industry												
1. Integrated Circuit or Semiconductor												
2. TFT Flat Panel Display												
3. Photovoltaics												
4. Heat Transfer Fluid												
5. Other *(as specified in table 2(II))*												
F. Product Uses as Substitutes for ODS ~~**Consumption of Halocarbons and SF_6**~~												
1. Refrigeration and Air Conditioning ~~Equipment~~												
2. Foam Blowing Agents												
3. Fire Protection ~~Extinguishers~~												
4. Aerosols ~~Metered Dose Inhalers~~												
5. Solvents												
6. Other applications ~~using ODS[3] substitutes~~												
~~7. Semiconductor Manufacture~~												
~~8. Electrical Equipment~~												
~~9. Other *(as specified in table 2(II))*~~												
G. Other Product Manufacture and Use												
1. Electrical Equipment												
2. SF6 and PFCs from Other Product Use												
3. N2O from Product Uses												
4. Other												
H. Other *(as specified in tables 2(I).A-G and 2(II))*												

Note: P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This applies only to source categories where methods exist for both tiers.

(1) The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

(2) CO_2 from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO_2 emissions of non-biogenic origin should be reported.

(3) ODS: ozone-depleting substances.

Documentation box:
Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Year

Emissions of CO_2, CH_4 and N_2O Submission

(Sheet 1 of 2) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
	Description [1]	(kt)	(t/t)			Emissions [3]	Recovery [4]	Emissions [3]	Recovery [4]	Emissions [3]	Recovery [4]
						(Gg)					
A. Mineral Industry ~~Products~~											
1. Cement Production	(e.g. cement or clinker production)										
2. Lime Production											
3. Glass Production											
4. Other Process Uses of Carbonates											
~~3. Limestone and Dolomite Use~~											
~~4. Soda Ash~~											
~~Soda Ash Production~~											
~~Soda Ash Use~~											
~~5. Asphalt Roofing~~											
~~6. Road Paving with Asphalt~~											
5. Other *(please specify)*											
~~Glass Production~~											
Ceramics											
Other uses of soda ash											
Non-metallurgical magnesium production											
Other uses of carbonates											
B. Chemical Industry											
1. Ammonia Production [5]											
2. Nitric Acid Production											
3. Adipic Acid Production											
4. Caprolactam, Glyoxal and Clyoxylic Acid Production											
Caprolactam											
Glyoxal											
Glyoxylic Acid											
4. Carbide Production											
Silicon Carbide											
Calcium Carbide											
6. Titanium Dioxide Production											
7. Soda Ash Production											
8. Petrochemical and Carbon Black Production											
a. Methanol											
b. Ethylene											
c. Ethylene Dichloride and Vinyl Chloride Monomer											
d. Ethylene Oxide											
e. Acrylonitrile											
f. Carbon Black											
g. Other											
Styrene											
10. Other *(please specify)*											
~~Carbon Black~~											
~~Ethylene~~											
~~Dichloroethylene~~											
~~Styrene~~											
~~Methanol~~											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] The implied emission factors (IEF) are estimated on the basis of gross emissions as follows: IEF = (emissions plus amounts recovered, oxidized, destroyed or transformed) / activity data.

[3] Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

[4] Amounts of emission recovery, oxidation, destruction or transformation.

[5] To avoid double counting, make offsetting deductions for fuel consumption (e.g. natural gas) in Ammonia Production, first for feedstock use of the fuel, and then for a sequestering use of the feedstock.

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 1 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs (1)	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	c-C_4F_8	C_5F_{12}	C_6F_{14}	Unspecified mix of listed PFCs (1)	Total PFCs	SF_6	NF3	Other FC
	(t)(2)													CO_2 equivalent (Gg)		(t)(2)							CO_2 equivalent (Gg)		(t)(2)		
Total Actual Emissions of Halocarbons (by chemical) and SF_6																											
B. Chemical Industry																											
9. Flurochemical Production																											
By-Product Emissions																											
Fugitive Emissions																											
10. Other																											
C. Metal Production																											
3. Aluminium Production																											
4. Magnesium Production																											
~~SF_6 Used in Aluminium Foundries~~																											
~~SF_6 Used in Magnesium Foundries~~																											
~~**E. Production of Halocarbons and SF_6**~~																											
~~1. By-product Emissions~~																											
~~Production of HCFC-22~~																											
~~Other~~																											
~~2. Fugitive Emissions~~																											
3. Other *(as specified in table 2(II).C,E)*																											
E. Electronics Industry																											
1. Integrated Circuit or Semiconductor																											
2. TFT Flat Panel Display																											
3. Photovoltaics																											
4. Heat Transfer Fluid																											
5. Other *(as specified in table 2(II))*																											
F. Product Uses as Substitutes for ODS ~~**Consumption of Halocarbons and SF_6**~~																											
1. Refrigeration and Air Conditioning ~~Equipment~~																											
2. Foam Blowing Agents																											
3. Fire Protection ~~Extinguishers~~																											
4. Aerosols ~~Metered Dose Inhalers~~																											
5. Solvents																											
6. Other applications ~~using ODS(2) substitutes~~																											
G. Other Product Manufacture and Use																											
1. Electrical Equipment																											
2. SF6 and PFCs from Other Product Use																											
4. Other																											
H. Other ***(please specify)***																											

Note:

1. All footnotes for this table are given at the end of the table on sheet 2.
2. Gases with global warming potential (GWP) values not yet agreed upon by the Conference of the Parties should be reported in table 9(b).

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Emissions of CO_2, CH_4 and N_2O
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description [1]	(kt)	(t/t)			(Gg)					
C. Metal Industry ~~Production~~											
1. Iron and Steel Production											
Steel											
Pig Iron											
Direct reduced iron											
Sinter											
~~Coke~~											
Pellet											
Other *(please specify)*											
2. Ferroalloys Production											
3. Aluminium Production											
Prebacke technology											
Soderberg technology											
4. Magnesium Production											
~~4. SF_6 Used in Aluminium and Magnesium Foundries~~											
5. Lead Production											
6. Zinc Production											
5. Other *(please specify)*											
D. Non-Energy Products from Fuels and Solvent Use											
1. Lubricant Use											
2. Paraffin Wax Use											
3. Solvent Use											
4. Other *(please specify)*											
G. Other Product Manufacture and Use											
3. N2O from Product Uses											
Medical applications											
Propellant for Pressure and Aerosol Products											
Other											
4. Other											
~~D. Other Production~~											
~~1. Pulp and Paper~~											
~~2. Food and Drink~~											
H. Other *(please specify)*											
1. Pulp and Paper											
2. Food and Beverages Industry											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] The implied emission factors (IEF) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

[3] Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

[4] Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:

• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• In relation to metal production, more specific information (e.g. data on virgin and recycled steel production) could be provided in this documentation box, or in the NIR, together with a reference to the relevant section.

• Confidentiality: Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality, a note indicating this should be provided in this documentation box.

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs (1)	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	c-C_4F_8	C_5F_{12}	C_6F_{14}	Unspecified mix of listed PFCs (1)	Total PFCs	SF_6
	~~(t)~~ (2)													CO_2 equivalent (Gg)		~~(t)~~ (2)							CO_2 equivalent (Gg)		~~(t)~~ (3)
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF_6 (4)																									
Production (5)																									
Import:																									
In bulk																									
In products (6)																									
Export:																									
In bulk																									
In products (6)																									
Destroyed amount																									

DELETED

GWP values used	11,700.00	650.00	150.00	1,300.00	2,800.00	1,000.00	1,300.00	140.00	300.00	3,800.00	2,900.00	6,300.00	560.00			6,500.00	9,200.00	7,000.00	7,000.00	8,700.00	7,500.00	7,400.00			23,900.00	to revise	
	CO2 equivalent																										
Total ~~Actual~~ Emissions (7) ~~(CO_2 equivalent (Gg))~~																											
B. Chemical Industry																											
C. Metal Production																											
~~E. Production of Halocarbons and SF_6~~																											
E. Electronics Industry																											
F. Product Uses as Substitutes for ODS ~~Consumption of Halocarbons and SF_6~~																											
G. Other Product Manufacture and Use																											
H. Other																											

DELETED

Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF_6																									
Actual emissions - F(a) (Gg CO_2 ~~eq.~~)																									
Potential emissions - F(p) (8) ~~(Gg CO_2 eq.)~~																									
Potential/Actual emissions ratio																									

(1) In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), these columns could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for these columns is Gg of CO_2 equivalent.

(2) Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. *t* instead of *Gg* .

(3) ODS: ozone-depleting substances

(4) Potential emissions of each chemical of halocarbons and SF_6 estimated using Tier 1a or Tier 1b of the IPCC Guidelines (Volume 3. Reference Manual, pp. 2.47-2.50). Where potential emission estimates are available in a disaggregated manner for the source categories F.1 to F.9, these should be reported in the NIR and a reference should be provided in the documentation box. Use table Summary 3 to indicate whether Tier 1a or Tier 1b was used.

(5) Production refers to production of new chemicals. Recycled substances could be included here, but avoid double counting of emissions. An indication as to whether recycled substances are included should be provided in the documentation box to this table.

(6) Relevant only for Tier 1b.

(7) Total actual emissions equal the sum of the actual emissions of each halocarbon and SF_6 from the source categories 2.C, 2.E, 2.F and 2.G as reported in sheet 1 of this table multiplied by the corresponding GWP values.

(8) Potential emissions of each halocarbon and SF_6 taken from row F(p) multiplied by the corresponding GWP values.

Note: As stated in the UNFCCC reporting guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO_2 equivalent. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability. Gases with GWP values not yet agreed upon by the COP should be reported in Table 9 (b).

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
• If estimates are reported under "2.G Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

TABLE 2(II).C SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal Production
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS					
			CF_4	C_2F_6	SF_6	CF_4		C_2F_6		SF_6	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description[1]	(t)	(kg/t)			(t)					
C. PFCs and SF_6 from Metal Production											
PFCs from Aluminium Production											
SF_6 used in Aluminium and Magnesium Foundries											
Aluminium Foundries	(SF6 consumption)										
Magnesium Foundries	(SF6 consumption)										

Merged into the new table 2(II)B-H

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS						
			HFC-23	SF6	HFCs/PFCs *(as specified)*	HFC-23		SF6		HFCs/PFCs		
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	specify chemical	Emissions[3]	Recovery[4]
	Description[1]	(t)	(kg/t)			(t)						
E. Production of Halocarbons and SF6												
1. By-product Emissions												
Production of HFC-22												
Other (*please specify activity*)												
2. Fugutive Emissions *(please specify activity)*												
3. Other *(please specify activity)*												

(1) Specify the activity data used as shown in the examples in parentheses.

(2) The implied emission factors (IEFs) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

(3) Final emissions (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

(4) Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:

• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
• Where applying Tier 1b and country-specific methods, specify any other relevant activity data used in this documentation box, including a reference to the section of the NIR where more detailed information can be found.
• Use this documentation box for providing clarification on emission recovery, oxidation, destruction and/or transformation, and provide a reference to the section of the NIR where more detailed information can be found.

TABLE 2(II).B-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Sources of Fluorinated Substances
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas *(please specify)* *One row per substance*	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]	EMISSIONS	
		Description	(t)	(kg/t)	Emissions[3] (t)	Recovery[4] (t)
B. Chemical Industry						
9. Fluorochemical Production						
By-Product Emissions						
Production of HCFC-22	HFC-23	Production of HCFC-22				
Other *(Please specify - one row per substance)*		Production of the main substance				
Fugitive Emissions (a)						
Production of HFC-134a	HFC-134a	Production of that substance				
Production of SF6	SF6	Production of that substance				
Other *(Please specify - one row per substance)*		Production of that substance				
C. Metal Production						
3. Production of Aluminium						
By-product emissions	CF4	Production of primary aluminium				
	C2F6	Production of primary aluminium				
F-gases used in foundries(b)	SF6, HFC..	Amount of aluminium casted				
4. Magnesium Production (c)	SF6, HFC..	Amount of magnesium casted				
E. Electronics Industry(d)						
1. Integrated Circuit or Semiconductor	CF4, C2F6, CHF3, C3F8, NF3 and SF6	Consumption per substance				
2. TFT Flat Panel Display	CF4, NF3 and SF6	Consumption per substance				
3. Photovoltaics	CF4 C2F6	Consumption per substance				
4. Heat Transfer Fluid	C6F14	Consumption per substance				
5. Other *(Please specify - one row per substance)(e)*		Consumption per substance				

NEW TABLE

[a] Fugitive emissions include emission from F-gases production. Some of the possible activities include Telomerization Process used in the production of fluorochemicals fluids and polymers, Photooxidation of tetrafluoroethylene to make

b) According to the 2006 IPCC guidelines possible SF6 from casting are to be included under Mg production. However in the current CRF a separate sub-category exists and is reported by Parties.

[c] Include emissions from cover gases and generated secondary compounds in the Mg foundries.

[d] Include data for the consumption of the F-gase in the process, i.e. use (filling) during manufacture. The emission include evaportative losses and by-product emissions. In case of by-product emissions include a separate row and include the information on the relevant AD in the documentation box of the table.

[e] Could include emissions from micro-electro-mechanical systems, hard disk drive manufacturing, device testing, vapour phase reflow soldering.

TABLE 2(II).B-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Year
Sources of Fluorinated Substances Submission
(Sheet 2 of 2) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas *(please specify)*	ACTIVITY DATA *Amount*			IMPLIED EMISSION FACTORS			EMISSIONS			
		Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal	Recovery[4]
		(t)			%			(t)			
F. Product Uses as Substitutes for ODS											
1. Refrigeration and Air-Conditioning	HFC-23, 32, 125, 134a, 143a, 152a, 227ea, 236fa										
Commercial Refrigeration											
Domestic Refrigeration											
Industrial Refrigeration											
Transport Refrigeration											
Mobile Air-Conditioning											
Stationary Air-Conditioning											
2. Foam Blowing Agents											
Closed cells	HFC-134a, 152a, 227ea, 245fa, 365mfc, HFC-43-10mee										
Open cells	HFC-134a, 152a, 227ea, 245fa, 365mfc, HFC-43-10mee										
3. Fire Protection	HFC-23, 125, 134a, 227ea, 236fa, CF4, C4F10										
Portable (streaming) equipment											
Fixed (flooding) equipment											
4. Aerosols	HFC-365mfc, HFC-43-10mee, C6F14										
5. Solvents	HFC-365mfc, HFC-43-10mee, C6F14										
6. Other applications (e)											
Emissive											
Contained											
G. Other Product Manufacture and Use											
1. Electrical Equipment(g)	SF6 and PFCs										
Sealed-Pressure	SF6 and PFCs										
Closed-Pressure											
Gas-Insulated Transformers	SF6 and PFCs										
2. SF6 and PFCs from Other Product Use											
Military applications											
Accelerators											
Soundproof windows											
Adiabatic properties: shoes and tyres											
Other *(Please specify - one row per substance)*											
4. Other											
H. Other *(please specify) (one row per activity/substance)*											

New table

NOTE: In case of prompt emissions (such as from aerosols, open cells, some of the solvents), the consumption in the same year should be reported as consumption in new manufactured products and consumption in the previous year - as in operational stock. Use column for emissions from manufacturing to report also installation emissions. Use the column for emissions from stock to report emissions from use, leakage, servicing, and maintenance. Disposal emissions could also include emissions from recycling and destruction.

(1) Specify the activity data used as shown in the examples within parentheses.
(2) The implied emission factors (IEFs) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.
(3) Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

(4) Amounts of emission recovery, oxidation, destruction or transformation, including from disposal emissions, where applicable

(5) Category includes SF6 and PFCs used in military applications (e.g. in airborne radar systmes and heat transer fluids in high powered electronic applications, SF6 used in university and reseach, PFCs used as heat transfer fludids in commercial and consumer applications, used in cosmetics and in medical applications, other).

(e) Emissions may include from HFCs and PFCs used in sterilisation equipment, for tobacco expansion applications, as solvents in the manufacture adhesives, coating and inks.

(g) Include data on electrical switgeargas (GIS), gas circuit breakers (GCB), high voltage gas-insulated lines (GIL), outdoor gas-insulated instrument transformers and other equipment. Emissions and activity data from equipment installation on-site should be reported under manufacturing for equipment installed within the country (also if handled by a foreign manufacturer)

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
• Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
• Where applying Tier 2 and country-specific methods, specify any other relevant activity data used in this documentation box, including a reference to the section of the NIR where more detailed information can be found.
• Use this documentation box for providing clarification on emission recovery, oxidation, destruction and/or transformation, and provide a reference to the section of the NIR where more detailed information can be found.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 1 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
1. Refrigeration[1]									
Air Conditioning Equipment									
Domestic Refrigeration *(please specify chemical)*[1]									
Commercial Refrigeration									
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air-Conditioning									
Mobile Air-Conditioning									
2. Foam Blowing[1]									
Hard Foam									
Soft Foam									

Merged into the new table 2(II)B-H

[1] Under each of the listed source categories, specify the chemical consumed (*e.g. HFC-32)* as indicated under category Domestic Refrigeration; use one row per chemical.

Note: This table provides for reporting of the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF_6 using the "bottom-up approach" (based on the total stock of equipment and estimated emission rates from this equipment). Some Parties may prefer to estimate actual emissions following the alternative "top-down approach" (based on annual sales of equipment and/or gas). Those Parties should indicate the activity data used and provide any other information needed to understand the content of the table in the documentation box at the end of sheet 2 to this table, including a reference to the section of the NIR where further details can be found. Those Parties should provide the following data in the NIR:

1. the amount of fluid used to fill new products,
2. the amount of fluid used to service existing products,
3. the amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products),
4. the product lifetime, and
5. the growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products.

In the NIR, Parties may provide alternative formats for reporting equivalent information with a similar level of detail.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
3. Fire Extinguishers									
(please specify chemical) [1]									
4. Aerosols [1]									
Metered Dose Inhalers									
Other									
5. Solvents [1]									
6. Other applications using ODS[2] substitutes [1]									
7. Semiconductors [1]									
8. Electrical Equipment[1]									
9. Other ***(please specify)*** [1]									

Merged into the new table 2(II)B-H

[1] Under each of the listed source categories, specify the chemical consumed (e.g. HFC-32) as indicated under category Fire Extinguishers; use one row per chemical.

[2] ODS: ozone-depleting substances.

Documentation box:

• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.

• With regard to data on the amounts of fluid that remained in retired products at decommissioning, use this documentation box to provide a reference to the section of the NIR where information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation can be found.

• Parties that estimate their actual emissions following the alternative top-down approach might not be able to report emissions using this table. As indicated in the note to sheet 1 of this table, Parties should in these cases provide, in the NIR, alternative formats for reporting equivalent information with a similar level of detail. References to the relevant section of the NIR should be provided in this documentation box.

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	N_2O	NMVOC
		(Gg)	
Total Solvent and Other Product Use			
A. Paint Application			
B. Degreasing and Dry Cleaning			
C. Chemical Products, Manufacture and Processing			
D. Other			
1. Use of N_2O for Anaesthesia			
2. N_2O from Fire Extinguishers			
3. N_2O from Aerosol Cans			
4. Other Use of N_2O			
5. Other *(as specified in table 3.A-D)*			

DELETED

Note: The quantity of carbon released in the form of NMVOCs should be accounted for in both the NMVOC and the CO_2 columns. The quantites of NMVOCs should be converted into CO_2 equivalent emissions before being added to the CO_2 amounts in the CO_2 column.

Documentation box:

• Parties should provide detailed explanations about the Solvent and Other Product Use sector in Chapter 5: Solvent and Other Product Use (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• The IPCC Guidelines do not provide methodologies for the calculation of emissions of N_2O from Solvent and Other Product Use. If reporting such data, Parties should provide in the NIR additional information (activity data and emission factors) used to derive these estimates, and provide in this documentation box a reference to the section of the NIR where this information can be found.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Year

Submission

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [1]	
	Description	(kt)	CO_2 (t/t)	N_2O (t/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other				
1. Use of N_2O for Anaesthesia				
2. N_2O from Fire Extinguishers				
3. N_2O from Aerosol Cans				
4. Other Use of N_2O				
5. Other *(please specify)* [2]				

DELETED

[1] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into ta[illegible].

[2] Some probable sources to be reported under 3.D Other are listed in this table. Complement the list with other relevant sources, as appropriate.

Documentation box:
Parties should provide detailed explanations on the Solvent and Other Product Use sector in Chapter 5: Solvent and Other Product Use (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 4 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Waste							
A. Solid Waste Disposal ~~on Land~~							
1. Managed Waste Disposal Sites ~~on Land~~							
2. Unmanaged Waste Disposal Sites							
3. ~~Other *(as specified in table 6.A)*~~ *Uncategorised Waste Disposal Sites*							
B. Biological Treatment of Solid Waste							
C. Incineration and Open Burning of Waste							
1. Waste Incineration							
2. Open Burning of Waste							
D. Waste Water ~~Handling~~ Treatment and Discharge							
1. ~~Industrial~~ Domestic Wastewater							
2. ~~Domestic and Commercial~~ Industrial Waste Water							
3. Other *(as specified in table 6.B)*							
~~C. Waste Incineration~~							
E. Other *(please specify)*							
Memo Item:							
Long-term storage of C in Waste Disposal Sites							
Annual change in total long-term C storage							
Annual change in total long-term C storage in HWP waste(5)							

[1] CO_2 emissions from source categories Solid waste disposal on land and Waste incineration should only be included if they derive from non-biological or inorganic waste sources.

Documentation box:
• Parties should provide detailed explanations on the waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
• If estimates are reported under "6.D Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

TABLE 4.A SECTORAL BACKGROUND DATA FOR WASTE
Solid Waste Disposal
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS			
	Annual waste at the SWDS	MCF	DOC ~~degraded~~ f(6)	CH_4 [1]	CO_2	CH_4			CO_2 [4]
						Emissions [2]	Flaring	Energy Recovery [3]	
	(Gg)		%	(t /t waste ~~MSW~~)		(Gg)			
1. Managed Waste Disposal Sites ~~on Land~~									
a. Anaerobic									
b. Semi-aerobic									
2. Unmanaged Waste Disposal Sites									
a. Deep (>5 m)									
b. Shallow (<5 m)									
3. Unspecified Waste Disposal Sites									

Additional information

Description	Value
Total population (1000s) [a]	
Urban population (1000s) [a]	
Waste generation rate (kg/capita/day)	
Fraction of MSW disposed to SWDS	
Fraction of DOC in MSW	
CH_4 oxidation factor [b]	
CH_4 fraction in landfill gas	
CH_4 generation rate constant (k) [c]	
Time lag considered (yr) [c]	

DELETED

Note: MSW - Municipal Solid Waste, SWDS - Solid Waste Disposal Site, MCF - Methane Correction Factor, DOC - Degradable Organic Carbon (IPCC Guidelines (Volume 3. Reference Manual, section 6.2.4)).
MSW includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. MSW should not include inorganic industrial waste such as construction or demolition materials.

[1] The CH_4 implied emission factor (IEF) is calculated on the basis of gross CH_4 emissions, as follows: IEF = (CH_4 emissions + CH_4 recovered)/annual MSW at the SWDS.
[2] Actual emissions (after flaring and recovery).
[3] When emissions CH_4 recovered is used for energy, the emissions from the combustion should be reported under 1.A and are provided here for information only.
[4] Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, whereas the CO_2 emissions from biogenic wastes are not included in the total emissions.
[5] Carbon stored in wood, paper, cardboard, garden and park wate (equal to annual change in stocks of HWP in SWDS from consumption, second AD in the table for HWP)
(6) Fraction of degradable organic carbon that decomposes

[a] Specify whether total or urban population is used and the rationale for doing so.
[b] See IPCC Guidelines (Volume 3. Reference Manual, p. 6.9).
[c] Only for Parties using Tier 2 methods.

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE
Waste Incineration
(Sheet 1 of 1)

MOVED AND REVISED

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR			EMISSIONS			
	Amount of incinerated wastes		CH_4	N_2O	CO_2 [1]	CH_4		N_2O
	(Gg)		(kg/t waste)		(Gg)			
Waste Incineration								
a. Biogenic [1]								
b. Other (non-biogenic - *please specify*) [1], [2]								

[1] Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, while the CO_2 emissions from biogenic wastes are not included in the total emissions.
[2] Enter under this source category all types of non-biogenic wastes, such as plastics.

Note: Only emissions from waste incineration without energy recovery are to be reported in the Waste sector. Emissions from incineration with energy recovery are to be reported in the Energy sector, as Other Fuels (see IPCC good practice guidance, page 5.23).

Documentation box:
• Parties should provide detailed explanations on the waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand
• Parties that use country-specific models should provide a reference in the documentation box to the relevant section in the NIR where these models are described, and fill in only the relevant cells of tables 6.A and 6.C.
• Provide a reference to the relevant section in the NIR, in particular with regard to:
(a) A population size (total or urban population) used in the calculations and the rationale for doing so;
(b) The composition of landfilled waste;
(c) In relation to the amount of incinerated wastes (specify whether the reported data relate to wet or dry matter).
Parties should specify the category in the energy sector under which the emissions from energy recovery are reported.

TABLE 4.B SECTORAL BACKGROUND DATA FOR WASTE
Biological Treatment of Solid Waste
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND	ACTIVITY DATA AND OTHER RELATED INFORMATION	IMPLIED EMISSION FACTOR		EMISSIONS			
SINK CATEGORIES		CH_4 (1)	N2O	CH_4			N2O
	Annual waste amount treated			Emissions (2)	Flaring	Energy Recovery (3)	
	(Gg dm)	[illegible]		(Gg)			
1. Composting							
MSW							
Industrial Wastes							
Sludge							
Other							
2. Anaerobic digestion at biogas facilities(3)							
MSW							
Industrial Wastes							
Sludge							
Other							

NEW TABLE

(1) The CH_4 implied emission factor (IEF) is calculated on the basis of gross CH_4 emissions, as follows: IEF = (CH_4 emissions + CH_4 recovered/flared)/annual MSW at the SWDS.
(2) Actual emissions (after recovery).

(3) When emissions CH_4 recovered is used for energy, the emissions from the combustion should be reported under 1.A and are provided here for information only.

Documentation box:
• Parties should provide detailed explanations on the waste sector in Chapter ?: Waste (CRF sector 5) of the NIR. Use this documentation box to provide references Parties should specify the category in the energy sector under which the emissions from energy recovery are reported.

TABLE 4.C SECTORAL BACKGROUND DATA FOR WASTE

Incineration and Open Burning of Waste

(Sheet 1 of 1)

OLD TABLE

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of incinerated wastes (Gg)	IMPLIED EMISSION FACTOR			EMISSIONS		
		CO_2	CH_4	N_2O	CO_2 (1)	CH_4	N_2O
		(kg/t waste)			(Gg)		
Waste Incineration							
a. Biogenic (1)							
b. Other (non-biogenic - *please specify*) (1), (2)							

REVISED TABLE

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of wastes (incinerated/open burned)	IMPLIED EMISSION FACTOR			EMISSIONS				
		CO_2	CH_4	N_2O	CO_2 (2)		CH_4		N_2O
					Emissions	Energy Recovery	Emissions	Energy Recovery	
	(Gg wet weight)	(kg/t waste)			(Gg)				
Biogenic (1)									
1 Waste Incineration									
MSW									
Industrial Solid Wastes									
Clinical Waste									
Sewage Sludge									
Other (please specify)									
2 Open Burning of Waste									
MSW									
Other (please specify)									
Non-biogenic									
1 Waste Incineration									
MSW									
Industrial Solid Wastes									
Hazardous Waste									
Clinical Waste									
Sewage Sludge									
Lubricants(3)									
Solvents(3)									
Waste oil(3)									
Other (please specify)									
2 Open Burning of Waste									
MSW									
Other (please specify)									

~~(1) Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic~~

~~(2) Enter under this source category all types of non-biogenic wastes, such as plastics.~~

(1) The CO2 emissions from combustion of biomass matereials (e.g. paper, food and wood waste) contained in the waste are biogenic emissions and should not be included in the national totals. However, if incineration of waste is used for energy purpose, both fossil and biogenic CO2 emissions should be estimated. Only fossil CO2 should be included in the emissions under energy sector, while biogenic CO2 should be reported as an information item under energy sector. The cells here are only for information purposes.

(2) The columns with energy recovery are for information purposes only. The emissions from waste used for energy are reported under energy sector.

(3) Unless fossil liquid waste is included in other types of waste (e.g. industrial, hazardous waste), the emissions need to be calculated separately

Note: Only emissions from waste incineration without energy recovery are to be reported in the Waste sector. Emissions from incineration with energy recovery are to be reported in the Energy

Documentation box:

- Parties should provide detailed explanations on the waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the
- Parties that use country-specific models should provide a reference in the documentation box to the relevant section in the NIR where these models are described, and fill in only the relevant
- Provide a reference to the relevant section in the NIR, in particular with regard to:
  - (a) A population size (total or urban population) used in the calculations and the rationale for doing so;
  - (b) The composition of landfilled waste;
  - (c) In relation to the amount of incinerated wastes (specify whether the reported data relate to wet or dry matter).

TABLE 4.D SECTORAL BACKGROUND DATA FOR WASTE
Waste Water Treatment and Discharge
(Sheet 1 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION[1]		IMPLIED EMISSION FACTOR		EMISSIONS			
					CH_4			
	Total organic product	Sludge removed(7)	CH_4 [2]	N_2O[3]	Emissions [4]	Flared	Energy Recovery [5]	N_2O [3]
	(Gg DC[1]/yr)		(kg/kg DC)		(Gg)			
1. Domestic Waste Water								
~~a. Waste Water~~								
~~b. Sludge~~								
2. Industiral Wastewater								
~~a. Waste Water~~								
~~b. Sludge~~								
3. Other *(please specify)* [6]								
~~a. Waste Water~~								
~~b. Sludge(6)~~								
[6]								

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS
	Population (1000s)	Protein consumption (kg/person/yr)	N fraction (kg N/kg protein)	N_2O (kg N_2O-N/kg sewage N produced)		N_2O (Gg)
N_2O from human sewage[3]						

Additional information

	Domestic	Industrial
Total waste water (m^3):		
Treated waste water (%):		

Waste-water streams:	Waste-water output (m^3)	DC (kg COD/m^3)
Industrial waste water		
Iron and steel		
Non-ferrous		
Fertilizers		
Food and beverage		
Paper and pulp		
Organic chemicals		
Other *(please specify)*		
	DC (kg BOD/1000 person/yr)	
Domestic and Commercial		
Other *(please specify)*		

Handling systems:	Industrial waste water treated (%)	Industrial sludge treated (%)	Domestic waste water treated (%)	Domestic sludge treated (%)
Aerobic				
Anaerobic				
Other *(please specify)*				

[1] DC - degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial waste water and BOD (Biochemical Oxygen Demand) for Domestic/Commercial waste water/sludge (IPCC Guidelines (Volume 3. Reference Manual, pp. 6.14, 6.18)).

[2] The CH_4 implied emission factor (IEF) is calculated on the basis of gross CH_4 emissions, as follows: IEF = (CH_4 emissions + CH_4 recovered or flared) / total organic product.

[3] Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or waste-water treatment should provide aggregate data in this table.

[4] Actual emissions (after recovery).

[5] CH_4 recovered and flared or utilized.

[6] Use the cells below to specify each activity covered under "6.B.3 Other". Note that under each reported activity, data for waste water and sludge are to be reported separately.

(7) If sludge removal is reported in the wastewater inventory, it should be consistent with the estimates for sludge applied to agricultural soils, sludge incinerated and sludge deposited in SWDS.

Documentation box:

• Parties should provide detailed explanations on the Waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Regarding the estimates for N_2O from human sewage, specify whether total or urban population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.

• Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or waste-water treatment should provide, in the NIR, corresponding information on methods, activity data and emission factors used, and should provide a reference to the relevant section of the NIR in this documentation box.