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CONFERENCE OF THE PARTIES
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Agenda item 4 (b)(ii)

GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION, PART I: UNFCCC REPORTING GUIDELINES ON ANNUAL INVENTORIES

TABLES OF THE COMMON REPORTING FORMAT

INTRODUCTION

1. The Subsidiary Body for Scientific and Technological Advise (SBSTA), at its sixteenth session, recommended to the Conference of the Parties (COP) a draft decision on the revision to the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, part I: UNFCCC reporting guidelines on annual inventories (FCCC/SBSTA/2002/L.5 and Add.1), for adoption by the COP at its eighth session (FCCC/SBSTA/2002/6, para 19 (a)).

2. The tables of the common reporting format (CRF), which constitute an annex to the guidelines referred to above, were not included in document FCCC/SBSTA/2002/L.5/Add.1 due to technical reasons. The changes introduced to the tables are, however, explained in pages 23-27 of that document.

3. This WEB document contains a full set of tables of the CRF including all modifications agreed by the SBSTA at its sixteenth session, and has been prepared as supplementary information to the report of the SBSTA (FCCC/SBSTA/2002/6). Upon request by interested Parties, this document will be made available by the secretariat. The tables of the CRF in their entirety will be issued as part of the report of the COP at its eighth session as an annex to the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, part I: UNFCCC reporting guidelines on annual inventories.

COMMON REPORTING FORMAT

List of tables

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Explanatory note:

The CRF is a standardized format to be used by Annex I Parties for reporting, electronically, estimates of greenhouse gas emissions and removals, and any other relevant information.

In order to avoid changes to the layout of the complex tables of the CRF, the tables have not been translated. Due to technical limitations, the layout of the printed version of the CRF in this document (e.g., size of tables and fonts) cannot be standardized. The list of tables in this document follows the order of tables in the electronic version of the CRF.

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
Total Energy							
A. Fuel Combustion Activities (Sectoral Approach)							
1. Energy Industries							
a. Public Electricity and Heat Production							
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. Other *(as specified in table 1.A(a) sheet 2)*							
3. Transport							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other Transportation *(as specified in table 1.A(a) sheet 3)*							

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fisheries							
5. Other *(as specified in table 1.A(a) sheet 4)*							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining and Handling							
b. Solid Fuel Transformation							
c. Other *(as specified in table 1.B.1)*							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Venting							
Flaring							
d. Other *(as specified in table 1.B.2)*							
Memo Items: [(1)]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A. Fuel Combustion									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
1.A.1. Energy Industries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
a. Public Electricity and Heat Production									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
b. Petroleum Refining									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
c. Manufacture of Solid Fuels and Other Energy Industries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									

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

Note: For the coverage of fuel categories, refer to the IPCC Guidelines (Volume 1. Reporting Instructions - Common Reporting Framework, section 1.2, p. 1.19). If some derived gases (e.g. gas works, gas, coke oven gas, blast furnace 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 table).

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.2 Manufacturing Industries and Construction									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Iron and Steel									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Non-Ferrous Metals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
c. Chemicals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
d. Pulp, Paper and Print									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
e. Food Processing, Beverages and Tobacco									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
f. Other *(please specify)*									
[4]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

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)

Country
Year
Submission

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

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)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	NCV/GCV[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.4 Other Sectors									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Commercial/Institutional									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Residential									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
c. Agriculture/Forestry/Fisheries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
1.A.5 Other *(Not specified elsewhere)* [6]									
a. Stationary*(please specify)*									
[7]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Mobile *(please specify)*									
[8]									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

[1] If activity data are calculated using net calorific values (NCV) as specified by the IPCC Guidelines, write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.
[2] Accurate estimation of CH_4 and N_2O emissions depends on combustion conditions, technology and emission control policy, as well as on fuel characteristics. Therefore, caution should be used when comparing the implied emission factors across countries.
[3] Although carbon dioxide emissions from biomass are reported in this table, they will not be included in the total CO_2 emissions from fuel combustion. The value for total CO_2 from biomass is recorded in Table1 sheet 2 under the Memo Items.
[4] Use this cell to list all activities covered under "f. Other".
[5] Use this cell to list all activities covered under "e. Other transportation".
[6] Include military fuel use under this category.
[7] Use this cell to list activities covered under "1.A.5.a Other - stationary".
[8] Use this cell to list activities covered under "1.A.5.b Other - mobile".

Documentation Box:

• Parties should provide detailed explanations on the fuel combustion sub-sector in Chapter 3.2: Fuel combustion (CRF source category 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• If estimates are based on GCV, use this documentation box to provide reference to the relevant section of the NIR where the information necessary to allow the calculation of the activity data based on NCV can be found.

• If some derived gases (e.g. gas works gas, coke oven gas, blast furnace gas) are considered, use this documentation box to provide a reference to the relevant section of the NIR containing the information on the allocation of these derived gases under the above fuel categories (liquid, soild, gaseous, biomass and other fuels).

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

Country
Year
Submission

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

[1] To convert quantities in previous columns to energy units, use net calorific values (NCV) and write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.
[2] If data for Anthracite are not available separately, include with Other Bituminous Coal.
[3] BKB: Brown coal/peat briquettes.

Documentation Box:
Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to CO_2 from the Reference approach, in Chapter 3.2: Fuel combustion (CRF source category 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
(Sheet 1 of 1)

Country
Year
Submission

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

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

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

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

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

[5] Emissions from biomass are not included.

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

Documentation Box:

• Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to the comparison of CO_2 emissions calculated using the Sectoral approach with those calculated using the Reference approach, in Chapter 3.2 Fuel combustion (CRF source category 1.A) of the NIR. Use this documentation box to provide references to the relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

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

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

Country
Year
Submission

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

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

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

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

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

• Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to feedstocks, in Chapter 3.2: Fuel combustion (CRF source category 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

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

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

Country
Year
Submission

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]	
	(Mt)	(kg/t)		(Gg)		
1. B. 1. a. Coal Mining and Handling						
i. Underground Mines[4]						
Mining Activities						
Post-Mining Activities						
ii. Surface Mines[4]						
Mining Activities						
Post-Mining Activities						
1. B. 1. b. Solid Fuel Transformation						
1. B. 1. c. Other *(please specify)* [5]						

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

[2] Amounts of CH_4 drained (recovered), utilized or flared.

[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 activity data of the amount of fuel produced for Underground Mines and Surface Mines.

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

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

Documentation box:

• Parties should provide detailed explanations on the fugitive emissions from source category 1.B.1 Solid fuels, in Chapter 3.3: Fugitive emissions from fuels: Solid fuels (CRF source category 1.B.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.

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

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

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

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Oil, Natural Gas and Other Sources
(Sheet 1 of 1)

Country
Year
Submission

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

[1] Specify the activity data used in the Description column (see examples). Specify the unit of the activity data in the Unit column using one of the following units: PJ, Tg, 10^6 m^3, 10^6 bbl/yr, km, number of sources (e.g. wells).
[2] The unit of the implied emission factor will depend on the unit of the activity data used, and is therefore not specified in this column.
[3] Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iv, respectively.
[4] If using default emission factors, these categories will include emissions from production other than venting and flaring.
[5] If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for under Venting.
[6] For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

Documentation box:
• Parties should provide detailed explanations on the fugitive emissions from source category 1.B.2 Oil and natural gas, in Chapter 3.4: Fugitive emissions from fuels: Oil and natural gas (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
International Bunkers and Multilateral Operations
(Sheet 1 of 1)

Country
Year
Submission

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

Additional information

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

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

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

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

Documentation box:

• Parties should provide detailed explanations on the fuel combustion sub-sector, including international bunker fuels, in Chapter 3.2: Fuel combustion (CRF source category 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

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

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)				(Gg)					
Total Industrial Processes													
A. Mineral Products													
1. Cement Production													
2. Lime Production													
3. Limestone and Dolomite Use													
4. Soda Ash Production and Use													
5. Asphalt Roofing													
6. Road Paving with Asphalt													
7. Other *(as specified in table 2(I)A-G)*													
B. Chemical Industry													
1. Ammonia Production													
2. Nitric Acid Production													
3. Adipic Acid Production													
4. Carbide Production													
5. Other *(as specified in table 2(I)A-G)*													
C. Metal Production													
1. Iron and Steel Production													
2. Ferroalloys Production													
3. Aluminium Production													
4. SF_6 Used in Aluminium and Magnesium Foundries													
5. Other *(as specified in table 2(I)A-G)*													

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

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

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)				(Gg)					
D. Other Production													
1. Pulp and Paper													
2. Food and Drink[2]													
E. Production of Halocarbons and SF_6													
1. By-product Emissions													
Production of HCFC-22													
Other													
2. Fugitive Emissions													
3. Other *(as specified in table 2(II))*													
F. Consumption of Halocarbons and SF_6													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Other applications using ODS[3] substitutes													
7. Semiconductor Manufacture													
8. Electrical Equipment													
9. Other *(as specified in table 2(II)*													
G. Other *(as specified in tables 2(I).A-G and 2(II))*													

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

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

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

(3) ODS: ozone-depleting substances.

Documentation box:

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

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

Emissions of CO_2, CH_4 and N_2O Year

(Sheet 1 of 2) Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description [1]	(kt)	(t/t)			(Gg)					
A. Mineral Products											
1. Cement Production	*(e.g. cement or clinker production)*										
2. Lime Production											
3. Limestone and Dolomite Use											
4. Soda Ash											
Soda Ash Production											
Soda Ash Use											
5. Asphalt Roofing											
6. Road Paving with Asphalt											
7. Other *(please specify)*											
Glass Production											
B. Chemical Industry											
1. Ammonia Production [5]											
2. Nitric Acid Production											
3. Adipic Acid Production											
4. Carbide Production											
Silicon Carbide											
Calcium Carbide											
5. Other *(please specify)*											
Carbon Black											
Ethylene											
Dichloroethylene											
Styrene											
Methanol											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parenthesis) 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-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Country

Emissions of CO_2, CH_4 and N_2O Year

(Sheet 2 of 2) Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]
	Description [1]	(kt)	(t/t)			(Gg)					
C. Metal Production											
1. Iron and Steel Production											
Steel											
Pig Iron											
Sinter											
Coke											
Other *(please specify)*											
2. Ferroalloys Production											
3. Aluminium Production											
4. SF_6 Used in Aluminium and Magnesium Foundries											
5. Other *(please specify)*											
D. Other Production											
1. Pulp and Paper											
2. Food and Drink											
G. 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 parenthesis) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

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

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

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

Documentation box:

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

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

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

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs (1)	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Unspecified mix of listed PFCs (1)	Total PFCs	SF_6
	(t) (2)													CO_2 equivalent (Gg)		(t) (2)							CO_2 equivalent (Gg)		(t) (2)
Total Actual Emissions of Halocarbons (by chemical) and SF_6																									
C. Metal Production																									
Aluminium Production																									
SF_6 Used in Aluminium Foundries																									
SF_6 Used in Magnesium Foundries																									
E. Production of Halocarbons and SF_6																									
1. By-product Emissions																									
Production of HCFC-22																									
Other																									
2. Fugitive Emissions																									
3. Other *(as specified in table 2(II).C,E)*																									
F(a). Consumption of Halocarbons and SF_6 (actual emissions - Tier 2)																									
1. Refrigeration and Air Conditioning Equipment																									
2. Foam Blowing																									
3. Fire Extinguishers																									
4. Aerosols/Metered Dose Inhalers																									
5. Solvents																									
6. Other applications using ODS (3) substitutes																									
7. Semiconductor Manufacture																									
8. Electrical Equipment																									
9. Other *(as specified in table 2(II)F)*																									
G. Other *(please specify)*																									

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

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

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs [1]	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	c-C_4F_8	C_5F_{12}	C_6F_{14}	Unspecified mix of listed PFCs [1]	Total PFCs	SF_6
	(t)[2]													CO_2 equivalent (Gg)		(t)[2]							CO_2 equivalent (Gg)		(t)[2]
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF_6 [4]																									
Production[5]																									
Import:																									
In bulk																									
In products [6]																									
Export:																									
In bulk																									
In products [6]																									
Destroyed amount																									
GWP values used	**11700**	**650**	**150**	**1300**	**2800**	**1000**	**1300**	**140**	**300**	**3800**	**2900**	**6300**	**560**			**6500**	**9200**	**7000**	**7000**	**8700**	**7500**	**7400**			**23900**
Total Actual Emissions [7] (CO_2 equivalent (Gg))																									
C. Metal Production																									
E. Production of Halocarbons and SF_6																									
F(a). Consumption of Halocarbons and SF_6																									
G. Other																									
Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF_6																									
Actual emissions - F(a) (Gg CO_2 eq.)																									
Potential emissions - F(p) [8] (Gg CO_2 eq.)																									
Potential/Actual emissions ratio																									

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

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

[3] ODS: ozone-depleting substances

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

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

[6] Relevant only for Tier 1b.

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

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

Note: As stated in the UNFCCC reporting guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO_2 equivalent. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability. Gases with GWP values not yet agreed upon by the COP should be reported in Table 9 (Completeness), sheet 2.

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

TABLE 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal Production; Production of Halocarbons and SF_6
(Sheet 1 of 1)

Country
Year
Submission

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS						
			HFC-23	SF_6	HFCs/PFCs *(as specified)*	HFC-23		SF_6		HFCs/PFCs		
						Emissions[3]	Recovery[4]	Emissions[3]	Recovery[4]	(specify chemical)	Emissions[3]	Recovery[4]
	Description[1]	(t)	(kg/t)			(t)						
E. Production of Halocarbons and SF_6												
1. By-product Emissions												
Production of HCFC-22												
Other *(specify activity)*												
2. Fugitive Emissions *(please specify activity)*												
3. Other *(please specify activity)*												

[1] Specify the activity data used as shown in the examples within parentheses.

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

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

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

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

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Country

Consumption of Halocarbons and SF_6 Year

(Sheet 1 of 2) Submission

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

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

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

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

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

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Consumption of Halocarbons and SF_6

(Sheet 2 of 2)

Country

Year

Submission

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

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

[2] ODS: ozone-depleting substances.

Documentation box:

- Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
- With regard to data on the amounts of fluid that remained in retired products at decommissioning, use this documentation box to provide a reference to the section of the NIR where information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation can be found.
- Parties that estimate their actual emissions following the alternative top-down approach might not be able to report emissions using this table. As indicated in the note to sheet 1 of this table, Parties should in these cases, in the NIR, provide alternative formats for reporting equivalent information with a similar level of detail. References to the relevant section of the NIR should be provided in this documentation box.

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

Country
Year
Submission

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

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

Documentation box:

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

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

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

Country
Year
Submission

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

[1] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 3.

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

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

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
Total Agriculture					
A. Enteric Fermentation					
1. Cattle [(1)]					
Option A:					
Dairy Cattle					
Non-Dairy Cattle					
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other *(as specified in table 4.A)*					
B. Manure Management					
1. Cattle [(1)]					
Option A:					
Dairy Cattle					
Non-Dairy Cattle					
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other livestock *(as specified in table 4.B(a))*					

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

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
B. Manure Management (continued)					
11. Anaerobic Lagoons					
12. Liquid Systems					
13. Solid Storage and Dry Lot					
14. Other *(please specify)*					
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other *(as specified in table 4.C)*					
D. Agricultural Soils [2]					
1. Direct Soil Emissions					
2. Pasture, Range and Paddock Manure [3]					
3. Indirect Emissions					
4. Other *(as specified in table 4.D)*					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues					
1 . Cereals					
2. Pulses					
3 . Tubers and Roots					
4 . Sugar Cane					
5 . Other *(as specified in table 4.F)*					
G. Other *(please specify)*					

[1] The sum for cattle would be calculated on the basis of entries made under either option A (dairy and non-dairy cattle) or option B (mature dairy cattle, mature non-dairy cattle and young cattle).

[2] See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D Agricultural Soils of the sector Agriculture should report the amount (in Gg) of these emissions or removals in table Summary 1.A of the CRF. References to additional information (activity data, emissions factors) reported in the NIR should be provided in the documentation box to table 4.D. In line with the corresponding table in the IPCC Guidelines (i.e. IPCC Sectoral Report for Agriculture), this table does not include provisions for reporting CO_2 estimates.

[3] Direct N_2O emissions from pasture, range and paddock manure are to be reported in the "4.D Agricultural Soils" category. All other N_2O emissions from animal manure are to be reported in the "4.B Manure Management" category. See also chapter 4.4 of the IPCC good practice guidance report.

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH_4 emissions and CH_4 and N_2O removals from agricultural soils, or CO_2 emissions from prescribed burning of savannas and field burning of agricultural residues. Parties that have estimated such emissions should provide, in the NIR, additional information (activity data and emission factors) used to derive these estimates and include a reference to the section of the NIR in the documentation box of the corresponding Sectoral background data tables.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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 "4.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 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE
Enteric Fermentation
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS [3]
	Population size [1] (1000s)	Average gross energy intake (GE) (MJ/head/day)	Average CH_4 conversion rate (Y_m) [2] (%)	CH_4 (kg CH_4/head/yr)
1. Cattle				
Option A:				
Dairy Cattle [4]				
Non-Dairy Cattle				
Option B:				
Mature Dairy Cattle				
Mature Non-Dairy Cattle				
Young Cattle				
2. Buffalo				
3. Sheep				
4. Goats				
5. Camels and Llamas				
6. Horses				
7. Mules and Asses				
8. Swine				
9. Poultry				
10. Other *(please specify)*				

Additional information (only for those livestock types for which Ttier 2 was used) [a]

Disaggregated list of animals [b] / Indicators:		Dairy Cattle	Non-Dairy Cattle	Other *(specify)*	
Weight	(kg)				
Feeding situation [c]					
Milk yield	(kg/day)				
Work	(h/day)				
Pregnant	(%)				
Digestibility of feed	(%)				

[a] See also Tables A-1 and A-2 of the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.31-4.34). These data are relevant if Parties do not have data on average feed intake.
[b] Disaggregate to the split actually used. Add columns to the table if necessary.
[c] Specify feeding situation as pasture, stall fed, confined, open range, etc.

[1] Parties are encouraged to provide detailed livestock population data by animal type and region, if available, in the NIR, and provide reference to the relevant section in the documentation box below. Parties should use the same animal population statistics to estimate CH_4 emissions from enteric fermentation, CH_4 and N_2O from manure management, N_2O direct emissions from soil and N_2O emissions associated with manure production, as well as emissions from the use of manure as fuel, and sewage-related emissions reported in the waste sector.
[2] Y_m refers to the fraction of gross energy in feed converted to methane and should be given in per cent in this table.
[3] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 4.
[4] Including data on dairy heifers, if available.

Documentation box:
• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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.
• Indicate in this documentation box whether the activity data used are one year-estimates or a three-year average.
• Provide a reference to the relevant section in the NIR, in particular with regard to:
(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or a three-year average.
(b) parameters relevant to the application of IPCC good practice guidance.

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH_4 Emissions from Manure Management
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS [4]
	Population size	Allocation by climate region [1]			Typical animal mass (average)	VS[2] daily excretion (average)	CH_4 producing potential (Bo)[2] (average)	CH_4
		Cool	Temperate	Warm				
	(1000s)	(%)			(kg)	(kg dm/head/day)	(m^3 CH_4/kg VS)	(kg CH_4/head/yr)
1. Cattle								
Option A:								
Dairy Cattle [3]								
Non-Dairy Cattle								
Option B:								
Mature Dairy Cattle								
Mature Non-Dairy Cattle								
Young Cattle								
2. Buffalo								
3. Sheep								
4. Goats								
5. Camels and Llamas								
6. Horses								
7. Mules and Asses								
8. Swine								
9. Poultry								
10. Other livestock *(please specify)*								

[1] Climate regions are defined in terms of annual average temperature as follows: Cool = less than 15°C; Temperate = 15 - 25°C inclusive; and Warm = greater than 25°C (see Table 4.2 of the IPCC Guidelines (Volume 3, Reference Manual, p. 4.8)).

[2] VS = Volatile Solids; Bo = maximum methane producing capacity for manure IIPCC Guidelines (Volume 3, Reference Manual, p.4.23 and p.4.15); dm = dry matter. Provide average values for VS and Bo where original calculations were made at a more disagregated level of these livestock categories.

[3] Including data on dairy heifers, if available.

[4] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 4.

Additional information (for Tier 2) [a]

Animal category	Indicator	Climate region	Animal waste management system						
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage	Dry lot	Pasture range paddock	Other
Dairy Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Non-Dairy Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Swine	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Other livestock *(please specify)*	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							

[a] The information required in this table may not be directly applicable to country-specific methods developed for MCF calculations. In such cases, information on MCF derivation should be described in the NIR and references to the relevant sections of the NIR should be provided in the documentation box.

[b] MCF = Methane Conversion Factor (IPCC Guidelines, (Volume 3. Reference Manual, p. 4.9)). If another climate region categorization is used, replace the entries in the cells with the climate regions for which the MCFs are specified.

Documentation box:
- Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.
- Indicate in this documentation box whether the activity data used are one-year estimates or a three-year average.
- Provide a reference to the relevant section in the NIR, in particular with regard to:
  (a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or a three-year average.
  (b) parameters relevant to the application of IPCC good practice guidance;
  (c) information on how the MCF are derived, if relevant data could not be provided in the additional information box.

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE

N_2O Emissions from Manure Management

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS [1]	
	Population size	Nitrogen excretion	Nitrogen excretion per animal waste management system (AWMS) (kg N/yr)						Emission factor per animal waste management system	
	(1000s)	(kg N/head/yr)	Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other	(kg N_2O-N/kg N)	
Cattle									Anaerobic lagoon	
Option A:									Liquid system	
Dairy Cattle									Solid storage and dry lot	
Non-Dairy Cattle									Other AWMS	
Option B:										
Mature Dairy Cattle										
Mature Non-Dairy Cattle										
Young Cattle										
Sheep										
Swine										
Poultry										
Other livestock *(please specify)*										
Total per AWMS										

[1] The implied emission factor will not be calculated until the emissions are entered directly into Table 4.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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.

• Indicate in this documentation box whether the activity data used are one-year estimates or a three-year average.

• Provide a reference to the relevant section in the NIR, in particular with regard to:

(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or a three-year average.

(b) information on other AWMS, if reported.

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE
Rice Cultivation
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR [1]	EMISSIONS
		Harvested area [2] (10^9 m^2/yr)	Organic amendments added[3] type	Organic amendments added[3] (t/ha)	CH_4 (g/m^2)	CH_4 (Gg)
1. Irrigated						
Continuously Flooded						
Intermittently Flooded	Single Aeration					
	Multiple Aeration					
2. Rainfed						
Flood Prone						
Drought Prone						
3. Deep Water						
Water Depth 50-100 cm						
Water Depth > 100 cm						
4. Other *(please specify)*						
Upland Rice[4]						
Total [4]						

[1] The implied emission factor implicitly takes account of all relevant corrections for continuously flooded fields without organic amendment, the correction for the organic amendments and the effect of different soil characteristics, if considered in the calculation of methane emissions.

[2] Harvested area is the cultivated area multiplied by the number of cropping seasons per year.

[3] Specify dry weight or wet weight for organic amendments in the documentation box.

[4] These rows are included to allow comparison with international statistics. Methane emissions from upland rice are assumed to be zero.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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.

• When disaggregating by more than one region within a country, and/or by growing season, provide additional information on disaggregation and related data in the NIR and provide a reference to the relevant section in the NIR.

• Where available, provide activity data and scaling factors by soil type and rice cultivar in the NIR.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Agricultural Soils[1]

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	EMISSIONS
	Description	Value kg N/yr	kg N_2O-N/kg N [2]	N_2O (Gg)
1. Direct Soil Emissions	**N input to soils**			
1. Synthetic Fertilizers	Nitrogen input from application of synthetic fertilizers			
2. Animal Manure Applied to Soils	Nitrogen input from manure applied to soils			
3. N-fixing Crops	Nitrogen fixed by N-fixing crops			
4. Crop Residue	Nitrogen in crop residues returned to soils			
5. Cultivation of Histosols [2]	Area of cultivated organic soils (ha/yr)			
6. Other direct emissions *(please specify)*				
2. Pasture, Range and Paddock Manure	**N excretion on pasture range and paddock**			
3. Indirect Emissions				
1. Atmospheric Deposition	Volatized N from fertilizers, animal manures and other			
2. Nitrogen Leaching and Run-off	N from fertilizers, animal manures and other that is lost through leaching and run-off			
4. Other *(please specify)*				

Additional information

Fraction [a]	Description	Value
$Frac_{BURN}$	Fraction of crop residue burned	
$Frac_{FUEL}$	Fraction of livestock N excretion in excrements burned for fuel	
$Frac_{GASF}$	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH_3 and NOx	
$Frac_{GASM}$	Fraction of livestock N excretion that volatilizes as NH_3 and NOx	
$Frac_{GRAZ}$	Fraction of livestock N excreted and deposited onto soil during grazing	
$Frac_{LEACH}$	Fraction of N input to soils that is lost through leaching and run-off	
$Frac_{NCRBF}$	Fraction of total above-ground biomass of N-fixing crop that is N	
$Frac_{NCRO}$	Fraction of residue dry biomass that is N	
$Frac_{R}$	Fraction of total above-ground crop biomass that is removed from the field as a crop product	
Other fractions *(please specify)*		

[a] Use the definitions for fractions as specified in the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.92 - 4.113) as elaborated by the IPCC good practice guidance (pp. 4.54 - 4.74).

[1] See footnote 4 to Summary 1.A. of this common reporting format. Parties that choose to report CO_2 emissions and removals from agricultural soils under 4.D. Agricultural Soils category should indicate the amount (in Gg) of these emissions or removals and relevant additional information (activity data, implied emissions factors) in the documentation box.

[2] To convert from N_2O-N to N_2O emissions, multiply by 44/28. Note that for cultivation of Histosols the unit of the IEF is kg N_2O-N/ha.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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 a reference to the relevant section in the NIR, in particular with regard to:

(a) Background information on CO_2 emissions and removals estimates from agricultural soils, if accounted for under the agriculture sector;

(b) Background information on CH_4 emissions from agricultural soils, if accounted for under the agriculture sector;

(c) Disaggregated values for $Frac_{GRAZ}$ according to animal type, and for $Frac_{BURN}$ according to crop types;

(d) Full list of assumptions and fractions used.

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE
Prescribed Burning of Savannas
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned (k ha/yr)	Average above-ground biomass density (t dm/ha)	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass	CH_4	N_2O	CH_4	N_2O
						(kg/t dm)		(Gg)	
(specify ecological zone)									

Additional information

	Living Biomass	Dead Biomass
Fraction of above-ground biomass		
Fraction oxidized		
Carbon fraction		

Documentation box:
Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE
Field Burning of Agricultural Residues
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS		EMISSIONS	
	Crop production (t)	Residue/ Crop ratio	Dry matter (dm) fraction of residue	Fraction burned in fields	Fraction oxidized	Total biomass burned (Gg dm)	C fraction of residue	N-C ratio in biomass residues	CH_4	N_2O	CH_4	N_2O
									(kg/t dm)		(Gg)	
1. Cereals												
Wheat												
Barley												
Maize												
Oats												
Rye												
Rice												
Other *(please specify)*												
2. Pulses												
Dry bean												
Peas												
Soybeans												
Other *(please specify)*												
3 Tubers and Roots												
Potatoes												
Other *(please specify)*												
4 Sugar Cane												
5 Other *(please specify)*												

Documentation box:

Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) 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 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions[1]	CO_2 removals[1]	Net CO_2 emissions/ removals [1]	CH_4	N_2O	NO_x	CO
	(Gg)						
Total Land-Use Change and Forestry							
A. Changes in Forest and Other Woody Biomass Stocks							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
Harvested Wood [2]							
B. Forest and Grassland Conversion							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
C. Abandonment of Managed Lands							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
D. CO_2 Emissions and Removals from Soil							
Cultivation of Mineral Soils							
Cultivation of Organic Soils							
Liming of Agricultural Soils							
Forest Soils							
Other *(please specify)* [3]							
E. Other *(please specify)*							

[1] Note that according to the IPCC Guidelines, for purposes of reporting, the signs for removals are always (-) and for emissions (+). Net CO_2 emissions/removals are calculated as follows: net CO_2 = CO_2 emissions - CO_2 removals. Note that this result is to be reported in table Summary 1.A, where a single number is to be placed in either the CO_2 emissions or the CO_2 removals column, as appropriate.

[2] Following the IPCC Guidelines, the harvested wood should be reported under Changes in Forest and Other Woody Biomass Stocks (Volume 3. Reference Manual, p.5.17).

[3] Include emissions from soils not reported under sections A, B and C.

Note: According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO2 emissions from agricultural soils are to be included under Land-use change and forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils either in the Agriculture sector, under 4.D Agricultural soils or in the Land-use change and forestry sector under 5.D Emissions and removals from soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by providing a brief explanation in the documentation boxes to Table 4D of the agriculture sector. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table8(a) (Recalculation - Recalculated data) and Table10 (Emission trends).

Documentation box:

• Parties should provide detailed explanations on the land-use change and forestry sector in Chapter 7: Land-use change and forestry (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 LAND-USE CHANGE AND FORESTRY

Country

Changes in Forest and Other Woody Biomass Stocks

Year

(Sheet 1 of 1)

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			ACTIVITY DATA		IMPLIED EMISSION FACTORS	ESTIMATES
			Area of forest/biomass stocks (kha)	Average annual growth rate (t dm/ha)	Implied carbon uptake factor (t C/ha)	Carbon uptake increment (Gg C)
Tropical	Plantations	*Acacia spp.*				
		Eucalyptus spp.				
		Tectona grandis				
		Pinus spp				
		Pinus caribaea				
		Mixed Hardwoods				
		Mixed Fast-Growing Hardwoods				
		Mixed Softwoods				
	Other Forests	Moist				
		Seasonal				
		Dry				
	Other *(specify)*					
Temperate	Plantations					
	Commercial	Evergreen				
		Deciduous				
	Other *(specify)*					
Boreal						
			Number of trees (1000s of trees)	Annual growth rate (kt dm/1000 trees)	Carbon uptake factor (t C/tree)	Carbon uptake increment (Gg C)
Non-Forest Trees *(specify type)*						
					Total annual growth increment (Gg C)	
					Gg CO_2	

	Amount of biomass removed (kt dm)	Carbon emission factor (t C/t dm)	Carbon release (Gg C)
Total biomass removed in Commercial Harvest			
Traditional Fuelwood Consumed			
Total Other Wood Use			
		Total Biomass Consumption from Stocks [1] (Gg C)	
		Other Changes in Carbon Stocks [2] (Gg C)	
		Gg CO_2	

Net annual carbon uptake (+) or release (-) (Gg C)	
Net CO_2 emissions (-) or removals (+) (Gg CO_2)	

[1] Make sure that the quantity of biomass burned off-site is subtracted from this total.

[2] The net annual carbon uptake/release is determined by comparing the annual biomass growth versus annual harvest, including the decay of forest products and slash left during harvest. The IPCC Guidelines recommend default assumption that all carbon removed in wood and other biomass from forests is oxidized in the year of removal. The emissions from decay could be included under Other Changes in Carbon Stocks.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology.

Parties that use country-specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:

Parties should provide detailed explanations on the land-use change and forestry sector in Chapter 7: Land-use change and forestry (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.

TABLE 5.B SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Forest and Grassland Conversion

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS					EMISSIONS				
		On site and off site burning				Decay of above-ground biomass[1]			Burning				Decay	Burning				Decay
									On site			Off site		On site			Off site	
		Area converted annually	Annual net loss of biomass	Quantity of biomass burned		Average area converted	Average annual net loss of biomass	Average quantity of biomass left to decay	CO_2	CH_4	N_2O	CO_2	CO_2	CO_2	CH_4	N_2O	CO_2	CO_2
				On site	Off site				(t/ha)					(Gg)				
Vegetation types		(kha)	(kt dm)	(kt dm)	(kt dm)	(kha)	(t dm/ha)	(kt dm)										
Tropical	Wet/Very Moist																	
	Moist, short dry season																	
	Moist, long dry season																	
	Dry																	
	Montane Moist																	
	Montane Dry																	
Tropical Savanna/Grasslands																		
Temperate	Coniferous																	
	Broadleaf																	
	Mixed Broadleaf/ Coniferous																	
Grasslands																		
Boreal	Mixed Broadleaf/ Coniferous																	
	Coniferous																	
	Forest-Tundra																	
Grasslands/Tundra																		
Other *(please specify)*																		
Total																		

[1] Activity data are by default 10-year averages. Specify the average decay time which is appropriate for the local conditions, if other than 10 years.

Emissions/Removals	On site	Off site
Immediate carbon release from burning		
Total On site and Off site (Gg C)		
Delayed emissions from decay (Gg C)		
Total annual carbon release (Gg C)		
Total annual CO_2 emissions (Gg CO_2)		

Additional information

Fractions	On site	Off site
Fraction of biomass burned (average)		
Fraction which oxidizes during burning (average)		
Carbon fraction of above-ground biomass (average)		
Fraction left to decay (average)		
Nitrogen-carbon ratio		

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country-specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:

Parties should provide detailed explanations on the land-use change and forestry sector in Chapter 7: Land-use change and forestry (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.

TABLE 5.C SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Country

Abandonment of Managed Lands

Year

(Sheet 1 of 1)

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		ESTIMATES	
		Total area abandoned and regrowing [1]		Annual rate of above-ground biomass growth		Carbon fraction of above-ground biomass		Rate of above-ground biomass carbon uptake		Annual carbon uptake in above-ground biomass	
Original natural ecosystems		first 20 years (kha)	>20 years (kha)	first 20 years (t dm/ha)	>20 years (t dm/ha)	first 20 years	>20 years	first 20 years (t C/ha/yr)	>20 years (t C/ha/yr)	first 20 years (Gg C/yr)	>20 years (Gg C/yr)
Tropical	Wet/Very Moist										
	Moist, short dry season										
	Moist, long dry season										
	Dry										
	Montane Moist										
	Montane Dry										
Tropical Savanna/Grasslands											
Temperate	Mixed Broadleaf/Coniferous										
	Coniferous										
	Broadleaf										
Grasslands											
Boreal	Mixed Broadleaf/Coniferous										
	Coniferous										
	Forest-tundra										
Grasslands/Tundra											
Other *(please specify)*											

Total annual carbon uptake (Gg C)	
Total annual CO_2 removal (Gg CO_2)	

[1] If lands are regenerating to grassland, then the default assumption is that no significant changes in above-ground biomass occur.

Note: Sectoral background data tables on Land-use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country-specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:

Parties should provide detailed explanations on the land-use change and forestry sector in Chapter 7: Land-use change and forestry (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.

TABLE 5.D SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

CO_2 Emissions and Removals from Soil

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	ESTIMATES
	Land area (Mha)	Average annual rate of soil carbon uptake/removal (Mg C/ha/yr)	Net change in soil carbon in mineral soils (Tg C over 20 yr)
Cultivation of Mineral Soils [1]			
High Activity Soils			
Low Activity Soils			
Sandy			
Volcanic			
Wetland (Aquic)			
Other *(please specify)*			
	Land area (ha)	**Annual loss rate (Mg C/ha/yr)**	**Carbon emissions from organic soils (Mg C/yr)**
Cultivation of Organic Soils			
Cool Temperate			
Upland Crops			
Pasture/Forest			
Warm Temperate			
Upland Crops			
Pasture/Forest			
Tropical			
Upland Crops			
Pasture/Forest			
	Total annual amount of lime (Mg)	**Carbon conversion factor**	**Carbon emissions from liming (Mg C)**
Liming of Agricultural Soils			
Limestone $Ca(CO_3)$			
Dolomite $CaMg(CO_3)_2$			

Total annual net carbon emissions from agriculturally impacted soils (Gg C)	
Total annual net CO_2 emissions from agriculturally impacted soils (Gg CO_2)	

Additional information

Year	Climate [a]	Land-use/ management system [a]	Soil type					
			High activity soils	Low activity soils	Sandy	Volcanic	Wetland (Aquic)	Organic soil
			percent distribution (%)					
20 years prior	*(e.g. tropical, dry)*	*(e.g. savanna)*						
		(e.g. irrigated cropping)						
inventory year								

[a] These should represent the major types of land management systems per climate region present in the country as well as ecosystem types which were either converted to agriculture (e.g., forest, savanna, grassland) or have been derived from previous agricultural land-use (e.g., abandoned lands, reforested lands). Systems should also reflect differences in soil carbon stocks that can be related to differences in management (IPCC Guidelines, Volume 2. Workbook, Table 5-9, p. 5.26, and Appendix (pp. 5.31 - 5.38)).

[1] The information to be reported under Cultivation of Mineral Soils aggregates data per soil type over all land-use/management systems. This refers to land area data and to the emission estimates and implied emissions factors accordingly.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country-specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:

Parties should provide detailed explanations on the land-use change and forestry sector in Chapter 7: Land-use change and forestry (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.

TABLE 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [(1)]	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Waste							
A. Solid Waste Disposal on Land							
1. Managed Waste Disposal on Land							
2. Unmanaged Waste Disposal Sites							
3. Other *(as specified in table 6.A)*							
B. Waste Water Handling							
1. Industrial Wastewater							
2. Domestic and Commercial Waste Water							
3. Other *(as specified in table 6.B)*							
C. Waste Incineration							
D. Other *(please specify)*							

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

Documentation box:

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

• If estimates are reported under "6.D Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE
Solid Waste Disposal
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS		
	Annual MSW at the SWDS	MCF	DOC degraded	CH_4 [1]	CO_2	CH_4		CO_2 [4]
						Emissions [2]	Recovery [3]	
	(Gg)		%	(t /t MSW)		(Gg)		
1 Managed Waste Disposal on Land								
2 Unmanaged Waste Disposal Sites								
a. Deep (>5 m)								
b. Shallow (<5 m)								
3 Other *(please specify)*								

Additional information

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

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

[1] The CH_4 implied emission factor (IEF) is calculated on the basis of gross CH_4 emissions, as follows: IEF = (CH_4 emissions + CH_4 recovered)/annual MSW at the SWDS.
[2] Actual emissions (after recovery).
[3] CH_4 recovered and flared or utilized.
[4] Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, whereas the CO_2 emissions from biogenic wastes are not included in the total emissions.

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

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

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

[1] Under Solid Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, while the CO_2 emissions from biogenic wastes are not included in the total emissions.

[2] Enter under this source category all types of non-biogenic wastes, such as plastics.

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

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

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Waste Water Handling
(Sheet 1 of 1)

Country
Year
Submission

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

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

Additional information

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

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

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

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

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

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

[4] Actual emissions (after recovery).

[5] CH_4 recovered and flared or utilized.

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

Documentation box:

- Parties should provide detailed explanations on the waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Regarding the estimates for N_2O from human sewage, specify whether total or urban population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.
- Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or waste-water treatment should provide, in the NIR, corresponding information on methods, activity data and emission factors used, and should provide a reference to the relevant section of the NIR in this documentation box.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 1 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	$HFCs^{(1)}$		$PFCs^{(1)}$		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)						(Gg)			
Total National Emissions and Removals														
1. Energy														
A. Fuel Combustion — Reference Approach [2]														
A. Fuel Combustion — Sectoral Approach [2]														
1. Energy Industries														
2. Manufacturing Industries and Construction														
3. Transport														
4. Other Sectors														
5. Other														
B. Fugitive Emissions from Fuels														
1. Solid Fuels														
2. Oil and Natural Gas														
2. Industrial Processes														
A. Mineral Products														
B. Chemical Industry														
C. Metal Production														
D. Other Production [3]														
E. Production of Halocarbons and SF_6														
F. Consumption of Halocarbons and SF_6														
G. Other														

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.
P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

Note: All footnotes for this table are given at the end of the table on sheet 3.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 2 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs [1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)				(Gg)					
3. Solvent and Other Product Use														
4. Agriculture														
A. Enteric Fermentation														
B. Manure Management														
C. Rice Cultivation														
D. Agricultural Soils	(4), (5)	(4), (5)												
E. Prescribed Burning of Savannas														
F. Field Burning of Agricultural Residues														
G. Other														
5. Land-Use Change and Forestry	(5)	(5)												
A. Changes in Forest and Other Woody Biomass Stocks	(5)	(5)												
B. Forest and Grassland Conversion	(5)	(5)												
C. Abandonment of Managed Lands	(5)	(5)												
D. CO_2 Emissions and Removals from Soil	(5)	(5)												
E. Other	(5)	(5)												
6. Waste														
A. Solid Waste Disposal on Land	(6)													
B. Waste-water Handling														
C. Waste Incineration	(6)													
D. Other														
7. Other *(please specify)* [7]														

Note: All footnotes for this table are given at the end of the table on sheet 3.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 3 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs		PFCs		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)						(Gg)			
Memo Items: [8]														
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO_2 Emissions from Biomass														

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

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the results from the Sectoral approach should be used, where possible.

[3] Other Production includes Pulp and Paper and Food and Drink Production.

[4] According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-use change and forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils either in the Agriculture sector, under 4.D Agricultural soils or in the Land-use change and forestry sector under 5.D Emissions and removals from soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by providing a brief explanation in the documentation boxes to Table 4D of the agriculture sector. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table8(a) (Recalculation - Recalculated data) and Table10 (Emission trends).

[5] Do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Note that for the purposes of reporting, the signs for removals are always (-) and for emissions (+).

[6] Note that CO_2 from source categories Solid waste disposal on land and Waste incineration should only be included if it stems from non-biogenic or inorganic waste streams. Note that only emissions from waste incineration without energy recovery are to be reported in the waste sector, whereas emissions from incineration with energy recovery are to be reported in the energy sector.

[7] If reporting any country-specific source category under sector "7. Other", detailed explanations should be provided in Chapter 9: Other (CRF sector 7) of the NIR.

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

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
						P	A	P	A	P	A				
		(Gg)				CO_2 equivalent (Gg)						(Gg)			
Total National Emissions and Removals															
1. Energy															
A. Fuel Combustion	Reference Approach[2]														
	Sectoral Approach[2]														
B. Fugitive Emissions from Fuels															
2. Industrial Processes															
3. Solvent and Other Product Use															
4. Agriculture [3]															
5. Land-Use Change and Forestry		[4]	[4]												
6. Waste															
7. Other															
Memo Items: [5]															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.
P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

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

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the result from the Sectoral approach should be used, where possible.

[3] According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-use change and forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils either in the Agriculture sector, under 4.D Agricultural soils or in the Land-use change and forestry sector under 5.D Emissions and removals from soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by providing a brief explanation in the documentation boxes to Table 4D of the agriculture sector. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table8(a) (Recalculation - Recalculated data) and Table10 (Emission trends).

[4] Do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Note that for the purposes of reporting, the signs for removals are always (-) and for emissions (+).

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs [2]	PFCs [2]	SF_6 [2]	Total
	CO_2 equivalent (Gg)						
Total (Net Emissions) [1]							
1. Energy							
A. Fuel Combustion (Sectoral Approach)							
1. Energy Industries							
2. Manufacturing Industries and Construction							
3. Transport							
4. Other Sectors							
5. Other							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
2. Oil and Natural Gas							
2. Industrial Processes							
A. Mineral Products							
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF_6							
F. Consumption of Halocarbons and SF_6 [2]							
G. Other							
3. Solvent and Other Product Use							
4. Agriculture							
A. Enteric Fermentation							
B. Manure Management							
C. Rice Cultivation							
D. Agricultural Soils [3]							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues							
G. Other							
5. Land-Use Change and Forestry [1]							
6. Waste							
A. Solid Waste Disposal on Land							
B. Waste-water Handling							
C. Waste Incineration							
D. Other							
7. Other *(as specified in Summary 1.A)*							

Memo Items: [4]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] For CO_2 emissions from Land-Use Change and Forestry the net emissions are to be reported. Note that for the purposes of reporting, the signs for removals are always (-) and for emissions (+).

[2] Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

[3] See footnote 4 to table Summary 1.A.

[4] See footnote 8 to table Summary 1.A.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions / removals	CH_4	N_2O	Total emissions
Land-Use Change and Forestry	CO_2 equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks						
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO_2 Emissions and Removals from Soil						
E. Other						
Total CO_2 Equivalent Emissions from Land-Use Change and Forestry						

Total CO_2 Equivalent Emissions without Land-Use Change and Forestry [a]	
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry [a]	

[a] The information in these rows is requested to facilitate comparison of data, because Parties differ in the way they report emissions and removals from Land-Use Change and Forestry. Note that these totals will differ from the totals reported in Table 10, sheet 5 if Parties report non-CO_2 emissions from LUCF.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
1. Energy												
A. Fuel Combustion												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												

Use the following notation keys to specify the method applied:

D (IPCC default),
RA (Reference Approach),
T1 (IPCC Tier 1),
T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively),
T2 (IPCC Tier 2),
T3 (IPCC Tier 3),
CR (CORINAIR),
CS (Country Specific).
OTH (Other)

If using more than one method within one source category, list all the relevant methods. Explanations regarding country-specific methods, other methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box. Also use the documentation box to explain the use of notation OTH.

Use the following notation keys to specify the emission factor used:

D (IPCC default),
CR (CORINAIR),
CS (Country Specific),
PS (Plant Specific).
OTH (Other)

Where a mix of emission factors has been used, list all the methods in the relevant cells and give further explanations in the documentation box. Also use the documentation box to explain the use of notation OTH.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Waste-water Handling												
C. Waste Incineration												
D. Other												
7. Other (as specified in Summary 1.A)												

Use the following notation keys to specify the method applied:

D (IPCC default), **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), **CR** (CORINAIR),
RA (Reference Approach), **T2** (IPCC Tier 2), **CS** (Country Specific).
T1 (IPCC Tier 1), **T3** (IPCC Tier 3), **OTH** (Other)

If using more than one method within one source category, list all the relevant methods. Explanations regarding country-specific methods, other methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box. Also use the documentation box to explain the use of notation OTH.

Use the following notation keys to specify the emission factor used:

D (IPCC default), **CS** (Country Specific),
CR (CORINAIR), **PS** (Plant Specific).
OTH (Other)

Where a mix of emission factors has been used, list all the methods in the relevant cells and give further explanations in the documentation box. Also use the documentation box to explain the use of notation OTH.

Documentation box:
• Parties should provide the full information on methodological issues, such as methods and emission factors used, in the relevant sections of Chapters 3 to 9 (see section 2.2 of each of Chapters 3 - 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.
• Where a mix of methods/emission factors has been used within one source category, use this documentation box to specify those methods/emission factors for the various sub-sources where they have been applied.
• Where the notation OTH (Other) has been entered in this table, use this documentation box to specify those other methods/emission factors.

TABLE 7 SUMMARY OVERVIEW FOR KEY SOURCES
(Sheet 1 of 1)

Country
Year
Submission

KEY SOURCES	GAS	CRITERIA USED FOR KEY SOURCE IDENTIFICATION			COMMENTS
		L	T	Q	
Specify key sources according to the national level of disaggregation used:					
For example: *4.B Manure management*	CH_4	*X*			

Note: L = Level assessment; T = Trend assessment; Q = Qualitative assessment.

For estimating key sources Parties may chose the disaggregation level presented as an example in Table 7.1 of the IPCC good practice guidance (page 7.6), the level used in Summary 1A of the CRF or any other disaggregation level that the Party used to determine its key sources.

Documentation box:
Parties should provide the full information on methodologies used for identifying key sources and the quantitative results from the level and trend assessments (according to tables 7.A1 – 7.A3 of the IPCC good practice guidance) in Annex 1 to the NIR.

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 1 of 2) **Recalculated year:**

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2					CH_4					N_2O				
	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [2][3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [2][3]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [2][3]
	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)
Total National Emissions and Removals															
1. Energy															
1.A. Fuel Combustion Activities															
1.A.1. Energy Industries															
1.A.2. Manufacturing Industries and Construction															
1.A.3. Transport															
1.A.4. Other Sectors															
1.A.5. Other															
1.B. Fugitive Emissions from Fuels															
1.B.1. Solid fuel															
1.B.2. Oil and Natural Gas															
2. Industrial Processes															
2.A. Mineral Products															
2.B. Chemical Industry															
2.C. Metal Production															
2.D. Other Production															
2.G. Other															
3. Solvent and Other Product Use															
4. Agriculture															
4.A. Enteric Fermentation															
4.B. Manure Management															
4.C. Rice Cultivation															
4.D. Agricultural Soils [4]															
4.E. Prescribed Burning of Savannas															
4.F. Field Burning of Agricultural Residues															
4.G. Other															
5. Land-Use Change and Forestry (net) [5]															
5.A. Changes in Forest and Other Woody Biomass Stocks															
5.B. Forest and Grassland Conversion															
5.C. Abandonment of Managed Lands															
5.D. CO_2 Emissions and Removals from Soil															
5.E. Other															

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

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 2 of 2) **Recalculated year:**

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2					CH_4					N_2O				
	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions [(2)]	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions [(2)]	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions [(2)]
	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)
6. Waste															
6.A. Solid Waste Disposal on Land															
6.B. Waste-water Handling															
6.C. Waste Incineration															
6.D. Other															
7. Other ***(as specified in Summary 1.A)***															
Memo Items:															
International Bunkers															
Multilateral Operations															
CO_2 Emissions from Biomass															

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFCs					PFCs					SF_6				
	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions	Previous submission	Latest submission	Difference	Difference[(1)]	Impact of recalculation on total emissions
	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)
Total Actual Emissions															
2.C.3 Aluminium Production															
2.E. Production of Halocarbons and SF_6															
2.F. Consumption of Halocarbons and SF_6															
2.G. Other															
Potential Emissions from Consumption of HFCs/PFCs and SF_6															

	Previous submission	Latest submission	Difference	Difference[(1)]
	CO_2 equivalent (Gg)			(%)
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry[(6)]				
Total CO_2 Equivalent Emissions without Land-Use Change and Forestry[(6)]				

[(1)] Estimate the percentage change due to recalculation with respect to the previous submission (Percentage change = 100 x [(LS-PS)/PS], where LS = Latest submission and PS = Previous submission. All cases of recalculation of the estimate of the source/sink category should be addressed and explained in Table 8(b).

[(2)] Total emissions refer to total aggregate GHG emissions expressed in terms of CO_2 equivalent, excluding GHGs from the LUCF sector. The impact of the recalculation on the total emissions is calculated as follows:
impact of recalculation (%) = 100 x [(source (LS) - source (PS))/total emissions (LS)], where LS = Latest submission, PS = Previous submission.

[(3)] The relative impact of recalculations of the LUCF sector is not considered in this table, until the IPCC completes its work on good practices for this sector and methods for estimating key sources from this sector are available.

[(4)] According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-use change and forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils either in the Agriculture sector, under 4.D Agricultural soils or in the Land-use change and forestry sector under 5.D Emissions and removals from soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by providing a brief explanation in the documentation boxes to Table 4D of the agriculture sector. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table8(a) (Recalculation - Recalculated data) and Table10 (Emission trends).

[(5)] Net CO_2 emissions/removals to be reported.

[(6)] The information in these rows is requested to facilitate comparison of data, because Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

Documentation box:
Parties should provide detailed information on recalculations in Chapter 10: Recalculations and improvements, and in the relevant sections of Chapters 3 to 9 (see section 2.5 of each of Chapters 3 - 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

TABLE 8(b) RECALCULATION - EXPLANATORY INFORMATION
(Sheet 1 of 1)

Country
Year
Submission

Specify the sector and source/sink category[1] where changes in estimates have occurred:		GHG	RECALCULATION DUE TO				
			CHANGES IN:			Addition/removal/ reallocation of source/sink categories	Other changes in data (e.g. statistical or editorial changes, correction of errors)
			Methods [2]	Emission factors [2]	Activity data [2]		

[1] Enter the identification code of the source/sink category (e.g. 1.B.1) in the first column and the name of the category (e.g. Fugitive Emissions from Solid Fuels) in the second column of the table. Note that the source categories entered in this table should match those used in Table 8(a).

[2] Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink as indicated in Table 8(a). Include changes in the assumptions and coefficients in the "Methods" column.

Documentation box:

Parties should provide the full information on recalculations in Chapter 10: Recalculations and improvements, and in the relevant sections of Chapters 3 to 9 (see section 2.5 of each of chapters 3 - 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table. References should particularly point to the sections of the NIR in which justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory are reported.

TABLE 9(a) COMPLETENESS - INFORMATION ON NOTATION KEYS
(Sheet 1 of 1)

Country
Year
Submission

Sources and sinks not estimated (NE)[1]			
GHG	**Sector[2]**	**Source/sink category [2]**	**Explanation**
CO_2			
CH_4			
N_2O			
HFCs			
PFCs			
SF_6			

Sources and sinks reported elsewhere (IE)[3]				
GHG	**Source/sink category**	**Allocation as per IPCC Guidelines**	**Allocation used by the Party**	**Explanation**
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				

[1] Clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source/sink category for which the notation key NE (not estimated) is entered in the sectoral tables.

[2] Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: Waste, source category: Waste-water Handling).

[3] Clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector indicated in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason for reporting these sources and sinks in a different sector. An entry should be made for each source/sink for which the notation key IE (included elsewhere) is used in the sectoral tables.

TABLE 9(b) COMPLETENESS - INFORMATION ON ADDITIONAL GREENHOUSE GASES
(Sheet 1 of 1)

Country
Year
Submission

Additional GHG emissions reported[1]						
GHG	**Source category**	**Emissions (Gg)**	**Estimated GWP value (100-year horizon)**	**Emissions CO_2 equivalent (Gg)**	**Reference to the source of GWP value**	**Explanation**

[1] Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Include such gases in this table if they are considered in the submitted inventory. Provide additional information on the estimation methods used.

Documentation box:
Parties should provide detailed information regarding completeness of the inventory in the NIR (Chapter 1.8: General assessment of the completeness, and Annex 5). Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

TABLE 10 EMISSIONS TRENDS (CO_2)
(Sheet 1 of 5)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Change from 1990[1] to latest reported year
	(Gg)														(%)
1. Energy															
A. Fuel Combustion (Sectoral Approach)															
1. Energy Industries															
2. Manufacturing Industries and Construction															
3. Transport															
4. Other Sectors															
5. Other															
B. Fugitive Emissions from Fuels															
1. Solid Fuels															
2. Oil and Natural Gas															
2. Industrial Processes															
A. Mineral Products															
B. Chemical Industry															
C. Metal Production															
D. Other Production															
E. Production of Halocarbons and SF_6															
F. Consumption of Halocarbons and SF_6															
G. Other															
3. Solvent and Other Product Use															
4. Agriculture															
A. Enteric Fermentation															
B. Manure Management															
C. Rice Cultivation															
D. Agricultural Soils [2]															
E. Prescribed Burning of Savannas															
F. Field Burning of Agricultural Residues															
G. Other															
5. Land-Use Change and Forestry [3]															
A. Changes in Forest and Other Woody Biomass Stocks															
B. Forest and Grassland Conversion															
C. Abandonment of Managed Lands															
D. CO_2 Emissions and Removals from Soil															
E. Other															
6. Waste															
A. Solid Waste Disposal on Land															
B. Waste-water Handling															
C. Waste Incineration															
D. Other															
7. Other *(as specified in Summary 1.A)*															
Total CO_2 emissions including net CO_2 from LUCF [4]															
Total CO_2 emissions excluding net CO_2 from LUCF [4]															
Memo Items:															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSIONS TRENDS (CH_4)
(Sheet 2 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Change from 1990[1] to latest reported year
	(Gg)														(%)
Total CH_4 emissions															
1. Energy															
A. Fuel Combustion (Sectoral Approach)															
1. Energy Industries															
2. Manufacturing Industries and Construction															
3. Transport															
4. Other Sectors															
5. Other															
B. Fugitive Emissions from Fuels															
1. Solid Fuels															
2. Oil and Natural Gas															
2. Industrial Processes															
A. Mineral Products															
B. Chemical Industry															
C. Metal Production															
D. Other Production															
E. Production of Halocarbons and SF_6															
F. Consumption of Halocarbons and SF_6															
G. Other															
3. Solvent and Other Product Use															
4. Agriculture															
A. Enteric Fermentation															
B. Manure Management															
C. Rice Cultivation															
D. Agricultural Soils															
E. Prescribed Burning of Savannas															
F. Field Burning of Agricultural Residues															
G. Other															
5. Land-Use Change and Forestry															
A. Changes in Forest and Other Woody Biomass Stocks															
B. Forest and Grassland Conversion															
C. Abandonment of Managed Lands															
D. CO_2 Emissions and Removals from Soil															
E. Other															
6. Waste															
A. Solid Waste Disposal on Land															
B. Waste-water Handling															
C. Waste Incineration															
D. Other															
7. Other ***(as specified in Summary 1.A)***															
Memo Items:															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSIONS TRENDS (N_2O)
(Sheet 3 of 5)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Change from 1990[1] to latest reported year
	(Gg)														(%)
Total N_2O emissions															
1. Energy															
A. Fuel Combustion (Sectoral Approach)															
1. Energy Industries															
2. Manufacturing Industries and Construction															
3. Transport															
4. Other Sectors															
5. Other															
B. Fugitive Emissions from Fuels															
1. Solid Fuels															
2. Oil and Natural Gas															
2. Industrial Processes															
A. Mineral Products															
B. Chemical Industry															
C. Metal Production															
D. Other Production															
E. Production of Halocarbons and SF_6															
F. Consumption of Halocarbons and SF_6															
G. Other															
3. Solvent and Other Product Use															
4. Agriculture															
A. Enteric Fermentation															
B. Manure Management															
C. Rice Cultivation															
D. Agricultural Soils															
E. Prescribed Burning of Savannas															
F. Field Burning of Agricultural Residues															
G. Other															
5. Land-Use Change and Forestry															
A. Changes in Forest and Other Woody Biomass Stocks															
B. Forest and Grassland Conversion															
C. Abandonment of Managed Lands															
D. CO_2 Emissions and Removals from Soil															
E. Other															
6. Waste															
A. Solid Waste Disposal on Land															
B. Waste-water Handling															
C. Waste Incineration															
D. Other															
7. Other ***(as specified in Summary 1.A)***															
Memo Items:															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS (HFCs, PFCs and SF_6)
(Sheet 4 of 5)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Change from 1990[1] to latest reported year
	(Gg)														
Emissions of HFCs[5] - (Gg CO_2 equivalent)															
HFC-23															
HFC-32															
HFC-41															
HFC-43-10mee															
HFC-125															
HFC-134															
HFC-134a															
HFC-152a															
HFC-143															
HFC-143a															
HFC-227ea															
HFC-236fa															
HFC-245ca															
Unspecified mix of listed HFCs[6] - (Gg CO_2 equivalent)															
Emissions of PFCs[5] - (Gg CO_2 equivalent)															
CF_4															
C_2F_6															
C_3F_8															
C_4F_{10}															
c-C_4F_8															
C_5F_{12}															
C_6F_{14}															
Unspecified mix of listed PFCs[6] - (Gg CO_2 equivalent)															
Emissions of SF_6[5] - (Gg CO_2 equivalent)															
SF_6															

Chemical	GWP
HFCs	
HFC-23	11700
HFC-32	650
HFC-41	150
HFC-43-10mee	1300
HFC-125	2800
HFC-134	1000
HFC-134a	1300
HFC-152a	140
HFC-143	300
HFC-143a	3800
HFC-227ea	2900
HFC-236fa	6300
HFC-245ca	560
PFCs	
CF_4	6500
C_2F_6	9200
C_3F_8	7000
C_4F_{10}	7000
c-C_4F_8	8700
C_5F_{12}	7500
C_6F_{14}	7400
SF_6	23900

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS (SUMMARY)
(Sheet 5 of 5)

Country
Year
Submission

GREENHOUSE GAS EMISSIONS	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Change from 1990[1] to latest reported year
	CO_2 equivalent (Gg)														(%)
CO_2 emissions including net CO_2 from LUCF[4]															
CO_2 emissions excluding net CO_2 from LUCF [4]															
CH_4															
N_2O															
HFCs															
PFCs															
SF_6															
Total (including net CO_2 from LUCF)[4]															
Total (excluding net CO_2 from LUCF)[4], [7]															

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Change from 1990[1] to latest reported year
	CO_2 equivalent (Gg)														(%)
1. Energy															
2. Industrial Processes															
3. Solvent and Other Product Use															
4. Agriculture															
5. Land-Use Change and Forestry[8]															
6. Waste															
7. Other															
Total (including LUCF) [8]															

[1] The column "Base year" should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP. For these Parties, this different base year is used to calculate the percentage change in the final column of this table.

[2] According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-use change and forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils either in the Agriculture sector, under 4.D Agricultural soils or in the Land-use change and forestry sector under 5.D Emissions and removals from soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by providing a brief explanation in the documentation boxes to Table 4D of the agriculture sector. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table8(a) (Recalculation - Recalculated data) and Table10 (Emission trends).

[3] Fill in net emissions as reported in table Summary 1.A. Please note that for the purposes of reporting, the signs for removals are always (-) and for emissions (+).

[4] The information in these rows is requested to facilitate comparison of data, because Parties differ in the way they report CO_2 emissions and removals from Land-Use Change and Forestry.

[5] Enter actual emissions estimates. If only potential emissions estimates are available, these should be reported in this table and an indication for this be provided in the documentation box. Note that only in these rows the emissions are expressed as CO_2 equivalent emissions.

[6] 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), this row could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for this row is Gg of CO_2 equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.

[7] These totals will differ from the totals reported in table Summary 2 if Parties report non-CO_2 emissions from LUCF.

[8] Includes net CO_2, CH_4 and N_2O from LUCF.

Documentation box:

• Parties should provide detailed explanations on emissions trends in Chapter 2: Trends in greenhouse gas emissions and, as appropriate, in the corresponding Chapters 3 - 9 of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

• Use the documentation box to provide explanations if potential emissions are reported.
