

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

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NMVOC	SO ₂
	[(Gg)] [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 (categories below will be included as a drop-down list)							
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 ₂ O	NO _x	CO	NM VOC	SO ₂
	[(Gg)] [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. CO₂ Transport and Storage							
1. Transport of CO ₂							
2. Injection and Storage							
3. Other							
Memo Items: ⁽¹⁾							
International Bunkers							
Aviation							
Navigation							
Multilateral Operations							
CO₂ Emissions from Biomass							
CO₂ 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 CO₂ 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 CO₂ 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 CO₂ 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
Fuel Combustion Activities - Sectoral Approach
 (Sheet 1 of 4)

Year
 Submission
 Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS			
	Consumption		CO ₂ ⁽¹⁾	CH ₄	N ₂ O	CO ₂ ⁽²⁾	CH ₄	N ₂ O	CO ₂
	(TJ)	NCV/GCV ⁽³⁾	(t/TJ)	(kg/TJ)		[Gg] [(kt)]			
I.A. Fuel Combustion									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
I.A.1. Energy Industries									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
a. Public Electricity and Heat Production									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
i. Electricity Generation									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
ii. Combined Heat and Power Generation									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
iii. Heat Plants									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
b. Petroleum Refining									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
c. Manufacture of Solid Fuels and Other Energy Industries									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
i. Manufacture of Solid Fuels									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
ii. Oil and gas extraction									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
iii. Other Energy Industries									
Liquids									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuel ⁽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) 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 tab)

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			EMISSIONS			
	Consumption		CO ₂ ⁽¹⁾	CH ₄	N ₂ O	CO ₂ ⁽²⁾	CH ₄	N ₂ O	CO ₂
	(TJ)	NCV/GCV ⁽³⁾	(t/TJ)	(kg/TJ)		[(Gg)] [kt]			
I.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
Fuel Combustion Activities - Sectoral Approach
(Sheet 3 of 4)

Year
 Submission
 Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption		CO ₂ ⁽¹⁾	CH ₄	N ₂ O	CO ₂ ⁽²⁾	CH ₄	N ₂ O
	(TJ)	NCV/GCV ⁽³⁾	(t/TJ)	(kg/TJ)		[(Gg) kt]		
I.A.3 Transport								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Other Fossil Fuels ⁽⁴⁾								
Biomass ⁽⁵⁾								
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 ⁽⁵⁾								
Other Fossil Fuels (please specify) ⁽⁴⁾								
i. Cars								
Gasoline								
Diesel Oil								
Liquefied Petroleum Gases (LPG)								
Other Liquid Fuels (please specify)								
Gaseous Fuels								
Biomass ⁽⁵⁾								
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 ⁽⁵⁾								
Other Fossil Fuels (please specify) ⁽⁴⁾								
iii. Heavy duty trucks and buses								
Gasoline								
Diesel Oil								
Liquefied Petroleum Gases (LPG)								
Other Liquid Fuels (please specify)								
Gaseous Fuels								
Biomass ⁽⁵⁾								
Other Fossil Fuels (please specify) ⁽⁴⁾								
iv. Motorcycles								
Gasoline								
Diesel Oil								
Liquefied Petroleum Gases (LPG)								
Other Liquid Fuels (please specify)								
Gaseous Fuels								
Biomass ⁽⁵⁾								
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 ⁽⁵⁾								
Other Fossil Fuels (please specify) ⁽⁴⁾								
c. Railways								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass ⁽⁵⁾								
Other Fossil Fuels (please specify)								
d. Domestic Navigation⁽⁸⁾								
Residual Fuel Oil								
Gas/Diesel Oil								
Gasoline								
Other Liquid Fuels (please specify)								
Gaseous Fuels								
Biomass ⁽⁵⁾								
Other Fossil Fuels (please specify) ⁽⁴⁾								
e. Other Transportation (please specify)								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Other Fossil Fuels ⁽⁴⁾								
Biomass ⁽⁵⁾								
i. Pipeline Transport								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Other Fossil Fuels ⁽⁴⁾								
Biomass ⁽⁵⁾								
ii. Other (please specify)⁽⁹⁾								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Other Fossil Fuels ⁽⁴⁾								
Biomass ⁽⁵⁾								

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			EMISSIONS			
	Consumption		CO ₂ ⁽¹⁾	CH ₄	N ₂ O	CO ₂ ⁽²⁾	CH ₄	N ₂ O	CO ₂
	(TJ)	NCV/GCV ⁽³⁾	(t/TJ)	(kg/TJ)		(Gg) [kt]			Amount captured
1.A.4 Other Sectors									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
a. Commercial/Institutional									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
Drop down list									
i. Stationary combustion									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
ii. Mobile combustion									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Biomass ⁽⁶⁾									
b. Residential									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
Drop down list									
i. Stationary combustion									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
ii. Mobile combustion									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Biomass ⁽⁶⁾									
c. Agriculture/Forestry/Fishing									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
i. Stationary									
Liquids									
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)⁽⁸⁾									
a. Stationary (please specify)									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Peat ⁽⁵⁾									
Biomass ⁽⁶⁾									
b. Mobile (please specify)									
Liquids									
Solid Fuels									
Gaseous Fuels									
Other Fossil Fuels ⁽⁴⁾									
Biomass ⁽⁶⁾									
Information Item⁽⁹⁾									
Waste incineration with energy recovery included as:									
Biomass ⁽⁶⁾									
Fossil Fuels ⁽⁴⁾									

⁽¹⁾ The IEFs for CO₂ are estimated on the basis of gross emissions, i.e. CO₂ emissions + amount captured

⁽²⁾ Final CO₂ emissions after subtracting the amounts of CO₂ captured.

⁽³⁾ 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.

⁽⁴⁾ Include information in the documentation box which fuels are included and provide a reference to the section in the NIR where further information is provided.

⁽⁵⁾ 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.

⁽⁶⁾ Although carbon dioxide emissions from biomass are reported in this table, they will not be included in the total CO₂ emissions from fuel combustion. The value for total CO₂ from biomass is recorded in Table 1 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 use the pre-defined category definitions rather than to create similar categories. This ensures the highest possible degree of comparability of the reporting. If the detailed data are not available Parties should include all emissions from manufacturing industry 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 in 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 AD and emissions Details on the actual information reported for the sub-categories and fuels should be included in the NIR.

Documentation Box:
 Parties should provide detailed explanations on the fuel combustion sub-sector in the corresponding part of chapter 4 (Energy) of the sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR in all 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, solid, gaseous, biomass and other fuels).

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO₂ from Fuel Combustion Activities - Reference Approach (IPCC Worksheet Fuel combustion activities-1)
 (Sheet 1 of 1)

Year
 Submission
 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 [(Gg)/[kt] C)	Carbon stored[C excluded] (Gg C)	Net carbon emissions [(Gg)/[kt] C)	Fraction of carbon oxidized	Actual CO ₂ emissions [(Gg)/[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 Gas (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 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 (NCV) and write NCV in this column. If gross calorific values (GCV) 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 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.
- ⁽⁶⁾ Include peat briquettes here

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

**Comparison of CO₂ emissions from Fuel Combustion
(Sheet 1 of 1)**

Year
Submission
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)][kt]	Energy consumption (PJ)	CO ₂ emissions ⁽⁵⁾ [(Gg)][kt]	Energy consumption (%)	CO ₂ emissions ⁽⁶⁾ (%)
Liquid Fuels (excluding international bunkers)							
Solid Fuels (excluding international bunkers) ⁽⁵⁾							
Gaseous Fuels							
Other Fossil Fuels							
Peat							
<i>Total</i> ⁽⁵⁾							

⁽¹⁾ "Sectoral approach" is used to indicate the approach (if different from the Reference approach) used by the Party to estimate CO₂ emissions from fuel combustion as reported in table 1.A(a), sheets 1-4.

⁽²⁾ Difference in CO₂ 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 from the Reference approach with energy consumption from the Sectoral approach, data in this column come from Table 1.A(d).

⁽⁵⁾ 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.

Note: The Reporting Instructions of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories require that estimates of CO₂ 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 CO₂ 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.

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 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)	([(Gg)] kt C)	([(Gg)] kt CO ₂)	(%)	([(Gg)] 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 ⁽⁵⁾							
		Residual Fuel Oil							
		Liquefied Petroleum Gas (LPG) ⁽⁶⁾							
		Ethane ⁽⁷⁾							
		Naphtha ⁽⁸⁾							
		Bitumen							
		Lubricants ⁽⁹⁾							
		Petroleum Coke ⁽¹⁰⁾							
Refinery Feedstocks									
Other Oil ⁽¹¹⁾									
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 ⁽¹²⁾							
Other Solid Fossil									
Solid Fossil Totals									
Gaseous Fossil	Natural Gas (Dry) ⁽¹³⁾								
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 an industrial process emission) 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 CO₂ 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 CO₂ from carbon excluded to CO₂ 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 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 in "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
Fugitive Emissions from Solid Fuels
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS		EMISSIONS		
	Amount of fuel produced	CH ₄ ⁽¹⁾	CO ₂ ⁽⁴⁾	CH ₄		CO ₂
				Recovery/Flaring ⁽²⁾	Emissions ⁽³⁾	Emissions ⁽⁷⁾
	(Mt)	(kg/t)		[(Gg)] 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 IEFs for CH₄ are estimated on the basis of gross emissions as follows: (CH₄ emissions + amounts of CH₄ flared/recovered) / activity data.

(2) Amounts of CH₄ drained (recovered), utilized or flared. [If CH₄ is recovered and flared the associated emissions should be included in 1.B.2.c.iv.]

(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 raw coal production for Underground Mines and Surface Mines.

(5) Include fugitive emissions from coal 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 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 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
- 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 CH₄ 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
Fugitive Emissions from Oil, Natural Gas and Other Emissions from Energy Production
 (Sheet 1 of 1)

Year
 Submission
 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 ₂ O	CO ₂		CH ₄	N ₂ O
							Emissions ⁽³⁾	Amount captured		
				<i>(kg/unit)</i> ⁽⁴⁾			<i>[(Gg)] kt</i>			
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 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], [10⁶ m³], [10⁶ bbl/yr], [km], [number of sources (e.g. wells)].

⁽²⁾ The IEFs for CO₂ are estimated on the basis of gross emissions, i.e. CO₂ emissions + amount captured

⁽³⁾ Net CO₂ emissions after subtracting the amounts of CO₂ captured.

⁽⁴⁾ 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.

⁽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 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 CO₂ emissions from production of geothermal power could be reported here.

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
	CO ₂ transported or injected ⁽¹⁾	CO ₂	CO ₂ ⁽²⁾
	[(Gg)] kt]	kg/[(Gg)] kt]	[(Gg)] kt]
1. Transport of CO₂			
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			
			<i>Total A</i>
Total amount of exports for storage			
Total amount of CO ₂ injected at storage sites			
Total leakage from transport, injection and storage			
			<i>Total B</i>
			<i>Difference (A-B)⁽⁶⁾</i>

⁽¹⁾ Excluding recycled CO₂ for enhanced recovery.

⁽²⁾ Corrected for baseline background fluxes.

⁽³⁾ Fugitive emissions during 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 not 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 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 (TJ)	CO ₂ (t/TJ)	CH ₄ kg/TJ	N ₂ O	CO ₂	CH ₄
					[(Gg) kt]		
International Aviation (Aviation Bunkers)							
Jet Kerosene							
Aviation Gasoline							
Biomass							
International Navigation (Marine Bunkers)							
Residual Fuel Oil							
Gas/Diesel Oil							
Gasoline							
Other Liquid Fuels <i>(please specify)</i>							
Gaseous Fuels							
Biomass							
Other Fossil Fuels <i>(please specify)</i> ⁽¹⁾							
Multilateral Operations ⁽²⁾							

⁽¹⁾ Include information in the documentation box which fuels are included and provide a reference to the section in the NIR where further information is provided.

⁽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 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 international navigation emissions from fuel sold to ships or aircraft engaged in international transport should be excluded

Documentation box:
<ul style="list-style-type: none"> Parties should provide detailed explanations on the fuel combustion sub-sector, including international aviation and international navigation 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 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.

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.

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

Year
Submission
Country

GREENHOUSE GAS SOURCE AND	CO ₂	CH ₄	N ₂ O	HFCs ⁽¹⁾	PFCs ⁽¹⁾	Unspecified mix of HFCs and PFCs ⁽¹⁾	Other fluorinated gases ⁽¹⁾	SF ₆	NF ₃	NO _x	CO	NMVOC	SO ₂
SINK CATEGORIES	[(Gg)] [kt]			CO ₂ equivalent [(Gg)] [kt]				[(Gg)] [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-G)													
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-G)													

⁽¹⁾ The emissions of HFCs, PFCs, unspecified mix of HFCs and PFCs, and other fluorinated gases are to be expressed as CO₂ 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 ₂ O	HFCs ⁽¹⁾	PFCs ⁽¹⁾	Unspecified mix of HFCs and PFCs ⁽¹⁾	Other fluorinated gases ⁽¹⁾	SF ₆	NF ₃	NO _x	CO	NMVOc	SO ₂
	[(Gg)] [kt]			CO ₂ equivalent [(Gg)] [kt]				[(Gg)] [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 ₂ O from Product Uses													
4. Other													
H. Other (as specified in tables 2(I).A-H and 2(II))⁽³⁾													

⁽¹⁾ The emissions of HFCs, PFCs, unspecified mix of HFCs and PFCs, and other fluorinated gases are to be expressed as CO₂ equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

⁽²⁾ ODS: ozone-depleting substances.

⁽³⁾ CO₂ from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO₂ 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 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
Emissions of CO₂, CH₄ and N₂O
 (Sheet 1 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 ₂ O	CO ₂		CH ₄		N ₂ O	
	Description ⁽¹⁾	(kt)				(t/t)	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾
					[(Gg)] [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											
9. Fluorochemical production											
10. Other (please specify)											

⁽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(I).A-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Emissions of CO₂, CH₄ and N₂O

(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 ₂ O	CO ₂		CH ₄		N ₂ O	
	Description ⁽¹⁾	(kt)				(t/t)	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾
			[(Gg)] [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 ₂ O from Product Uses											
a. Medical applications											
b. Other											
Drop down list											
Propellant for Pressure and Aerosol Products											
4. Other											
H. Other (please specify)											
Drop down list											
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 SF₆
(Sheet 1 of 1)

Year
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mcc	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ea	Unspecified mix of listed HFCs ⁽¹⁾	Total HFCs	CF ₄	C ₂ F ₆	C ₃ F ₈	C ₄ F ₁₀	e-C ₄ F ₈	C ₃ F ₁₂	C ₄ F ₁₄	Unspecified mix of listed PFCs ⁽¹⁾	Total PFCs	Unspecified mix of HFCs and PFCs ⁽¹⁾	SF ₆	NF ₃	Other fluorinated gases ⁽¹⁾		
	(t) ⁽²⁾													CO ₂ equivalent [(Gg)] [kt]	(t) ⁽²⁾						CO ₂ equivalent [(Gg)] [kt]	CO ₂ equivalent [(Gg)] [kt]	(t) ⁽²⁾	(t) ⁽²⁾	CO ₂ equivalent [(Gg)] [kt]					
Total Actual Emissions of Halocarbons (by chemical) and SF₆																														
B. Chemical Industry																														
9. Fluorochemical Production																														
By-Product Emissions																														
Fugitive Emissions																														
10. Other																														
C. Metal Production																														
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⁽³⁾																														
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)																														
GWP values used	11,700	650	150	1,300	2,800	1,000	1,300	140	300	3,800	2,900	6,300	560			6,500	9,200	7,000	7,000	8,700	7,500	7,400				23,900		17,200		
	CO2 equivalent																													
Total Emissions⁽⁴⁾																														
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, 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 CO₂.
⁽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⁾ Total actual emissions equal the sum of the actual emissions of each halocarbon and SF₆ 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.

Note: As stated in the UNFCCC reporting guidelines, Parties should report actual emissions of HFCs, PFCs and SF₆, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO₂ 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.H 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) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF₆
(Sheet 2 of 2)

Moved to table 2(II)s1

Year
Submission

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			
	CO ₂ equivalent																										
Total Emissions ⁽⁷⁾																											
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, 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 CO₂ 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 SF₆ 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 SF₆ 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 SF₆ 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 SF₆, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO₂ 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).B-H SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

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⁾ (kg/t)	EMISSIONS	
		Description	(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	Production of primary aluminium				
	e.g. C ₂ F ₆	Production of primary aluminium				
F-gases used in foundries ⁽⁵⁾	e.g. SF ₆ , HFC..	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 ₂ F ₆ , CHF ₃ , C ₃ F 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 ₂ F ₆	Consumption per substance				
4. Heat Transfer Fluid	e.g. C ₆ F 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
Sources of Fluorinated Substances
 (Sheet 2 of 2)

Year
 Submission
 Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas (please specify) One row per substance	ACTIVITY DATA			IMPLIED EMISSION FACTORS			EMISSIONS ⁽²⁾			
		Amount			Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal	Recovery ⁽³⁾
		Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning							
		(t)			%			(t)			
F. Product Uses as Substitutes for ODS											
1. Refrigeration and Air-Conditioning											
Commercial Refrigeration											
Domestic Refrigeration											
Industrial Refrigeration											
Transport Refrigeration											
Mobile Air-Conditioning											
Stationary Air-Conditioning											
2. Foam Blowing Agents											
Closed cells											
Open cells											
3. Fire Protection											
4. Aerosols											
Metered dose inhalers											
Other (Please specify - one row per substance)											
5. Solvents											
6. Other applications ⁽⁹⁾											
Emissive											
Contained											
G. Other Product Manufacture and Use											
1. Electrical Equipment ⁽¹⁰⁾											
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 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) 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.
- (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 emission from F-gases production. Some of the possible activities include Telomerization Process used in the production of fluorochromic fluids and polymers, Photo oxidation of tetrafluoroethylene to make fluorochromic fluids, SF₆ production, Halogen Exchange Processes to make low boiling PFCs like C₂F₆ and CF₄, HFC 134a and 245fa, NF₃ manufacturing, Production of uranium hexafluoride, of fluorinated monomers (e.g. tetrafluoroethylene and hexafluoropropylene), of fluorochromic agrochemicals and/or anesthetics. Both production and handling losses are to be included.
- (5) 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.
- (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 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-electro-mechanical systems, hard disk drive manufacturing, device testing, vapour phase reflow soldering.
- (9) Emissions may include from: HFCs and PFCs used in sterilisation equipment, for tobacco expansion applications, as solvents in the manufacture adhesives, coating and inks.
- (10) Include data on electrical switchgear gas (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).
- (11) Category includes SF₆ and PFCs used in military applications (e.g. in airborne radar systems and heat transfer fluids in high powered electronic applications), SF₆ used in university and research, PFCs used as heat transfer fluids in commercial and consumer applications, used in cosmetics and in medical applications, other.

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 5 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Year
Submission
Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	NO _x	CO	NMVOC	SO ₂
	[(Gg)] [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. Waste Water-Treatment and Discharge							
1. Domestic Wastewater							
2. Industrial Waste Water							
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⁾ CO₂ emissions from 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 annual change in stocks of HWP in SWDS from consumption, second AD in the table for HWP).

Documentation box:

• Parties should provide detailed explanations on the waste sector in Chapter 7: Waste (CRF sector 5) 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 "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			
	Annual waste at the SWDS (Gg)	MCF	DOC f %	CH ₄ ⁽¹⁾	CO ₂	CH ₄			CO ₂ ⁽⁴⁾
				(t/t waste)		Emissions ⁽²⁾	Amount of CH ₄ flared	Amount of CH ₄ for Energy Recovery ⁽³⁾	
					[(Gg)] [kt]				
1. Managed Waste Disposal Sites									
a. Anaerobic									
b. Semi-aerobic									
2. Unmanaged Waste Disposal Sites									
3. Unspecified Waste Disposal Sites									

Note: MSW - Municipal Solid Waste; 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)).

Annual waste includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. Annual waste should not include inorganic industrial waste such as construction or demolition materials.

Note: There 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 CH₄ and N₂O in category 1.B.2.c.

⁽¹⁾ The CH₄ implied emission factor (IEF) is calculated on the basis of gross CH₄ emissions, as follows: IEF = (CH₄ emissions + CH₄ recovered)/annual waste at the SWDS.

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

⁽³⁾ When emissions CH₄ 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, CO₂ emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO₂ emissions from non-biogenic wastes are included in the total emissions, whereas the CO₂ emissions from biogenic wastes are not included in the total emissions.

~~⁽⁵⁾ Fraction of degradable organic carbon that decomposes.~~

Documentation box:

- Parties should provide detailed explanations on the waste sector in Chapter 7: Waste (CRF sector 5) 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.
- 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 5.A and 4.C.
- Provide a reference to the relevant section in the NIR, in particular with regard to:
 - A population size (total or urban population) used in the calculations and the rationale for doing so;
 - The composition of landfilled waste;
- Parties should specify the category in the energy sector under which the emissions from energy recovery are reported.

Additional information

Description	Value
Total population (1000s) ^(a)	
Urban population (1000s) ^(a)	
Waste generation rate (kg/capita/day)	
Fraction of MSW disposed to landfills	
Fraction of DOC in MSW	
CH ₄ oxidation factor ^(b)	
CH ₄ fraction in landfill gas	
CH ₄ generation rate constant (k) ^(c)	

^(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 5.B SECTORAL BACKGROUND DATA FOR WASTE
Biological Treatment of Solid Waste
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION	IMPLIED EMISSION FACTOR		EMISSIONS			
		CH ₄ ⁽¹⁾	N ₂ O	CH ₄			N ₂ O
	Annual waste amount treated			Emissions ⁽²⁾	Amount of CH ₄ flared	Amount of CH ₄ for Energy Recovery ⁽³⁾	
	(Gg dm)	(g/kg waste)		[(Gg)] [kt]			
1. Composting							
Annual Waste							
Other (please specify)							
2. Anaerobic digestion at biogas facilities(3)							
Annual Waste							
Other (please specify)							

⁽¹⁾ The CH₄ implied emission factor (IEF) is calculated on the basis of gross CH₄ emissions, as follows: IEF = (CH₄ emissions + CH₄ recovered/flared)/annual waste at the SWDS.

⁽²⁾ Actual emissions (after recovery).

⁽³⁾ When emissions CH₄ 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 7: Waste (CRF sector 5) 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.

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
Incineration and Open Burning of Waste
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of wastes (incinerated/open burned) (Gg wet weight)	IMPLIED EMISSION FACTOR			EMISSIONS		
		CO ₂	CH ₄	N ₂ O	CO ₂ ⁽²⁾	CH ₄	N ₂ O
		(kg/t waste)			[(Gg)] [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 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).

⁽¹⁾ The CO₂ 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. 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 emissions from waste used for energy are reported under energy sector.~~

⁽²⁾ This category includes lubricants, solvents and waste oil. Unless fossil liquid waste is included in other types of waste (e.g. industrial, 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 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 tables 6.A and 5.C.
- Provide a reference to the relevant section in the NIR, in particular with regard to the amount of incinerated wastes (specify whether the reported data relate to wet or dry matter).

TABLE 5.D SECTORAL BACKGROUND DATA FOR WASTE
Waste Water Treatment and Discharge
(Sheet 1 of 1)

Year
 Submission
 Country

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION ⁽¹⁾		IMPLIED EMISSION FACTOR		EMISSIONS			
	Total organic product (BOD/COD)	Sludge removed ⁽²⁾	CH ₄ ⁽³⁾	N ₂ O ⁽⁴⁾	CH ₄			N ₂ O ⁽⁴⁾
					Emissions ⁽⁵⁾	Amount of CH ₄ flared	Amount of CH ₄ for Energy Recovery ⁽⁶⁾	
(kt DC ⁽¹⁾ /yr)		(kg/kg DC)		[(Gg)] kt]				
1. Domestic Waste Water								
2. Industrial Wastewater								
3. Other (please specify)								

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION	IMPLIED EMISSION FACTOR	EMISSIONS
	N ₂ O from human sewage ⁽⁴⁾	N in effluent	N ₂ O (kg N ₂ O-N/kg sewage N produced)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED					IMPLIED EMISSION FACTOR		EMISSIONS				
	Total organic product	Sludge removed ⁽⁷⁾	Population	Protein consumption	N in effluent	CH ₄ ⁽²⁾	N ₂ O ⁽³⁾	CH ₄			N ₂ O ⁽³⁾	
								Emissions ⁽⁴⁾	Amount of CH ₄ flared	Amount of CH ₄ for Energy Recovery ⁽³⁾		
(kt DC ⁽¹⁾ /yr)		(1000s)	(kg/person/yr)	(kt N/yr)	(kg/kg DC)		[(Gg)] kt]					
1. Domestic Waste Water												
N ₂ O from human sewage ⁽⁴⁾												
2. Industrial Wastewater												
3. Other (please specify)												
Commercial Wastewater												

⁽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 5, Section 6.1, pp. 6.7))

⁽²⁾ 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.

⁽³⁾ The CH₄ implied emission factor (IEF) is calculated on the basis of gross CH₄ emissions, as follows: IEF = (CH₄ emissions + CH₄ recovered or flared) / total organic product.

⁽⁴⁾ Parties using methods other than those from the IPCC for estimating N₂O emissions from human sewage or waste-water treatment should provide aggregate data in this table.

⁽⁵⁾ Actual emissions (after flaring and recovery).

⁽⁶⁾ CH₄ recovered and flared or utilized.

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 N₂O 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 NO 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.