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
	(kt)						
Total Energy							
A. Fuel combustion activities (sectoral approach)							
1. Energy industries							
a. Public electricity and heat production							
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-metallic minerals							
g. Other (*please specify*)							
3. Transport							
a. Domestic aviation							
b. Road transportation							
c. Railways							
d. Domestic 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
	(kt)						
4. Other sectors							
a. Commercial/institutional							
b. Residential							
c. Agriculture/forestry/fishing							
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. Solid fuel transformation							
c. Other *(as specified in table 1.B.1)*							
2. Oil and natural gas and other emissions from energy production							
a. Oil							
b. Natural gas							
c. Venting and flaring							
d. Other *(as specified in table 1.B.2)*							
C. CO_2 Transport and storage							
1. Transport of CO_2							
2. Injection and storage							
3. Other							
Memo items: [1]							
International bunkers							
Aviation							
Navigation							
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 carbon dioxide (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 (IPCCsector 1) of the national inventory report. 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			EMISSIONS			
	Consumption		CO_2[1]	CH_4	N_2O	CO_2[2]	CH_4	N_2O	CO_2 Amount captured
	(TJ)	NCV/GCV[3]	(t/TJ)	(kg/TJ)		(kt)			
1.A. Fuel combustion									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
1.A.1. Energy industries									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[6]									
Biomass[6]									
a. Public electricity and heat production									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[6]									
Biomass[6]									
i Electricity generation									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
ii Combined heat and power generation									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
iii Heat plants									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
b. Petroleum refining									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
c. Manufacture of solid fuels and other energy industries									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
i. Manufacture of solid fuels									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
ii. Oil and gas extraction									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
iii. Other energy industries									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									

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 2006 IPCC Guidelines (chapter 1 of energy volume, section 1.4.1.1, page 1.11). If some derived gases (e.g. gas works, gas, coke oven gas, blast furnace gas)

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY Year
Fuel combustion activities - sectoral approach Submission
(Sheet 2 of 4) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS			
	Consumption		CO_2 [1]	CH_4	N_2O	CO_2 [2]	CH_4	N_2O	CO_2 Amount captured
	(TJ)	NCV/GCV [3]	(t/TJ)	(kg/TJ)		(kt)			
1.A.2 Manufacturing industries and construction									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
a. Iron and steel									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
b. Non-ferrous metals									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
c. Chemicals									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
d. Pulp, paper and print									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
e. Food processing, beverages and tobacco									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
f. Non-metallic minerals									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
g. Other [7] (*please specify*) (the categories below will be included as a drop-down list)									
i. Manufacturing of machinery									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
ii. Manufacturing of transport equipment									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
iii. Mining (excluding fuels) and quarrying									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
iv. Wood and wood products									
Liquid fuels									
Solid Fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
v. Construction									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
vi. Textile and leather									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									
vii. Non-specified industry									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels [4]									
Peat [5]									
Biomass [6]									

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			EMISSIONS		
	Consumption		CO_2 [1]	CH_4	N_2O	CO_2 [2]	CH_4	N_2O
	(TJ)	NCV/GCV [3]	(t/TJ)	(kg/TJ)		(kt)		
1.A.3 Transport								
Liquid fuels								
Solid fuels								
Gaseous fuels								
Other fossil fuels [4]								
Biomass [6]								
a. Domestic aviation [8]								
Aviation gasoline								
Jet kerosene								
Biomass								
b. Road transportation								
Gasoline								
Diesel oil								
Liquefied petroleum gases (LPG)								
Other liquid fuels (*please specify*)								
Gaseous fuels								
Biomass [6]								
Other fossil fuels *(please specify)* [4]								
i. Cars								
Gasoline								
Diesel oil								
Liquefied petroleum gases (LPG)								
Other liquid fuels (*please specify*)								
Gaseous fuels								
Biomass [6]								
Other fossil fuels *(please specify)* [4]								
ii. Light duty trucks								
Gasoline								
Diesel oil								
Liquefied petroleum gases (LPG)								
Other liquid fuels (*please specify*)								
Gaseous fuels								
Biomass [6]								
Other fossil fuels *(please specify)* [4]								
iii. Heavy duty trucks and buses								
Gasoline								
Diesel oil								
Liquefied petroleum gases (LPG)								
Other liquid fFuels (*please specify*)								
Gaseous fuels								
Biomass [6]								
Other fossil fuels *(please specify)* [4]								
iv. Motorcycles								
Gasoline								
Diesel oil								
Liquefied petroleum gases (LPG)								
Other liquid fuels (*please specify*)								
Gaseous fuels								
Biomass [6]								
Other fossil fuels *(please specify)* [4]								
v. Other (please specify)								
Gasoline								
Diesel oil								
Liquefied petroleum gases (LPG)								
Other liquid fuels (*please specify*)								
Gaseous Fuels								
Biomass [6]								
Other fossil fuels *(please specify)* [4]								
c. Railways								
Liquid fuels								
Solid fuels								
Gaseous fuels								
Biomass [6]								
Other fossil fuels (*please specify*)								
d. Domestic Navigation [8]								
Residual fuel oil								
Gas/diesel oil								
Gasoline								
Other liquid fuels *(please specify)*								
Gaseous fuels								
Biomass [6]								
Other fossil fuels (*please specify*) [4]								
e. Other transportation *(please specify)*								
Liquid fuels								
Solid fuels								
Gaseous fuels								
Other fossil fuels [4]								
Biomass [6]								
i. Pipeline transport								
Liquid fuels								
Solid fuels								
Gaseous fFuels								
Other fossil Fuels [4]								
Biomass [6]								
ii. Other *(please specify)* [5]								
Liquid fuels								
Solid fuels								
Gaseous fuels								
Other fossil fuels [4]								
Biomass [6]								

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 4 of 4) Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS			
	Consumption		CO_2[1]	CH_4	N_2O	CO_2[2]	CH_4	N_2O	CO_2 Amount captured
	(TJ)	NCV/GCV[3]	(t/TJ)	(kg/TJ)		(kt)			
1.A.4 Other sectors									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
a. Commercial/institutional									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
Drop-down list									
i. Stationary combustion									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
ii. Mobile combustion									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Biomass[6]									
b. Residential									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
Drop-down list									
i. Stationary combustion									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
ii. Mobile combustion									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Biomass[6]									
c. Agriculture/forestry/fishing									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
i. Stationary									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
ii. Off-road vehicles and other machinery									
Gasoline									
Diesel oil									
Liquefied petroleum gases (LPG)									
Other liquid fuels (*please specify*)									
Gaseous fuels									
Biomass[6]									
Other fossil fuels *(please specify)* [4]									
iii. Fishing									
Residual fuel oil									
Gas/diesel oil									
Gasoline									
Other liquid fuels *(please specify)*									
Gaseous fuels									
Biomass[6]									
Other fossil fuels (*please specify*) [4]									
1.A.5 Other *(Not specified elsewhere)* [9]									
a. Stationary *(please specify)*									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Peat[5]									
Biomass[6]									
b. Mobile *(please specify)*									
Liquid fuels									
Solid fuels									
Gaseous fuels									
Other fossil fuels[4]									
Biomass[6]									
Information item:[10]									
Waste incineration with energy recovery included as:									
Biomass[6]									
Fossil fuels[4]									

[1] The implied emission factors (IEFs) for carbon dioxide (CO_2) are estimated on the basis of gross emissions, i.e. CO_2 emissic
[2] Final CO_2 emissions after subtracting the amounts of CO_2 captured.
[3] If activity data are calculated using net calorific values (NCVs) as specified by the IPCC Guidelines, write NCV in this column. If gross calorific values (GCVs) are used, write GCV in this column.
[4] Include information in the documentation box on which fuels are included and provide a reference to the section in the national inventory report (NIR) where further information is provided.
[5] 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 the 2006 IPCC Guidelines, chapter 1 of energy volume, page 1.15.
[6] Although CO_2 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.
[7] If data are available, Parties are encouraged to report at the disaggregated level available from the pre-defined drop-down menu. Furthermore, Parties are encouraged to the extent possible to use the pre-defined category definitions rather than to create similar categories. This ensures the highest possible degree of comparability of the reporting. If detailed data are not available, Parties should include all emissions from manufacturing industries and construction not included in subcategories 1.A.2.a-1.A.2.f under Non-specified industry.
[8] Domestic aviation and navigation should not include emissions from military aviation and navigation. The emissions from military mobile sources should be reported under category 1.A.5.b.
[9] Include military fuel use under this category.
[10] "Information item" data are included to allow cross-sectoral and cross-fuel checks for activity data and emissions. Details on the actual amounts reported for the subcategories and fuels should be included in the NIR.

Documentation Box
• Parties should provide detailed explanations on the fuel combustion subsector in the corresponding part of chapter 3: energy (CRF subsector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any addition information and/or further details are needed to understand the content of this table.
• If estimates are based on GCVs, use this documentation box to provide reference to the relevant section of the NIR where the information necessary for the calculation of the activity data based on NCVs 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, solid, gaseous, biomass and other fuels).

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY Year

CO_2 from fuel combustion activities - reference approach (IPCC worksheet fuel combustion activities) Submission

(Sheet 1 of 1) Country

FUEL TYPES			Unit	Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor (TJ/Unit)[1]	NCV/ GCV [2]	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (kt)	Carbon stored[C excluded] (kt C)	Net carbon emissions ((kt) C)	Fraction of carbon oxidized	Actual CO_2 emissions ((kt) 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 gases (LPG)																
		Ethane																
		Naphtha																
		Bitumen																
		Lubricants																
		Petroleum coke																
		Refinery feedstocks																
		Other oil																
Other liquid fossil																		
Liquid fossil totals																		
Solid fossil	Primary fuels	Anthracite[3]																
		Coking coal																
		Other bituminous coal																
		Sub-bituminous coal																
		Lignite																
		Oil shale and tar sand																
	Secondary fuels	BKB[4] 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																		
Waste (non-biomass fraction)																		
Other fossil fuels																		
Peat[5,6]																		
Total																		
Biomass total																		
		Solid biomass																
		Liquid biomass																
		Gas biomass																
		Other non-fossil fuels (biogenic waste)																

[1] If consumption data are not reported in physical units, please report net calorific values in a similar level of disaggregation as fuel types in the national inventory report (NIR) and indicate in the documentation box where this information is reported.

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

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

[4] BKB: Brown coal briquettes.

[5] Although peat is not strictly speaking a fossil fuel, the carbon dioxide (CO_2) 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.

[6] Include peat briquettes here.

Documentation Box:

Parties should provide detailed explanations on the fuel combustion sub-sector, including information relating to CO_2 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 CO_2 EMISSIONS FROM FUEL COMBUSTION

Year

Comparison of CO_2 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 (kt)	Energy consumption (PJ)	CO_2 emissions[5] (kt)	Energy consumption (%)	CO_2 emissions[6] (%)
Liquid fuels (excluding international bunkers)							
Solid fuels (excluding international bunkers)							
Gaseous fuels							
Other 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 carbon dioxide (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, reductants 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 in the reference approach with energy consumption in the sectoral approach, data in this column come from table 1.A(d).

[5] For the sectoral approach gross emissions (without accounting for CO_2 captured) are included in the comparison.

[6] In the case of discrepancies between the approaches (of more than 2 per cent), investigate and document the reasons for such discrepancies.

Documentation Box:

• Parties should provide detailed explanations on the fuel combustion subsector, 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 subsector 1.A) of the national inventory report (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(d) SECTORAL BACKGROUND DATA FOR ENERGY Year
Feedstocks, reductants and other non-energy use of fuels Submission
(Sheet 1 of 1) Country

FUEL TYPE			ACTIVITY DATA AND RELATED INFORMATION	IMPLIED EMISSION FACTOR	CARBON EXCLUDED FROM REFERENCE APPROACH		IMPLIED CARBON EXCLUDED FRACTION	REPORTED CO_2 EMISSIONS[1]	
			Fuel quantity for NEU	Carbon emission factor	Carbon excluded	CO_2 excluded	Carbon fraction excluded from reference approach[2]	CO_2 emissions from the NEU reported in the inventory	Reported under: Select category(ies) from the category tree[3]
			(TJ)	(t C/TJ)	((kt) C)	((kt) CO_2)	(%)	((kt) CO_2)	
Liquid fossil	Primary fuels	Crude oil							
		Orimulsion							
		Natural gas liquids							
	Secondary fuels	Gasoline							
		Jet kerosene							
		Other kerosene[4]							
		Shale oil							
		Gas/diesel oil[4]							
		Residual fuel oil							
		Liquefied petroleum gases (LPG)[4]							
		Ethane[4]							
		Naphtha[4]							
		Bitumen							
		Lubricants[5]							
		Petroleum coke[5]							
		Refinery feedstocks							
		Other oil[6]							
Other liquid fossil									
Liquid fossil totals									
Solid fossil	Primary fuels	Anthracite							
		Coking coal							
		Other bituminous coal							
		Sub-bituminous Coal							
		Lignite							
		Oil shale and tar sand							
	Secondary fuels	BKB and patent fuel							
		Coke oven/gas coke							
		Coal tar[7]							
Other solid fossil									
Solid fossil totals									
Gaseous fossil		Natural gas (dry)[4,8]							
Other gaseous fossil									
Gaseous fossil totals									
Waste (non-biomass fraction)									
Other fossil fuels									
Other fossil fuels totals									

[1] Carbon excluded from fuel combustion is either emitted in another sector of the inventory (for example as industrial process emissions) or is stored for long periods of time in a product manufactured from the fuel and therefore no emissions occur (for example, bitumen/asphalt used for road paving). Column I includes carbon dioxide (CO_2) emissions from non-energy use and column J documents where in the inventory these emissions are reported.
[2] The fraction of carbon excluded from reference approach relates CO_2 from carbon excluded to CO_2 reported in the reference approach.
[3] 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 national inventory report (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).
[4] 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 occurring).
[5] Total deliveries.
[6] Refinery gas, paraffin waxes and white spirit are included under "other oil" in table 1A(b).
[7] Deliveries to petrochemical feedstock and blast furnaces.
[8] Deliveries to chemical industry and construction.

Documentation box:
Parties should provide detailed explanations on the fuel consumption for non-energy uses, in the corresponding part of chapter 3.2.3. Feedstocks and non-energy use of fuels 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

Year

Solid fuels

Submission

(Sheet 1 of 1)

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
	(Mt)	(kg/t)		(kt)		
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. Solid fuel transformation[5]						
1. B. 1. c. Other (*please specify*)[6]						

(1) The implied emission factors (IEFs) for methane (CH_4) are estimated on the basis of gross emissions as follows: (CH_4 emissions + amounts of CH_4 flared/

(2) Amounts of CH_4 drained (recovered), utilized or flared. If CH_4 is recovered and flared the associated emissions should be included under 1.B.1.c.

(3) Final CH_4 emissions after subtracting the amounts of CH_4 utilized or recovered.

(4) In accordance with the IPCC Guidelines, emissions from Mining activities and Post-mining activities are calculated using the raw coal production for Underground mines and Surface mines.

(5) Include fugitive emissions from coke and charcoal production under this category.

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

Note: There are no clear references to the coverage of subcategories 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 category, indicate this by using the notation key "IE" (included elsewhere) 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 category 1.B.1) of the NIR. Use this documentation box to provide references to relevant sections of the national inventory report (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 the above table, specify in this documentation box whether the fuel amount is based on the run-of-mine 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

Oil, natural gas and other emissions from energy production

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[2]	CH_4	N_2O	CO_2		CH_4	N_2O
							Emissions[3]	Amount captured		
				(kg/unit) [4]			(kt)			
1. B. 2. a. Oil[5]										
1. Exploration	(e.g. number of wells drilled)									
2. Production[6]	(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										
1. Exploration										
2. Production[6]	(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	(e.g. PJ gas consumed)									
1. B. 2. c. Venting and flaring										
Venting										
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)* [7]										
Drop-down list										
Geothermal energy production										
Other (*please specify*)										

(1) Specify the activity data (AD) used in the description column (see examples). Specify the unit of the AD in the unit column in either energy units or volume units (e.g. PJ, 10^6 m^3 and 10^6 bbl/yr).

(2) The implied emission factors (IEFs) for carbon dioxide (CO_2) are estimated on the basis of gross emissions, i.e. C

(3) Net CO_2 emissions after subtracting the amounts of CO_2 captured.

(4) The unit of the IEF will depend on the unit of the AD used, and is therefore not specified in this column.

(5) 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 subcategories 1.B.2.b.iii and 1.B.2.b.v, respectively.

(6) If using default emission factors, these categories will include emissions from production other than venting and flaring.

(7) For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

Documentation box:

• Parties should provide detailed explanations on the fugitive emissions from category 1.B.2 Oil and Natural gas in the corresponding part of chapter 3: energy (CRF 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 AD 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

Year

CO_2 Transport and storage

Submission

(Sheet 1 of 1)

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS
	CO_2 transported or injected[1] (kt)	CO_2 (kg/kt)	CO_2[2] (kt)
1. Transport of CO_2			
a. Pipelines			
b. Ships			
c. Other			
2. Injection and storage[3]			
a. Injection			
b. Storage			
3. 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 CO_2 injected at storage sites			
Total leakage from transport, injection and storage			
Total B			
Difference (A-B) [6]			

[1] Excluding recycled carbon dioxide (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.

[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] It should be checked that the mass of CO_2 captured does no exceed the mass of CO_2 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 aviation and international navigation (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)	(kg/TJ)		(kt)		
International aviation (aviation bunkers)							
Jet kerosene							
Aviation gasoline							
Biomass							
International navigation (marine bunkers)							
Residual fuel oil							
Gas/diesel oil							
Gasoline							
Other liquid fuels *(please specify)*							
Gaseous fuels							
Biomass							
Other fossil fuels *(please specify)* [1]							
Multilateral operations[2]							

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.D) are used.

[1] Include information in the documentation box on which fuels are included and provide a reference to the section in the national inventory report (NIR) where further information is provi

[2] 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 memo iItems in the summary tables and in the sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and international navigation 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 subsector, including international aviation and international navigation, in the corresponding part of chapter 3: energy (CRF subsector 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 of how the consumption of international aviation and international navigation 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 AND PRODUCT USE
(Sheet 1 of 2)

Year

Submission

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]	PFCs[1]	Unspecified mix of HFCs and PFCs[1]	SF_6	NF_3	NO_x	CO	NMVOC	SO_2
	(kt)			CO_2 equivalent (kt)			(kt)					
Total industrial processes												
A. Mineral industry												
1. Cement production												
2. Lime production												
3. Glass production												
4. Other process uses of carbonates												
B. Chemical industry												
1. Ammonia production												
2. Nitric acid production												
3. Adipic acid production												
4. Caprolactam, glyoxal and glyoxylic 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-H)*												
C. Metal industry												
1. Iron and steel production												
2. Ferroalloys production												
3. Aluminium production												
4. Magnesium production												
5. Lead production												
6. Zinc production												
7. Other *(as specified in table 2(I).A-H)*												

[1] The emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), unspecified mix of HFCs and PFCs, and other fluorinated gases are to be expressed as carbon dioxide 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 AND PRODUCT USE
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]	PFCs[1]	Unspecified mix of HFCs and PFCs[1]	SF_6	NF_3	NO_x	CO	NMVOC	SO_2
	(kt)			CO_2 equivalent (kt)			(kt)					
D. Non-energy products from fuels and solvent use												
1. Lubricant use												
2. Paraffin wax use												
3. Other												
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[2]												
1. Refrigeration and air conditioning												
2. Foam blowing agents												
3. Fire protection												
4. Aerosols												
5. Solvents												
6. Other applications												
G. Other product manufacture and use												
1. Electrical equipment												
2. SF_6 and PFCs from other product use												
3. N_2O from product uses												
4. Other												
H. Other (as specified in tables 2(I).A-H and 2(II))[3]												

[1] The emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), unspecified mix of HFCs and PFCs, and other fluorinated gases are to be expressed as carbon dioxide equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in table 2(II).

[2] ODS ozone-depleting substances.

[3] Carbon dioxide (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.

Documentation box:
Parties should provide detailed explanations on the industrial processes sector in chapter 4: industrial processes (CRF sector 2) of the national inventory report (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-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES AND PRODUCT USE 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]
						(kt)					
A. Mineral industry											
1. Cement production	(e.g. cement or clinker production)										
2. Lime production											
3. Glass production											
4. Other process uses of carbonates											
a. Ceramics											
b. Other uses of soda ash											
c. Non-metallurgical magnesium production											
d. Other											
B. Chemical industry											
1. Ammonia production[5]											
2. Nitric acid production											
3. Adipic acid production											
4. Caprolactam, glyoxal and glyoxylic acid production											
a. Caprolactam											
b. Glyoxal											
c. Glyoxylic acid											
5. Carbide production											
a. Silicon carbide											
b. 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											
Drop-down list											
Styrene											
10. Other *(please specify)*											

(1) Where the IPCC Guidelines provide options for activity data (AD), 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 (IEFs).
(2) The IEFs are estimated on the basis of gross emissions as follows: IEF = (emissions plus amounts recovered, oxidized, destroyed or transformed) / AD.
(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(I).A-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES AND PRODUCT USE
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)			(kt)					
C. Metal industry											
1. Iron and steel production											
a. Steel											
b. Pig iron											
c. Direct reduced iron											
d. Sinter											
e. Pellet											
f. Other *(please specify)*											
2. Ferroalloys production											
3. Aluminium production											
4. Magnesium production											
5. Lead production											
6. Zinc production											
7. Other *(please specify)*											
D. Non-energy products from fuels and solvent use											
1. Lubricant use											
2. Paraffin wax use											
3. Other *(please specify)*											
Drop-down list											
Solvent use											
Road paving with asphalt											
Asphalt roofing											
G. Other product manufacture and use											
3. N_2O from product uses											
a. Medical applications											
b. Other											
Drop-down list											
Propellant for pressure and aerosol products											
4. Other											
H. Other[5] *(please specify)*											
Drop-down list											
1. Pulp and paper											
2. Food and beverages industry											

(1) Where the IPCC Guidelines provide options for activity data (AD), 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 (IEFs).

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

(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) If data are available, Parties are encouraged to report at the disaggregated level available from the pre-defined drop-down menu. Furthermore, Parties are encouraged to the extent possible to use the pre-defined category definitions rather than to create similar categories. This ensures the highest possible degree of comparability of the reporting. If detailed data are not available Parties should include all emissions from industrial processes not included in subcategories 2.A-2.G, under this category.

Documentation Box:

• Parties should provide detailed explanations on the industrial processes sector in chapter 4: industrial processes (CRF sector 2) of the national inventory report (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 of the NIR.

• 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 AND PRODUCT USE - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 1 of 1)

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-143	HFC-143a	HFC-152	HFC-152a	HFC-161	HFC-227ea	HFC-236cb	HFC-236ea	HFC-236fa	HFC-245ca	HFC-245fa	HFC-365mfc	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}	$C_{10}F_{18}$	SF_5CF_3	c-C_3F_6	Unspecified mix of listed PFCs [1]	Total PFCs	Unspecified mix of HFCs and PFCs [1]	SF_6	NF_3
	(t) [2]																			CO_2 equivalent (kt)		(t) [2]										CO_2 equivalent (kt)		CO_2 equivalent (kt)	(t) [2]	(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 industry																																			
3. Aluminium production																																			
4. Magnesium production																																			
7. Other																																			
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 [2]																																			
1. Refrigeration and air conditioning																																			
2. Foam blowing agents																																			
3. Fire protection																																			
4. Aerosols																																			
5. Solvents																																			
6. Other applications																																			
G. Other product manufacture and use																																			
1. Electrical equipment																																			
2. SF_6 and PFCs from other product use																																			
4. Other																																			
H. Other *(please specify)*																																			
	CO_2 equivalent (kt)																																		
Total emissions [3]																																			
B. Chemical industry																																			
C. Metal production																																			
E. Electronics industry																																			
F. Product uses as substitutes for ODS																																			
G. Other product manufacture and use																																			
H. Other																																			

[1] In accordance with the UNFCCC reporting guidelines, emissions of hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), unspecified mix of HFCs and PFCs and other fluorinated gases should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. owing to mixtures, confidential data, lack of disaggregation), these columns could be used for reporting aggregate figures for HFCs and PFCs, unspecified mix of HFCs and PFCs and fluorinated gases, respectively. Parties should provide information on global warming potential values used in the national inventory review report. Note that the unit used in these columns is kt of carbon dioxide equivalent (CO_2eq).

[2] ODS ozone-depleting substances

[3] Total actual emissions equal the sum of the actual emissions of each halocarbon, sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) from the categories 2.C, 2.E, 2.F, 2.G and 2.H in this table multiplied by the corresponding global warming potential 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_2eq. 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.

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.H Other, use this documentation box to provide information regarding activities covered under this category and to provide a reference to the section of the NIR where background information can be found.

TABLE 2(II).B-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES AND PRODUCT USE

Sources of fluorinated substances

(Sheet 1 of 2)

Year

Submission

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas *(please specify)* *One row per substance*	ACTIVITY DATA		IMPLIED EMISSION FACTORS[1]	EMISSIONS	
		Description	(t)	(kg/t)	Emissions[2] (t)	Recovery[3] (t)
B. Chemical industry						
9. Fluorochemical production						
By-product emissions						
Production of HCFC-22	e.g. HFC-23	Production of HCFC-22				
Other *(please specify - one row per substance)*		Production of the main substance				
Fugitive emissions[4]						
Production of HFC-134a	e.g. HFC-134a	Production of that substance				
Production of SF_6	e.g. SF_6	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	e.g. CF_4, C_2F_6	Production of primary aluminium				
F-gases used in foundries[5]	e.g. SF_6	Amount of aluminium casted				
4. Magnesium production[6]	e.g. SF_6, HFC	Amount of magnesium casted				
7. Other *(please specify - one row per substance)*						
E. Electronics industry[7]						
1. Integrated circuit or semiconductor	e.g. CF_4, C_2F_6, CHF_3, C_3F_8, NF_3 and SF_6	Consumption per substance				
2. TFT flat panel display	e.g. CF_4, NF_3 and SF_6	Consumption per substance				
3. Photovoltaics	e.g CF_4 e.g C_2F_6	Consumption per substance				
4. Heat transfer fluid	e.g C_6F_{14}	Consumption per substance				
5. Other *(please specify - one row per substance)* [8]						
		Consumption per substance				

Note: All footnotes for this table are given at the end of the table on sheet 2.

TABLE 2(II).B-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES AND PRODUCT USE
Sources of fluorinated substances
(Sheet 2 of 2)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas *(please specify)*	ACTIVITY DATA *Amount*			IMPLIED EMISSION FACTORS[1]			EMISSIONS[2]			
	One row per substance	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[3]
		(t)				%		(t)			
F. Product uses as substitutes for ODS											
1. Refrigeration and airconditioning	e.g. 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	e.g. HFC-134a, 152a, 227ea, 245fa, 365mfc, HFC-43-10mee										
Open cells	e.g. HFC-134a, 152a, 227ea, 245fa, 365mfc, HFC-43-10mee										
3. Fire protection	e.g. HFC-23, 125, 134a, 227ea, 236fa, CF_4, C_4F_{10}										
4. Aerosols	e.g. HFC-365mfc, HFC-43-10mee, C_6F_{14}										
Metered dose inhalers											
Other *(please specify - one row per substance)*											
5. Solvents	HFC-365mfc, HFC-43-10mee, C6F14										
6. Other applications[9]											
Emissive											
Contained											
G. Other product manufacture and use											
1. Electrical equipment[10]	e.g. SF_6 and PFCs										
2. SF_6 and PFCs from other product use[11]											
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)*											

NOTE: In the case of prompt emissions (such as from aerosols, open cells, and 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 also report 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) The implied emission factors (IEFs) are estimated on the basis of gross emissions as follows: IEF = emissions / activity data (AD).

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

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

(4) Fugitive emissions include emissions from fluorinated gas (F-gas) production. Some of the possible activities include the telomerization process used in the production of fluorochemicals fluids and polymers, photo oxidation of tetrafluoroethylene to make fluorochemical fluids, sulphur hexafluoride (SF_6) production, halogen exchange processes to make low-boiling PFCs like CF_4 and C_2F_6, HFC 134a and 245fa, NF_3 manufacturing, and production of uranium hexafluoride, of fluorinated monomers (e.g. tetrafluoroethylene and hexafluoropropylene), and of fluorochemical agrochemicals and/or anesthetics. Both production and handling losses are to be included

(5) According to the 2006 IPCC Guidelines possible SF_6 from casting are to be included under Mg production. However, in the current CRF a separate subcategory exists and is reported by Parties.

(6) Include emissions from cover gases and generated secondary compounds in the Mg foundries.

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

(8) Could include emissions from micro-electromechanical systems, hard disk drive manufacturing, device testing, and vapour phase reflow soldering.

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

(10) Include data on electrical switchgear gas, gas circuit breakers, high voltage gas-insulated lines, outdoor gas-insulated instrument transformers and other equipment. Emissions and AD from equipment installation onsite should be reported under manufacturing for equipment installed within the country (also if handled by a foreign manufacturer).

(11) Category includes SF_6 and PFCs used in military applications (e.g. in airborne radar systems and heat transfer fluids in high-powered electronic applications), SF_6 used in university and research, and PFCs used as heat transfer fluids in commercial and consumer applications, used in cosmetics and in medical applications, and other.

Documentation box:
• Parties should provide detailed explanations on the industrial processes sector in chapter 4: industrial processes (CRF sector 2) of the national inventory report (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 5 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
	(kt)						
Total waste							
A. Solid waste disposal							
1. Managed waste disposal sites							
2. Unmanaged waste disposal sites							
3. Uncategorized waste disposal sites							
B. Biological treatment of solid waste							
1. Composting							
2. Anaerobic digestion at biogas facilities							
C. Incineration and open burning of waste							
1. Waste incineration							
2. Open burning of waste							
D. Wastewater treatment and discharge							
1. Domestic wastewater							
2. Industrial wastewater							
3. Other *(as specified in table 6.B)*							
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[(2)]							

(1) CO_2 emissions from the categories solid waste disposal on land and waste incineration should only be included if they derive from non-biological or inorganic waste sources.

(2) Carbon stored in wood, paper, cardboard, garden and park waste (equals to the annual change in stocks of harvested wood products in solid waste disposal sites from consumption, second activity data in the table for harvested wood products).

Documentation box:

• Parties should provide detailed explanations on the waste sector in chapter 7: waste (CRF sector 5) of the national inventory report (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 5.E 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 5.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			
				CH_4[1]	CO_2	CH_4			CO_2[4]
	Annual waste at the SWDS	MCF	DOC_f			Emissions[2]	Amount of CH_4 flared	Amount of CH_4 for energy recovery[3]	
	(kt)		%	(t/t waste)		(kt)			
1. Managed waste disposal sites									
a. Anaerobic									
b. Semi-aerobic									
2. Unmanaged waste disposal sites									
3. Uncategorized waste disposal sites									

Note: SWDS = solid waste disposal site, MCF = methane correction factor, DOC_f = fraction of degradable organic carbon that decomposes, DOC = degradable organic carbon (IPCC Guidelines (Volume 5, section 3.2.3)).
Note: Annual waste includes household waste, yard/garden waste, commercial/institutional waste, sludge, industrial and other waste.
Note: The is no methodology in the 2006 IPCC Guidelines to estimate emissions from flaring based on recovered biogas from solid waste disposal sites and wastewater handling. If data are available, Parties are encouraged to report emissions of methane (CH_4) and nitrous oxide (N_2O)

[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 waste at the SWDS.
[2] Actual emissions (after flaring and recovery).
[3] When recovered CH_4 emissions are used for energy, the emissions from the combustion should be reported under category 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 waste are included in the total emissions, whereas the CO_2 emissions from biogenic waste are not included in the total emissions.

Documentation box:
• Parties should provide detailed explanations on the waste sector in chapter 7: waste (CRF sector 5) of the national invnetory report (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.
• 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 table 5.A.
• Provide a reference to the relevant section in the NIR, in particular with regard to:
(a) The population size (total or urban population) used in the calculations and the rationale for doing so;
(b) The composition of landfilled waste.
• Parties should specify the category in the energy sector under which the emissions from energy recovery are reported.

TABLE 5.B SECTORAL BACKGROUND DATA FOR WASTE

Year

Biological Treatment of Solid Waste

Submission

(Sheet 1 of 1)

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION	IMPLIED EMISSION FACTOR		EMISSIONS			
		CH_4[(1)]	N_2O	CH_4			N_2O
	Annual waste amount treated			Emissions[(2)]	Amount of CH_4 flared	Amount of CH_4 for energy recovery[(3)]	
	(kt dm)	(g/kg waste)		(kt)			
1. Composting							
Annual waste							
Other (please specify)							
2. Anaerobic digestion at biogas facilities[(3)]							
Annual waste							
Other (please specify)							

[(1)] The CH_4 implied emission factor (IEF) is calculated on the basis of gross methane (CH_4) emissions as follows IEF = (CH_4 emissions + CH_4 recovered/flared)/annual waste at the solid waste disposal sites.

[(2)] Actual emissions (after recovery and flaring).

[(3)] When CH_4 emissions recovered are used for energy, the emissions from the combustion should be reported under category 1.A.

Documentation box:

• Parties should provide detailed explanations on the waste sector in chapter 7: waste (CRF sector 5) of the national inventory report (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.

• Parties should specify the category in the energy sector under which the emissions from energy recovery are reported.

TABLE 5.C SECTORAL BACKGROUND DATA FOR WASTE

Year

Incineration and Open Burning of Waste

Submission

(Sheet 1 of 1)

Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of wastes (incinerated/open burned) (kt wet weight)	IMPLIED EMISSION FACTOR			EMISSIONS		
		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
		(kg/t waste)			(kt)		
Biogenic [1]							
1 Waste incineration							
Annual waste							
Other *(please specify)*							
Drop down list							
Industrial solid wastes							
Clinical waste							
Sewage sludge							
2 Open burning of waste							
Annual waste							
Other *(please specify)*							
Non-biogenic							
1 Waste incineration							
Annual waste							
Other *(please specify)*							
Drop down list							
Industrial solid wastes							
Hazardous waste							
Clinical waste							
Sewage sludge							
Fossil liquid waste[2]							
2 Open burning of waste							
Annual waste							
Other *(please specify)*							

Note: Only emissions from waste incineration without energy recovery are to be reported under the waste sector. Emissions from incineration with energy recovery are to be reported under the energy sector, as other fossil fuels (see the 2006 IPCC Guidelines, Volume 2, page 1.15).

[1] The CO_2 emissions from combustion of biomass materials (e.g. paper, food and wood waste) contained in the waste are biogenic emissions and should not be included in the national totals. If incineration of waste is used for energy purposes, fossil CO_2 emissions should be estimated and reported under category 1.A. The cells here are only for information purposes.

[2] This category includes lubricants, solvents and waste oil. Unless fossil liquid waste is included in other types of waste (e.g. industrial or hazardous waste), the emissions need to be calculated separately.

Documentation box:

• Parties should provide detailed explanations on the waste sector in Chapter 7: Waste (CRF sector 5) of the national inventory report (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.

• 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 table 5.C.

• Provide a reference to the relevant section of the NIR, in particular with regard to the amount of incinerated waste (specify whether the reported data relate to wet or dry matter).

TABLE 5.D SECTORAL BACKGROUND DATA FOR WASTE
Wastewater treatment and discharge
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS			
						CH_4			
	Total organic product	Sludge removed[1]	N in effluent	CH_4[2]	N_2O[3]	Emissions[4]	Amount of CH_4 flared	Amount of CH_4 for Energy Recovery[5]	N_2O[3]
	(kt DC[1]/yr)		(kt N/yr)	(kg/kg DC)	kg N2O-N/kg N	(kt)			
1. Domestic wastewater									
2. Industrial wastewater									
3. Other *(please specify)*									

Additional information

Population	1000s	
Protein consumption	kg/person/yr	
Fraction of nitrogen in protein		
$F_{NON-CON}$		
$F_{IND-COM}$		
T_{PLANT}	%	

[1] 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 solid waste disposal sites.
[2] The methane (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 nitrous oxide (N_2O) emissions from human sewage or wastewater treatment should provide aggregate data in this table.
[4] Actual emissions (after flaring and recovery).
[5] When CH_4 recovered is used for energy production, the emissions should be reported under category 1.A.
[6] DC = degradable organic component. DC indicators are COD (chemical oxygen demand) for industrial waste water and BOD (biochemical oxygen demand) for domestic/commercial wastewater/sludge (2006 IPCC Guidelines (Volume 5. Section 6.1, pp. 6.7))

Note: Parties are encouraged to

$F_{NON-CON}$ = Fraction of non-consumed protein added to the wastewater
$F_{IND-COM}$ = Fraction of industrial and commercial co-discharged protein into the sewer system
T_{PLANT} = Degree of utilization of modern, centralized WWT plants

Documentation box:

• 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 an explanation in the documentation box.

• Parties using methods other than those from the IPCC for estimating N_2O emissions from wastewater treatment should provide, in the national inventory report (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.