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### NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

### GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS

**Draft conclusions by the Chairman** 

### Addendum

### **COMMON REPORTING FORMAT**

### Notes on the common reporting format

- 1. This common reporting format consists of summary, reporting and overview tables from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines), plus newly developed sectoral background tables. Users of IPCC software and of the software for converting from CORINAIR to IPCC formats should be aware that a few small additions have been made to the tables taken from the IPCC Guidelines.
- 2. Some sectoral background tables call for the calculation of *implied emission factors*. These are top-down ratios between the Party's emissions estimate and aggregate activity data. The implied emission factors are intended solely for purposes of comparison. They will not necessarily be the emission factors actually used in the original emissions estimate, unless of course this was a simple multiplication based on the same aggregate activity data used to calculate the implied emission factor.

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- 3. Consistent with the IPCC Guidelines memo items, such as emissions estimates from international marine and aviation bunker fuels, should be reported in the appropriate tables, but not included in national totals.
- 4. Parties should use the documentation boxes provided at the foot of the sectoral background tables to improve clarity.
- 5. Parties should complete all cells calling for emissions or removals estimates, activity data or emission factors. The following standard indicators should be used where data are not entered.
- (a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;
- (b) "NE" (not estimated) for existing emissions by sources and removal by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, or SF<sub>6</sub>, the Party should indicate using the completeness table 9, why emissions could not be estimated;
- (c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which NA is applicable are shaded, they do not need to be filled in;
- (d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate using the completeness table 9, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;
- (e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 of the UNFCCC reporting guidelines on annual inventories;
- (f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which would therefore appear as zero after rounding. The amount should still be included in the relevant subtotals. In the sectoral background tables, Parties should provide data as detailed as methods allow.
- 6. Parties should complete the data in the additional information boxes. Where the information called for is inappropriate because of the methodological tier used by the Party, the corresponding cells should be completed using the indicator NA.

- 7. Table 5 (the land-use change and forestry sectoral report) should be completed by Parties. The corresponding sectoral background tables 5 A-D follow the IPCC Guidelines and should be completed by Parties that use IPCC default methods. The species and ecosystem types given in the background tables are examples and may be changes by Parties to better describe national circumstances. Parties which do not use the sectoral background tables 5 A-D should complete alternative formats, when they are available.
- 8. Neither the order nor the notation of columns, rows or cells should be changed in the tables because this will complicate data compilation. Any additions to the existing disaggregation of source and sink categories should be made using the spare rows and columns provided. Additional changes that are made should be clearly indicated both by using a red font and by underlining the information contained in changed cells.
- 9. Where recalculations of previously submitted data are necessary for the reasons set out in paragraphs 10 and 11 of the UNFCCC reporting guidelines on annual inventories, Parties should complete recalculation table 8a for every year from the base year, and table 8b. Parties should also complete the other tables of the common reporting format for the base year which have changed due to the recalculations.

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

 $SO_2$ NMVOC (gg) 00 NO<sub>x</sub> (Gg) SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES PFCs<sup>(I)</sup> CO<sub>2</sub> equivalent (Gg) HFCs<sup>(1)</sup>  $N_2O$  $\mathrm{CH}_4$ (Gg) Removals  $co_2$ Emissions F. Consumption of Halocarbons and Sulphur E. Production of Halocarbons and Sulphur A. Fuel Combustion (Sectoral Approach) 2. Manufacturing Industries and Fotal National Emissions and Removals GREENHOUSE GAS SOURCE AND SINK CATEGORIES B. Fugitive Emissions from Fuels Other (please specify) 2. Oil and Natural Gas 1. Energy Industries G. Other (please specify) 4. Other Sectors Construction B. Chemical Industry Industrial Processes 1. Solid Fuels A. Mineral Products C. Metal Production D. Other Production 3. Transport Hexafluoride Hexafluoride L. Energy

<sup>=</sup> Potential emissions based on Tier 1 Approach.

A = Actual emissions based on Tier 2 Approach.

<sup>(1)</sup> The emissions of HFCs and PFCs are to be expressed as CO<sub>2</sub> equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

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

SUMMARY REPORT FOR NATIONAL CO <sub>2</sub> equivalent	EPORT FOR CO		GREENHOUSE GAS INVENTORIES emissions (Gg)	ISE GAS IN	VENTORI	ŒS								
GREENHOUSE GAS SOURCE AND SINK	CO <sub>2</sub>	CO <sub>2</sub>	CH4	N <sub>2</sub> O	HFCs	x	PFCs	s	${ m SF}_6$	,	NOx	00	NMVOC	SO <sub>2</sub>
CATEGORIES	Emissions	Removals			Ъ	A	Ь	Ą	Ь	A				
		(Gg)			CO <sub>2</sub> -eq. (Gg)	(Gg)	CO <sub>2</sub> -eq. (Gg)	(Gg)			(Gg)			
3. Solvent and Other Product Use					_		-							
4. Agriculture											<u> </u>	-		
A. Enteric Fermentation														
B. Manure Management														
C. Rice Cultivation														
D. Agricultural Soils	(1)	(1)												
E. Prescribed Burning of Savannas														
F. Field Burning of Agricultural Residues														
G. Other (please specify)				200000										
5. Land-Use Change and Forestry	(1)	(1)		22222			-							
A. Changes in Forest and Other Woody Biomass Stocks	(1)	(1)												
B. Forest and Grassland Conversion														
C. Abandonment of Managed Lands	(1)	(1)	••••										<b>!</b>	
D. CO <sub>2</sub> Emissions and Removals from Soil	· (1)	(1)												
E. Other (please specify)														
6. Waste				2000000							-			
A. Solid Waste Disposal on Land														
B. Wastewater Handling			•											
	(2)			*******										
D. Other (please specify)	-													
7. Other (please specify)														

<sup>(1)</sup> Please do not provide an estimate of both CO<sub>2</sub> emissions and CO<sub>2</sub> removals. You should estimate "net" emissions of CO<sub>2</sub> and place a single number in either the CO<sub>2</sub> emissions or CO<sub>2</sub> removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

(2) Note that CO2 from waste incineration should only be included if it stems from non-biogenic or inorganic waste streams.

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

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

	SUMMAF	SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	FOR N	ATIONAI	, GREEN	HOUSE	GAS IN	/ENTO	RES					
GREENHOUSE GAS SOURCE AND SINK	co <sub>2</sub>	CO <sub>2</sub>	$CH_4$ $N_2O$	N <sub>2</sub> O	HFCs	s	PFCs	بې	S	${ m SF}_6$	NOx	00	NO <sub>x</sub> CO NMVOC SO <sub>2</sub>	$SO_2$
CATEGORIES	Emissions	Emissions Removals			Ь	V	P	A	Ь	A				
		(Gg)			ٽ ا	CO2 equivalent (Gg)	lent (Gg)					(Gg)		
Memo Items (1)														
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO <sub>2</sub> Emissions from Biomass														

<sup>(1)</sup> Memo Items are not included in the national totals.

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

HS	SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	ARY REPOR	T FOR I	NATION.	AL GREEN	HOUSE	GAS INVE	NTORIES					
GREENHOUSE GAS SOURCE AND SINK	CO2	$co_2$	CH4	$N_2O$	HFCs <sup>(1)</sup>	î.	PFCs <sup>(1)</sup>		$\mathrm{SF}_6$	NOx	00	NMVOC	$SO_2$
CATEGORIES	Emissions	Removals		•	<u>a</u>	V	P A	а	A				
		(Gg)			CO <sub>2</sub> -eq. (Gg)	╁	CO <sub>2</sub> -eq. (Gg)			<del> </del> 9)	(Gg)	-     	
Total National Emissions and Removals						$\mid$							
1. Energy Reference Approach <sup>(2)</sup>													
Sectoral Approach <sup>(2)</sup>					-								
A. Fuel Combustion													
B. Fugitive Emissions from Fuels								L					
2. Industrial Processes									000000000000000000000000000000000000000				
3. Solvent and Other Product Use													
4. Agriculture													
5. Land-Use Change and Forestry	(3)	(ε)											
6. Waste													
7. Other						000000000000000000000000000000000000000			300000000000000000000000000000000000000				
Memo Items:													
International Bunkers										000000000000000000000000000000000000000	000000000000000000000000000000000000000		
Aviation													
Marine													
Multilateral Operations													
CO <sub>2</sub> Emissions from Biomass													
	,	01.000000000000000000000000000000000000	000000000000000000000000000000000000000	0.0000000000000000000000000000000000000	200000000000000000000000000000000000000	STREETS STREETS STREET							

P = Potential emissions based on Tier 1 Approach.

A = Actual emissions based on Tier 2 Approach.

<sup>(1)</sup> The emissions of HFCs and PFCs are to be expressed as CO<sub>2</sub> equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

<sup>(2)</sup> 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. Calculations using the Sectoral Approach should be used for calculating national totals. Do not include the results of both the Reference Approach and the Sectoral Approach in national totals.

<sup>(3)</sup> Please do not provide an estimate of both CO<sub>2</sub> emissions and CO<sub>2</sub> removals. You should estimate "net" emissions of CO<sub>2</sub> and place a single number in either the CO<sub>2</sub> emissions or CO<sub>2</sub> removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

### SUMMARY 2 CO<sub>2</sub> EQUIVALENT EMISSIONS SUMMARY REPORT (Sheet 1 of 1)

GHG Source and Sink Categories			CO₂ equiv	alent emiss	ions (Gg )		
CO <sub>2</sub> equivalent emissions (Gg)	CO <sub>2</sub> (1)	CH₄	N <sub>2</sub> O	HFC	PFC	SF <sub>6</sub>	Total
Total (net emissions) (1)							
1. Energy					24		
A. Fuel Combustion (Sectoral Approach)							
Energy Industries     Manufacturing Industries and							
Construction				A17			
Construction 3. Transport							
4. Other Sectors							
5. Other							
B. Fugitive Emissions from Fuels					artikanier bis		
Solid Fuels						200	
2. Oil and Natural Gas							
2. Industrial Processes							
A. Mineral Products						NACES N	
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF <sub>6</sub>	(46 kg / 25 kg	3.0		/			
F. Consumption of Halocarbons and SF <sub>6</sub>	1999				,		
G. Other	· ·						
3. Solvent and Other Product Use							
4. Agriculture				Kata Walkani			
A. Enteric Fermentation							
B. Manure Management					Salavali e 15		
C. Rice Cultivation	1000				100 A 40 A 10 A		
D. Agricultural Soils							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues	24.0						
G. Other	34.3					SECTION OF THE	
5. Land-Use Change and Forestry <sup>(1)</sup>		•					
6. Waste			<del> </del>		12.557		
A. Solid Waste Disposal on Land			Ce Second				
B. Wastewater Handling							
C. Waste Incineration			·.				
D. Other			<del> </del>				
7. Other (please specify)				<u> </u>		K 2 - 3 - 3 - 3 - 4 - (2)	
3							
Memo Items		8 May 200 /					1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
International Bunkers						52 K AL 28 M A	
Aviation							
Marine							
Multilateral Operations							
CO <sub>2</sub> Emissions from Biomass  (1) For CO <sub>2</sub> emissions from Land-Use Change and Fo						33	

(1) For CO<sub>2</sub> emissions from Land-Use Change and Forestry (LUCF) the net emissions (emissions - removals) are to be reported. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

GHG Source and Sink Categories		. со	2 equivalent	emissions	(Gg)	
Land-Use Change and Forestry	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	Net CO <sub>2</sub> emissions / removals	CH₄	N <sub>2</sub> O	Total emissions
A. Changes in Forest and Other Woody Biomass Stocks				06,046,6		
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO <sub>2</sub> Emissions and Removals from Soil						
Total CO <sub>2</sub> equivalent emissions from LUCF						

Total CO <sub>2</sub> equivalent emissions without Land-Use Change and Forestry (a)	
Total CO <sub>2</sub> equivalent emissions with Land-Use Change and Forestry (a)	

<sup>(</sup>a) The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

SUMMARY 3 SUMMARY REPORT ON METHODS AND EMISSION FACTORS USED

(Sheet 1 of 2)

(= 10 - 100110)												
	SU	SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	ORT FOR N	ATIONAL G	REENHOUS	SE GAS INV	ENTORIES					
GREENHOUSE GAS SOURCE AND SINK	0	CO2	CH4	I4	$O^2N$	0	HFCs	Cs	PFCs	Cs	${ m SF}_6$	9
CATEGORIES	Method	Emission	Method	Emission	Method	Emission	Method	Emission	Method	Emission	Method	Emission
	Applied (1)	Factor (2)	Applied (1)	Factor (2)	Applied (1)	Factor (2)	Applied (I)	Factor (2)	Applied (1)	Factor (2)	Applied (1)	Factor (2)
1. Energy												
A. Fuel Combustion (Sectoral Approach)												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other (please specify)												
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 Sulphur Hexafluoride												
F. Consumption of Halocarbons and Sulphur Hexafluoride												
G. Other (please specify)												
THE PERSON NAMED IN COLUMN												

information on the proper use of methods per source category where more than one method is indicated and explanations on the country specific methods, should be provided in the documentation box of the relevant (1) Use the following notation keys to specify the method applied: D (default IPCC), RA (Reference Approach), T1 (IPCC Tier 1), T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), T2 (IPCC Tier 2), (IPCC Tier 3), C (CORINAIR), CS (Country Specific), M (Model). If using more than one method, enumerate the relevant methods. Explanations of any modifications to the default IPCC methods, as well as Sectoral Background Data Table.

(2) Use the following notation keys to specify the emission factor used: D (IPCC default), C (CORINAIR), CS (Country Specific), PS (Plant Specific), M (Model). Where a mix of emission factors has been used, use different notations in one and the same cells with further explanation in the documentation box of the relevant Sectoral Background Data Table.

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

	OS	SUMMARY REPORT FOR	PORT FOR N	NATIONAL GREENHOUSE GAS INVENTORIES	REENHOUSE	GAS INVEN	TORIES					
GREENHOUSE GAS SOURCE AND SINK	700	2	IJ	CH₄	$N_2O$	0	HFCs	Š	ЬF	PFCs	S	${ m SF}_6$
CATEGORIES	Method	Emission	Method	Emission	Method	Emission	Method	Emission	Method	Emission	Method	Emission
	Applied (1)	Factor (2)	Applied (1)	Factor (2)	Applied (1)	Factor (2)	Applied (1)	Factor (2)	Applied (1)	Factor (2)	Applied (1)	Factor (2)
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 (please specify)												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion						000000000000000000000000000000000000000						
C. Abandonment of Managed Lands												
D. CO <sub>2</sub> Emissions and Removals from Soil												
E. Other (please specify)												
6. Waste												
A. Solid Waste Disposal on Land												
B. Wastewater Handling												
C. Waste Incineration												
D. Other (please specify)												
7. Other (please specify)												
											,	
Ullea the following notification base to enactify the mothed analog. D (defent 1000) DA	the method	Lad. D ( dafe.		(Defended Ame	11/ LT (11	T VI TOUR	1 TIL TI. /I	TDOO T	. L. 1.		CHO CT CI	T. C. T. C.

(IPCC Tier 3), C (CORINAIR), CS (Country Specific), M (Model). If using more than one method, enumerate the relevant methods. Explanations of any modifications to the default IPCC methods, as well as information Use the following notification keys to specify the method applied: D (default IPCC), RA (Reference Approach), TI (IPCC Tier 1), TIa, TIb, TIc (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), T2 (IPCC Tier 2), T3 on the proper use of methods per source category where more than one method is indicated and explanations on the country specific methods, should be provided in the documentation box of the relevant Sectoral Background Data Table.

<sup>(2)</sup> Use the following notation keys to specify the emission factor used: D (IPCC default), C (CORINAIR), CS (Country Specific), PS (Plant Specific), M (Model). Where a mix of emission factors has been used, use different notations in one and the same cells with further explanation in the documentation box of the relevant Sectoral Background Data Table.

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

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	RT FOR NATIO	ONAL GREENH	OUSE GAS INV	ENTORIES		8	
		(Gg)					
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	c0 <sub>2</sub>	$\mathrm{CH}_4$	$O^2N$	<sup>x</sup> ON	00	NMVOC	SO <sub>2</sub> <sup>(1)</sup> ·
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 (please specify)							
3. Transport							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other (please specify)							

TABLE 1 SECTORAL REPORT FOR ENERGY

(Sheet 2 of 2)

(31100 2 01 2)							
SECTORA	SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (Gg)	NATIONAL GR (Gg)	EENHOUSE GA	S INVENTORIE	S		
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	$co_2$	CH4	$N_2O$	NO <sub>x</sub>	00	NMVOC	$SO_2$
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fishing							
5. Other (please specify) <sup>(1)</sup>							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining							
b. Solid Fuel Transformation							
c. Other (please specify)							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Venting							
Flaring							
Other (please specify)							
Memo Items (2)							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO <sub>2</sub> Emissions from Biomass						****	
(1) Include willitime first meetinglon this potions							

<sup>(1)</sup> Include military fuel use under this category.

<sup>(2)</sup> Please do not include in energy totals.

TABLE 1.A SECTORAL BACKGROUND DATA FOR ENERGY

Fuel combustion activities (Sectoral approach) (Sheet 1 of 4)

	いしょうしょく コート・コート・コート・コート・コート・コート・コート・コート・コート・コート・	2.1.						
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	DATA	-	IMPLIED E	IMPLIED EMISSION FACTORS <sup>(1)</sup>	TORS <sup>(1)</sup>		EMISSIONS	
	Consumption		CO <sub>2</sub>	CH <sub>4</sub>	$N_2O$	CO <sub>2</sub> (2)	CH <sub>4</sub>	O <sub>2</sub> O
	(TJ)	(1)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A. FUEL COMBUSTION								
Liquid Fuels								
Solid Fuels					i.			
Gaseous Fuels	,							
Biomass (2)								
Other fuels								
1.A.1. Energy Industries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
a. Public Electricity and Heat Production								:
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
b. Petroleum Refining								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
c. Manufacture of Solid Fuels and Other Energy Industries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels						٠		

Accurate estimation of CH<sub>4</sub> and N<sub>2</sub>O emissions depends on combustion conditions, technology, and emission control policy, as well as fuel characteristics. Therefore, caution should be used when comparing the implied emission factors.

Note: For the coverage of fuel categories, please refer to the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 1 (Common Reporting Framework, section 1.2, p. 1.19).

<sup>(2)</sup> Carbon dioxide emissions from biomass are reported under memo items.

<sup>(3)</sup> Activity data should be calculated using net calorific values (NCV) as specified by the Revised 1996 IPCC Guidelines. If gross calorific values (GCV) were used, please indicate this by placing a "G" in this column.

TABLE 1.A SECTORAL BACKGROUND DATA FOR ENERGY

Fuel combustion activities (Sectoral approach)

(Sheet 2 of 4)

(311001 2 01 4)							,
GREENHOUSE GAS SOURCE AND SINK	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS	rors		EMISSIONS	
CALEGORIES	Consumption	CO	CH	N <sub>2</sub> O	CO <sub>2</sub>	CH,	N <sub>2</sub> O
	(TJ)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.2 Manufacturing Industries and Construction							
Liquid Fuels							
Solid Fuels							
Gaseous Fuels							
Biomass							
Other fuels							
a. Iron and Steel							
Liquid Fuels							
Solid Fuels							
Gaseous Fuels							
Biomass							
Other fuels							
b. Non-Ferrous Metals							
Liquid Fuels							
Solid Fuels							
Gaseous Fuels							
Biomass							
Other fuels							
c. Chemicals							
Liquid Fuels							
Solid Fuels							
Gaseous Fuels							
Biomass							
Other fuels							
d Pulp Paner and Print					:		
Colid Engle							,
Cassous Evols							
Cascous rueis							
Biomass							
Other ruers							
e. Food Processing, Beverages and Tobacco							
Liquid Fuels							
Solid Fuels							
Gaseous Fuels							
Biomass							
Other fuels							
f. Other (please specify)							
Liquid Fuels							
Solid Fuels							
Gaseous Fuels							
Biomass							
Other fuels							

<sup>(1)</sup> Activity data should be calculated using net calorific values (NCV) as specified by the Revised 1996 IPCC Guidelines. If gross calorific values (GCV) are used, please indicate this by placing a "G" in this column.

(2) Carbon dioxide emissions from biomass are reported under memo items.

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TABLE 1.A SECTORAL BACKGROUND DATA FOR ENERGY

Fuel combustion activities (Sectoral approach)

(Sheet 3 of 4)

(2000)								
GREENHOUSE GAS SOURCE AND SINK	AGGREGATE ACTIVI DATA		IMPLIED	IMPLIED EMISSION FACTORS	CTORS		<b>EMISSIONS</b>	
CALEGORIES	Consumption	<u> </u>	CO <sub>2</sub>	CH4	N <sub>2</sub> O	CO <sub>2</sub>	CH4	$N_2O$
	(TJ)	(I)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.3 Transport								
Gasoline								
Diesel								
Natural gas								
Solid Fuels								
Biomass								
Other fuels (please specify)								
:								
a. Civil Aviation								
Gasoline								
Jet Kerosene								
b. Road Transportation								
Gasoline								
Diesel oil								
Natural gas								
Biomass								
Other fuels (please specify)								
c. Railways								
Solid fuels								
Liquid fuels								
d. Navigation								
Coal								
Residual oil								
Other fuels (please specify)								
e. Other Transportation						,		
Liquid fuels								
Solid fuels								
Gaseous fuels								
(1) Activity data should be calculated using net calorific values (NCV) as snecified by the Revised 1996 IPCC Guidelines. If gross calorific values (CCV) are used	fic values (NCV) as specifi	44 hv th	Prised 1996 IPCC	Guidelines If	roce calorific vali	pesii eae (AJJ) sei	nlease indicate this by placing a "G" in	v nlacino a "G" in

Activity data should be calculated using net calorific values (NCV) as specified by the Revised 1996 IPCC Guidelines. If gross calorific values (GCV) are used, please indicate this by placing a "G" in this column.

TABLE 1.A SECTORAL BACKGROUND DATA FOR ENERGY

Fuel combustion activities (Sectoral approach)

(Sheet 4 of 4)

GREENHOUSE GAS SOURCE AND SINK	AGGREGATE ACTI	====	IMPLIED	IMPLIED EMISSION FACTORS	CTORS		EMISSIONS	
CALEGORIES	Consumption	l	CO <sub>2</sub>	CH <sub>2</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CH4	N <sub>2</sub> O
	(TJ)	(I)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.4 Other Sectors								
Liquid Fuels								*
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
a. Commercial/Institutional								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
b. Residential								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
c. Agriculture/Forestry/Fishing								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
1.A.5 Other (Not elsewhere specified)(1)								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other fuels								
WActivity data should be calculated using net calcultic values (NCV) as		oified hv	snepitied by the Revised 1006 ID	Journal Office	(V)()) souley office es sour f	pesti ere (V.); )) seule,	o please indicate this by placing o	this by placing a

Activity data should be calculated using net calorific values (NCV) as specified by the Revised 1996 IPCC Guidelines. If gross calorific values (GCV) are used, please indicate this by placing a "G" in this column.

(2) Include military fuel use under this category.

Percentage from the given

production figure

surface

underground

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY

Fugitive emissions from solid fuels (Sheet 1 of 1)

(Sheet 1 of 1)						Additional Information	
GREENHOUSE GAS SOURCE AND	ACTIVITY DATA	IMPLIED EMISSION FACTOR	SION FACTOR	EMISSIONS	IONS	Types of coal mined in different type of mines	Percentag produ
SINK CATEGORIES	Amount of fuel produced (1)	CH4	$\mathrm{CO}_2$	CH₄	CO <sub>2</sub>	(class/rank of coal)	underground
	(Mt)	(kg/t)	(kg/t)	(Gg)	(Gg)	Anthracite	
1. B. 1. a. Coal Mining and Handling						Coking coal	
i. Underground Mines <sup>(2)</sup>						Other bituminous coal	
Mining activities						Sub-bituminous coal	
Post-Mining activities						Lignite	
ii. Surface Mines <sup>(2)</sup>							
Mining activities						Amount of CH <sub>4</sub> recovered and utilized	nd utilized
Post-Mining activities						$(Gg)^{(a)}$ .	
1. B. 1. b. Solid Fuel Transformation						Mines with recovery systems (number)	s (number)
1. B. 1. c. Other (please specify) <sup>(3)</sup>						(a) for underground mines.	

Note: There are no clear references to the coverage of 1.B.1.b. and 1.B.1.c. in the Revised 1996 IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, give reference in the documentation box.

<sup>(1)</sup> Specify whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.

<sup>(2)</sup> Emissions for "Mining Activities" and "Post-Mining Activities" are calculated with the activity data in lines "Underground Mines" and "Surface Mines" respectively.

<sup>(3)</sup> Use the "Other" rows to enter any other solid fuel related activities resulting in fugitive emissions.

value

Additional Information

(specify)

her relevant information

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### TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY Fugitive emissions from oil and natural gas (Sheet 1 of 1)

CREENHOUSE CAS SOURCE AND	ACTIVITY DATA	1	IMPLIEI	IMPLIED EMISSION FACTORS	ACTORS		EMISSIONS		Unit
SINK CATEGORIFS	Description (1)	value	CO <sub>2</sub>	CH <sub>1</sub>	$N_2O$	$co_{i}$	tH)	$N_2O$	Pipelines length (km)
SINK CALEGONIES			(kg/PJ) (2)	$(kg/PJ)^{(2)}$	(kg/PJ) <sup>(2)</sup>	(Gg)	(Gg)	(Gg)	Number of oil wells
1. B. 2. a. Oil <sup>(3)</sup>									Other relevant informat
i. Exploration	(e.g. number of wells drilled)								s)
ii. Production <sup>(4)</sup>	(e.g. P.J of oil produced)								
iii. Transport	(e.g. P.) oil loaded in tankers)								
iv. Refining / Storage	(e.g. P.J oil refined)								
v. Distribution of oil products	(e.g. PJ oil refined)								
vi. Other									
1. B. 2. b. Natural Gas									
Exploration									
i. Production (4) / Processing	(e.g. PJ gas produced)								
ii. Transmission	(e.g. P.J gas consumed)								
Distribution	(e.g. P.J gas consumed)								
iii. Other Leakage	(e.g. P.J gas consumed)								
at industrial plants and power stations									
in residential and commercial sectors									
1. B. 2. c. Venting (5)	100								
i. Oil	(e.g. P.J oil produced)								
ii. Gas	(e.g. PJ gas produced)								
iii. Combined									
Flaring									
i. Oil	(e.g. PJ gas consumption)								
ii. Gas	(e.g. P.J gas consumption)								
iii. Combined						:			
1.B.2.d. Other (please specify) <sup>(6)</sup>									

Specify the activity data used and fill in the activity data unit column, as given in the examples in brackets. Specify whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one variable is used as activity data.

<sup>(2)</sup> Specify the unit of the implied emission factor where it is not kg GHG/PJ.

<sup>(3)</sup> 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.iii, respectively.

<sup>(4)</sup> If using default emission factors these categories will include emissions from production other than venting and flaring.

<sup>(3)</sup> If using default emission factors, emissions from venting and flaring from all oil and gas production should be accounted for here. Parties using the IPCC software could report those emissions together, indicating so in the documentation box.

<sup>(6)</sup> For example, fugitive CO<sub>2</sub> emissions from production of geothermal power could be reported here.

**WORKSHEET 1-1** 

CO2 from energy sources (Reference approach)

(Sheet 1 of 1)

	FUEL	FUEL TYPES	Production I	mports Expo	Production Imports Exports International Stock Change	Stock Change	Apparent	Conversion	Apparent	Carbon Emission Carbon Content Carbon Stored	Carbon Content	Carbon Stored	Net Carbon Fraction of	Fraction of	Actual CO <sub>2</sub>
					Bunkers		Consumption	Factor (1)	Consumption	Factor			Emissions	Carbon	Emissions
			<i>-</i>					(TJ/Unit)	(TJ)	(t C/TJ)	(Gg C)	(Gg C)	(Gg C)	Oxidized	(Gg CO <sub>2</sub> )
	Drimoni	Crude Oil													
Liquid	Finds	Orimulsion													
Fossil	1	Natural Gas Liquids													
	Secondary														
	Secondary Engle														
	r ncis	Other Kerosene													
		Shale Oil										-			
		Gas / Diesel Oil													
	-	Residual Fuel Oil													
		LPG												-	
		Ethane													
		Naphtha													
		Bitumen				,									
		Lubricants													
		Petroleum Coke													
		Refinery Feedstocks													
		Other Oil													
Liquid Fossil Totals	Totals														
Solid Fossil	Primary	Anthracite (2)					-						:		
	Fuels	Coking Coal													
		Other Bit. Coal													
		Sub-bit. Coal													
		Lignite													
		Oil Shale													
		Peat													
	Secondary	BKB & Patent Fuel					-								
	Fuels	Coke Oven/Gas Coke													
Solid Fuel Totals	tals														
Gaseous Fossi	=	Natural Gas (Dry)													
Total															
Biomass total															
		Solid Biomass													
		Liquid Biomass													
		Gas Biomass													
()												**************************************			

<sup>(1)</sup> To convert quantities expressed in natural units to energy units, use the net calorific values. If gross calorific values (GCV) are used in this table, please indicate this with a footnote.

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

## TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY Feedstocks and non-energy use of fuels

Year:

(Sheet 1 of 1)

(Sheet 1 of 1)					Additional Information (a)	nation <sup>(a)</sup>
	HALLINI	/ITY DATA IM	IMPLIED EMISSION FAC	ESTIMATES	CO <sub>2</sub> not emitted	Subtracted from
Fuel type (1)	Fuel Quantity	Fraction of	Carbon	Carbon Stored		(specify source
•		Carbon Stored	Emission Factor			category)
	(TJ)		(t C/TJ)	(Gg C)	$(Gg CO_2)$	
Naphtha (2)						
Lubricants						
Bitumen						
Coal Oils and Tars (from Coking Coal)						
Natural Gas <sup>(2)</sup>					-	
Gas/Diesel Oil (2)						
Propane (2)	-					
Butane (2)						
Ethane (2)						
Other (specify)						
(1) Where fuels are used in different industries, please enter in different rows.	s, please enter in differe	nt rows.		,	(a) The fuel lines of	(a) The fuel lines continue from the left

<sup>(1)</sup> Where fuels are used in different industries, please enter in different rows.

Note: The 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 methodologies, and provide explanation notes in the documentation box below.

side table

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 the 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 an extra "Additional Information" table, as shown below:

Associated CO <sub>2</sub> emissions	Allocated under
(Gg)	(Specify source category) <sup>(a)</sup>
	(a)

<sup>(</sup>a) e.g. industrial processes, waste incineration, etc.

<sup>(2)</sup> Enter these fuels when they are used as feedstocks.

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## TABLE 1.D SECTORAL BACKGROUND DATA FOR ENERGY International bunkers and multilateral operations

(Sheet 1 of 1)

(Sheet 1 of 1)								Additional Information		
GREENHOUSE GAS	ACTIVITY DATA	IMPLIE	IMPLIED EMISSION FA	ACTORS		EMISSIONS		Fuel consumption	Allocation	Allocation (percent)
SOURCE AND SINK	Consumption	CO <sub>2</sub>	CH4	O <sub>2</sub> N	CO2	CH,	$N_2O$		Domestic	International
CALEGONIES	(TJ)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)	Marine		
Marine Bunkers								Aviation		
Gasoline										
Gas/Diesel Oil								For calculating the allocation of fuel consumption, use the	tion of fuel const	mption, use the
Residual Fuel Oil								sums of fuel consumption by domestic navigation and	by domestic nav	igation and
Lubricants								aviation (Table 1.A) and by international bunkers (Table	by international b	unkers (Table
Coal								1.D).		
Other (specify)										
Aviation Bunkers										
Jet Kerosene										
Gasoline										
Multilateral Operations (1)		·								

Note: In accordance with the Revised 1996 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 informational purposes only.

<sup>(1)</sup> Parties may choose to report or not report the activity data and emission factors for multilateral operation consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines on inventories. 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.

TABLE 1.E COMPARISON OF CO, EMISSIONS FROM FUEL COMBUSTION (Sheet 1 of 1)

	Reference Ap	pproach	National Approach (1)	pproach <sup>(1)</sup>	Difference (2)	ıce <sup>(2)</sup>
	Energy consumption	CO <sub>2</sub> emissions	Energy consumption	CO <sub>2</sub> emissions	Energy consumption	CO <sub>2</sub> emissions
Fuel types	(PJ)	(Gg)	(PJ)	(Gg)	(%)	(%)
Liquid fuels (excluding international bunkers)						
Solid fuels (excluding international bunkers)						
Gaseous fuels						
Other (specify)						
Total				,		

<sup>(1) &</sup>quot;National Approach" is used to indicate the approach (different from the Reference Approach) followed by the Party to estimate its CO<sub>2</sub> emissions from fuel combustion reported in the national GHG inventory.

IPCC Guidelines (Worksheet 1-1). The Reference Approach is to assist in verifying the sectoral data. Parties should also complete the above tables to compare the alternative estimates, and if the Note: In addition to estimating CO<sub>2</sub> emissions from fuel combustion by sector, Parties should also estimate these emissions using the IPCC Reference Approach, as found in volume 2 of the estimates lie more than 2 percent apart, should explain the source of this difference in the documentation box provided.

Documentation box: Please explain the source of any difference greater than 2 percent.

 $<sup>^{(2)}</sup>$  Difference of the Reference Approach over the National Approach i.e. difference = 100x((RA-NA)/NA), where NA = National Approach and RA = Reference Approach.

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

	SECTORA	L REPOR	I FOR NA	SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	REENHO	USE GAS	INVENTO	RIES					
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO2	$\mathrm{CH}_4$	$N_2O$	HFCs <sup>(1)</sup>	(I) <b>S</b>	PFCs <sup>(1)</sup>	(t) <sup>S</sup>	$SF_6$	.9	NOx	00	NMVOC	$SO_2$
				Ь	Α	Ь	А	P	Α				
	(Gg)	(Gg)	(Gg)	CO <sub>2</sub> equivalent (Gg)	lent (Gg)	CO2 equivalent (Gg)	lent (Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(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 (please specify)													
B. Chemical Industry													
1. Ammonia Production													
2. Nitric Acid Production													
3. Adipic Acid Production													
4. Carbide Production													
5. Other (please specify)													
C. Metal Production													
1. Iron and Steel Production										•			
2. Ferroalloys Production													
3. Aluminium Production													
4. SF <sub>6</sub> Used in Aluminium and Magnesium Foundries		•											
5. Other (please specify)						-							

P = Potential emissions based on Tier I Approach. A = Actual emissions based on Tier 2 Approach. This only applies in sectors where methods exist for both tiers.

<sup>(1)</sup> The emissions of HFCs and PFCs are to be expressed as CO<sub>2</sub> 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)

SAIGO ANIS GNY ADAIGS SYD ASIOCHNAAGO	$co_2$	$_{ m CH_4}$	N <sub>2</sub> O		HFCs <sup>(1)</sup>	PFCs <sup>(1)</sup>	(I) <b>S</b>	S	${ m SF}_6$	NOx	00	NMVOC	$SO_2$
GNEETHOUSE GAS SOONCE AND SHAR CATEGORIES				Ы	A	Ы	A	Ь	₹				
		(Gg)			CO2 equivalent (Gg)	lent (Gg)				(g <sub>S</sub> )	(g		
D. Other Production													i
1. Pulp and Paper													
2. Food and Drink <sup>(2)</sup>													
E. Production of Halocarbons and Sulphur Hexafluoride													
1. By-product Emissions <sup>(3)</sup>													
2. Fugitive Emissions													
3. Other (please specify)													
F. Consumption of Halocarbons and Sulphur Hexafluoride													
1. Refrigeration and Air Conditioning Equipment											,		
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Other (please specify)													
Semiconductor manufacture													
Electrical equipment													
						,							
G. Other (please specify)												-	

P = Potential emissions based on Tier 1 Approach. A= Actual emissions based on Tier 2 Approach. This only applies in sectors where methods exist for both tiers.

<sup>(1)</sup> The emissions of HFCs and PFCs are to be expressed as CO<sub>2</sub> equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

<sup>(2)</sup> CO<sub>2</sub> from food and drink production (e.g. gasification of water) can be of biological or non-biological origin. Only information on CO<sub>2</sub> emissions of non-biological origin should be reported.

<sup>(3)</sup> Include production of HCFC-22 and other.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions

(Sheet 1 of 2)

(Sileet 1 01 2)				١		ı					
GREENHOUSE GAS SOURCE	ACTIVITY DATA			IMPL	IMPLIED EMISSION FACTORS	N FAC				EMISSIONS	
AND SINK CATEGORIES	Production/Consumption Quantity	uantity	CO <sub>2</sub>		CH		$N_2O$		CO <sub>2</sub>	CH4	N <sub>2</sub> O
	Description (1)	(kt)	(1/t)	(2)	(t/t)	(2)	(t/t)	(2)	(t/t)	(t/t)	(1/t)
A. Mineral Products				_							
1. Cement Production	(e.g. cement or clinker 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 (please specify)											
Glass Production											
				-							
B. Chemical Industry				l							
1. Ammonia Production (3)										*	
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											
other (please specify)											
				Н							
(1)							The second secon				

<sup>1)</sup> Where the IPCC Guidelines provide options for activity data, e.g. cement or clinker for estimating the emissions from cement production, specify the activity data used (as shown in the example in brackets) in order to make the choice of emission factor more transparent.

<sup>(2)</sup> Enter "R" to specify cases in which the final emissions reported in the Sectoral Report tables are reduced with the quantities of emission recovery, oxidation, destruction, transformation. The emissions factors before such adjustments should be entered. Parties should include quantitative information on recovery, oxidation, destruction, and transformation in inventory documentation.

<sup>(3)</sup> To avoid double counting make offsetting deductions from fuel consumption (e.g. natural gas) in ammonia production, first for feedstock use of the fuel, and then to a sequestering use of the feedstock.

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

CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions

(Sheet 2 of 2)

(Sueet 2 01 2)		٠			\$						
GREENHOUSE GAS SOURCE	ACTIVITY DATA	1			IMPLIED EMISSION FACTORS	NFAC			:	EMISSIONS	
AND SINK CATEGORIES	Production/Consumption Quantity	Quantity	CO2		CH4		N <sub>2</sub> O		CO <sub>2</sub>	CH4	N <sub>2</sub> O
	Description <sup>(1)</sup>	(kt)	(t/t)	(2)	(1/1)	(2)	(t/t)	(2)	(t/t)	(t/t)	(1/t)
C. Metal Production (3)											
1. Iron and Steel Production											
steel				220							
pig iron											
sinter											
coke								7			
									:		
2. Ferroalloys Production											
3. Aluminium Production											
5. Other (please specify)											
D. Other Production											
<ol> <li>Pulp and Paper</li> </ol>											
2. Food and Drink											
G. Other (please specify)											

<sup>(1)</sup> Where the IPCC Guidelines provide options for activity data, e.g. cement or clinker for estimating the emissions from cement production, specify the activity data used (as shown in the example in brackets) in order to make the choice of emission factor more transparent.

Note: In case of confidentiality of the activity data information, the entries should provide aggregate figures but there should be a note indicating this.

<sup>(2)</sup> Enter "R" to specify cases in which the final emissions reported in the Sectoral Report tables are reduced, with the quantities of emission recovery, oxidation, destruction or transformation. The emission factors before such adjustments should be entered. Parties should include quantitative information on recovery, oxidation, destruction, and transformation in inventory documentation.

<sup>(3)</sup> More specific information (e.g. data on virgin and recycled steel production) could be provided in the documentation box.

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# TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES Emissions of HFCs, PFCs and SF<sub>6</sub>

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=

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this. Other gases with GWP not yet agreed upon by the COP, should be reported in Table 9 (Completeness), sheet 2.

2E<sup>e</sup>

otal PFCs

 $C^2 E^{15}$ 

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TABLE 2(II) SECTORAL REPORT FOR Emissions of HFCs, PFCs and SF <sub>6</sub> (Sheet 2 of 2)	OR INDUSTRIAL PROCESSES	DUS	<b>TRIA</b>	L PR	OCE	SSES	70											
18	ECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES  (t)	NL REI	PORT	FOR N	ATION	(t)	REENH	OUSE	GAS I	NVEN	TORIE	S						
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	НЕС-23	HEC-37	HEC-41	HFC-43-10mee	HEC-134	HEC-13¢g	HEC-1259	HEC-143	HEC-1439	HFC-227ea	HFC-236fa	HFC-245ca	Total HFCs	CE <sup>†</sup>	C <sup>5</sup> E <sup>6</sup>	C <sup>3</sup> E <sup>8</sup>	C4F <sub>10</sub>	8 <sup>-</sup> ∃ <sub>4</sub> D-o
Consumption of Halocarbons and SF <sub>6</sub>																		
(potential emissions) (1)			-															
production						_		_	L	_								
production of new substance						-	_											
recycled substance							_											
import: in bulk											_							
in products (2)						·												
export: in bulk										_								
in products <sup>(2)</sup>																		
destroyed amount																		
- 4/115				r			F	F						L	L		L	
GWF values used	11700	650	150	1300	2800	1000	1300	140 3(	300 3800	00 2900	0 6300	099		6500	9200	7000	7000	8700
Actual emissions (Gg CO <sub>2</sub> eq.)								٠.										
C Metal Production																		
E Production of Halocarbons and SF <sub>6</sub>						$\vdash$			_	L	L	L						
F Consumption of Halocarbons and SF <sub>6</sub>						-			_		_				L			
Potential emissions from consumption of halocarbons									_			L						
and SF <sub>6</sub> (Gg CO <sub>2</sub> eq.)													_					
					ł	ļ		Ì										

23900

0 7500 7400

(1) When potential emissions estimates are available in a disaggregated manner corresponding to the subsectors for actual emissions defined on sheet 1 of this table, these should be reported in an annex to sheet 2, using the format of sheet 1, sector F.

Potential/Actual Emissions Ratio

Consumption of halocarbons and SF<sub>6</sub>

Note: As stated in the revised UNFCCC guidelines, Parties should report actual emissions of HFCs, PFCs and SF<sub>6</sub>, where data are available, providing disaggregated data by chemical and source category in units of

mass and in CO<sub>2</sub> equivalents. 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.

<sup>(2)</sup> Relevant just for Tier 1b.

<sup>(3)</sup> This ratio of potential to actual emissions applies only to emissions from the consumption of halocarbons and SF<sub>6</sub>. Emissions from metal production and from the production of halocarbons and SF<sub>6</sub> should not be included in this ratio.

### TABLE 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Metal production; Production of Halocarbons and SF<sub>6</sub>

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DA	ATA <sup>(1)</sup>	IMPLIED EMISSION FACTORS <sup>(3)</sup>	
the second second	Description (2)	(t)	(kg/t)	(4)
C. PFCs and SF <sub>6</sub> from metal production				
PFC				
CF <sub>4</sub>				
$C_2F_6$				
SF <sub>6</sub>				
Aluminium foundries	(SF <sub>6</sub> consumption)			
Magnesium foundries				
E. Production of Halocarbons and SF <sub>6</sub>				-
1. By-product emissions				+
Production of HCFC-22		·		
HFC-23				
Other				
(specify chemical)				
	, , , , , , , , , , , , , , , , , , , ,			
2. Fugitive emissions				+
HFC (specify chemical)				+
THE (speedy enemical)	*			+
				-
PFC (specify chemical)				1
SF <sub>6</sub>				
3. Other				
		<u> </u>		

<sup>(1)</sup> Where applying Tier 1b (for C), Tier 2 (for E) and country specific methods, specify any other relevant activity data used in the documentation box below.

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note indicating

Documentation box:		
	•	
		•
	•	

<sup>(2)</sup> Specify the activity data used as shown in the examples within brackets.

<sup>(3)</sup> Aggregate emission factors before recovery.

<sup>(4)</sup> Enter "R" to specify cases in which the final emissions reported in the Sectoral Report table are reported after substracting the quantities of emission recovery, oxidation, destruction, transformation. Use the documentation box for further explanations.

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

Consumption of Halocarbons and  ${\rm SF_6}^{(1)}$  (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND		ACTIVITY DATA		IMPLIE	IMPLIED EMISSION FACTORS	CTORS		EMISSIONS	
SINK CATEGORIES		Amount of fluid		Product	Product life factor	Disposal loss	from	from stocks	from disposal
	filled in new	in operating systems	I —	manufacturing		factor	manufacturing		
	manufactured	(average annual stocks)	at decommissioning	factor					
	products								
	(t)	(t)	(1)	(%)	(%)	(%)	(t)	(t)	(t)
1 Refrigeration									
Air Conditioning Equipment									
Domestic refrigeration									
HFC/PFC/SF <sub>6</sub> (specify chemical) (2)									
Commercial refrigeration									
									:
Transport refrigeration									
Industrial refrigeration									
A STATE OF THE STA									
Stationary air-conditioning									
Mobile air-conditioning	•								
2 Foam Blowing									
Hard foam									
	-								
Soft foam									
3 Fire Extinguishers									

<sup>(1)</sup> Indicate with a footnote or in the documentation box whether a "Bottom-up Approach" or a "Sales-Based Approach" is used.

(2) Use the rows left empty to specify the chemical consumed

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note indicating this.

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

Consumption of Halocarbons and ${\rm SF_6}^{(1)}$ (Sheet 2 of 2)	and $\mathrm{SF_6}^{(1)}$								
GREENHOUSE GAS SOURCE AND		ACTIVITY DATA	_	AGGREGAT	AGGREGATE EMISSION FACTORS	FACTORS		EMISSIONS	
SINK CATEGORIES		Amount of fluid		Product manufacturing Product life factor	Product life factor	Disposal loss factor	from manufacturing	from stocks	from disposal
	filled in new manufactured	in operating systems (average annual stocks)	remained in products at decommissioning	factor					
	(t)	(1)	(t)	(%)	(%)	(%)	(t)	(t)	(t)
4 Aerosols									
Metered Dose Inhalers									
Other		Manharan and Aran							
				,					
5 Solvents									
6 Semiconductors									
Electric equipment									
8 Other (please specify)									

<sup>(1)</sup> Indicate as a footnote or in the documentation box whether a "Bottom-up Approach" or a "Sales-Based Approach" is used.

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note indicating this.

<sup>(2)</sup> Use the rows left empty to specify the chemical consumed.

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

Year:

L	SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	REENHOUSE GAS I	NVENTORIES	
	(Gg)			
	GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	$N_2O$	NMVOC
ĭ	Total Solvent and Other Product Use			
A.	A. Paint Application			
æ	B. Degreasing and Dry Cleaning			
Ü	C. Chemical Products, Manufacture and Processing			
Ö.	D. Other (please specify)			
	(Use of $N_2O$ for anesthesia)			
L.	$(N_2O$ from fire extinguishers)			
	$(N_2O$ from aerosol cans)			
	(Other use of $N_2O$ )			
				-

Please account for the quantity of carbon released in the form of NMVOC in both the NMVOC and the CO2 columns.

Note: The IPCC Guidelines do not provide methodologies for the calculation of emissions of N2O from solvent and other product use. If you have reported such data, you should provide additional information (activity data and emission factors) used to make these estimates.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	ΓA	IMPLIED EMISS	IMPLIED EMISSION FACTORS
	Description	(kt)	$CO_2$ (kg/t)	$N_2O$ (kg/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other (please specify) <sup>(1)</sup>				
(Use of $N_2O$ for anesthesia)			•	
(N <sub>2</sub> O from fire extinguishers)				
(N <sub>2</sub> O from aerosol cans)		•		
(Other use of $N_2$ O)				

<sup>(1)</sup> Some probable sources are provided in brackets. Complement the list with other relevant sources.

Note: The table follows the format of the IPCC Sectoral Report for Solvent and Other Product Use, although some of the source categories are not relevant to the direct GHG emissions.

TABLE 4 SECTORAL REPORT FOR AGRICULTURE

(Sheet 1 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	OR NATIONAL G	REENHOUSE GAS	SINVENTORIES		
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	$_{ m CH_4}$	$N_2O$	$NO_{x}$	00	NMVOC
Total Agriculture					
A. Enteric Fermentation					
1. 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)					
B. Manure Management					
1. Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					

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

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES	AL GREENHOU	SE GAS INVEN	TORIES		
	(Gg)		•		
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH4	$N_2O$	NOx	00	NMVOC
B. Manure Management (continued)					
10. Anaerobic Lagoons					
11. Liquid Systems					
12. Solid Storage and Dry Lot					
13. Other (please specify)					
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other (please specify)					
D. Agricultural Soils					
1. Direct Soil Emissions					
2. Animal Production					
3. Indirect Emissions					
4. Other (please specify)					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues <sup>(1)</sup>				*	
1 . Cereals					
2. Pulse					
3 . Tuber and Root					
4 . Sugar Cane					
5. Other (please specify)					
G. Other (please specify)					

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH<sub>4</sub> emissions, CH<sub>4</sub> and N<sub>2</sub>O removals from agricultural soils, or CO<sub>2</sub> emissions from savanna burning or agricultural residues burning. If you have reported such data, you should provide additional information (activity data and emissions factors) used to make these estimates.

## TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE

Enteric fermentation

(Sheet 1 of 1)

GREENHOUSE GAS	ACTIVITY DAT	ACTIVITY DATA AND OTHER RELATED	RELATED	IMPLIED EMISSION	
SOURCE AND SINK	Z	INFORMATION		FACTORS	Dieggera
CATEGORIES					a 188ncı /
	Population size (1)	Average daily	CH⁴	CH <sub>4</sub>	
	•	feed intake	conversion		
	(1000 head)	(MJ/day)	(%)	(kg CH <sub>4</sub> /head/yr)	Indicators:
1. Cattle					Weight
Dairy Cattle <sup>(2)</sup>					Weight Gain
Non-Dairy Cattle					Feeding Situation
2. Buffalo					Milk yield
3. Sheep					Work
4. Goats					Pregnant
5. Camels and Llamas					Digestibility
6. Horses					of feed
<ol><li>Mules and Asses</li></ol>					(a) Compare to
8. Swine					Guidelines for
9. Poultry					manual (pp. 4.3
<ol><li>Other (please specify)</li></ol>					(b) Disaggregate
					necessary.

Additional Information (for Tier 2)<sup>(a)</sup>

Year:

Son Souther So	(kg)	day)	e.g stall	day)	day)	(%)		
animals <sup>(h)</sup>	(kg)	(kg/day)		(kg/day)	(hrs/day)	(%)		ý
Disaggregated list of animals <sup>(h)</sup> Indicators:	Weight	Weight Gain	Feeding Situation	Milk yield	Work	Pregnant	Digestibility	of food

r National Greenhouse Gas Inventories: Reference Tables A-1 and A-2 of the Revised 1996 IPCC .31-4.34). ite to the split actually used. Add columns to the table if

(1) Parties are encouraged to provide detailed livestock population data by animal type and region in a separate table. This consistent set of animal population statistics should be used to estimate CH<sub>4</sub> emissions from enteric fermentation, CH<sub>4</sub> and N<sub>2</sub>O from manure management, N<sub>2</sub>O direct emissions from soil and N<sub>2</sub>O emissions associated with manure production, as well as for emissions from the use of manure as fuel, and sewage-related emissions reported in the waste sector. (2) Including dairy heifers.

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poəsds λμορ

Animal Waste Management System

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## TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE CH4 emissions from manure management (Sheet 1 of 1)

(Sh	(Sheet 1 of 1)								Addi	Additional Information for Tier 2	mation fo	r Tier 2	
GR	GREENHOUSE GAS	ACTIN	ACTIVITY DAT		ND OTHER	A AND OTHER RELATED INFORMATION	FORMATION	IMPLIED			An	Animal Wasi	as
2	CATEGORIES		Alloca	Allocation by				FACTORS	(ŧ	····-	иос	u	'
		Population	climate	climate region	lypical	VS <sup>(3)</sup> daily	CH <sub>4</sub> producing		ory		อธิธ	ıəjs	vva.
		size <sup>(1)</sup>	loos	emperate warm	Animal	excretion	potential (Bo)	CH₁	gətsə İsr	ator ate region	ı əidovər	ve biupil	лаѕ лүрр
		(1000 head)		(%)	(kg)	(kg dm/head/yr)	(CH <sub>4</sub> m <sup>3</sup> /kg VS)	(kg CH <sub>4</sub> /head/yr)	ninA	soibnle	อนซ		,
-1-	Cattle									P)moi	lc		
	Dairy Cattle <sup>(4)</sup>								ə[J]	temperate	re e		l
	Non-Dairy Cattle								SO /	warm	п		
2. I	Buffalo									e cool	)1		
3. 8	Sheep								_	E temperate	et e		
4.	Goats			_						warm	n		
5. (	Camels and Llamas									)no	le		
6. I	Horses									temperate	e,		
7.	Mules and Asses								iry	warm	u		
8.	Swine									looo e	10		
9. F	Poultry									C temperate	e		
									_	« warm	n		
			•							)noi loo	16		
										temperate	je.		
			_	_					_	warm	u		
(1) Set	(1) See footnote 1, Sectoral background data table 4.A	background da	ta table	4.A.					MS	looo ê	lo		
.10		`	•					000					l

warm cool emperate warm cool temperate warm

(2) Climate regions are defined in terms of annual average temperature as follows: Cool = less than 15°C; Temperate = 15°C to 25°C

inclusive; and Warm = greater than 25°C.

(3) Volatile Solids (see page 4.23 of the Revised 1996 IPCC Guidelines, Volume 3 (Reference Manual)).

(4) Including dairy heifers.

Documentation box:

(a) Copy the above table as many times as necessary.

WCE<sub>(p)</sub>

climate region categorization, please replace the entries in the cells with the (b) Methane Conversion Factor (see page 4.9 of the Revised 1996 IPCC Guidelines, Volume 3 (Reference Manual). In the case of use of other climate regions for which the MCFs are specified.

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

N<sub>2</sub>O emissions from manure management

(Sheet 1 of 1)

ACTIVITY DATA AND OTHER	OTHER RELATED INFORMATION	MATION		IMPLIED EMISSION FACTORS	RS SES
	N excretion per AWMS <sup>(2)</sup> (kg N/yr)	(2) (kg N/yr)		Emission factor per AWMS	
(kg N/head/yr) anaerobic liquid system	liquid system daily spread <sup>(3)</sup> solid storage pasture range and dry lot and paddock <sup>(3)</sup>	solid storage pasture range and dry lot and paddock (3)	sture range other	(kg N <sub>2</sub> O-N/kg N)	
				anaerobic lagoon	
				liquid system	
	,			solid storage and dry lot	
				other (please specify)	

(1) See footnote 1, Sectoral background data table 4.A.

(2) AWMS - Animal Waste Management System.
(3) Animal waste applied to soils are to be used in Sectoral Background Data Table 4.D.

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE Rice cultivation

(Sheet 1 of 1)

AND GIVE HOUSE OF OUR HOUSE OF	ACTIVITY I	ACTIVITY DATA AND OTHER RELATED	TED	IMPLIED EMISSION	EMISSIONS
GREENHOUSE GAS SOURCE AND SINK CATEGORIES		INFORMATION		FACTOR (1)	
	Harvested area (2)	Organic amendments added <sup>(3)</sup> :	dded <sup>(3)</sup> :	CH <sub>4</sub>	CH <sub>4</sub>
	$(m^2/yr)$	type	(t/ha)	$(g/m^2)$	(Gg)
1. Irrigated					
Continuously flooded					
Intermittently Single Aeration					
flooded 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 <sup>(4)</sup>					
Total (4)	,			·	

<sup>(1)</sup> The aggregate emission should take account of all relevant corrections for continuously flooded fields without organic amendment plus the correction for the organic amendments, if used. Aggregate also the effect of different soil characteristics, if taken into account, on methane emissions.

#### Documentation box:

When dissagregating by more than one region within a country, provide additional information in the documentation box. Where available, provide activity data and scaling factors by soil type and rice cultivar.

<sup>(2)</sup> Harvested area is the cultivated area multiplied by the number of cropping seasons per year.

<sup>(3)</sup> Specify dry weight or wet weight for organic amendments.

<sup>(4)</sup> These rows are included to allow comparison with the international statistics. Upland rice emissions are assumed to be zero and are ignored in the emission calculations.

Additional Information

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Agricultural soil

	FIN
	IMPLIED EMISSION
	REI ATED
	AND OTHER
	TV DATA A
	ACTIVIT
1 of 1)	GREENHOUSE GAS SOURCE ACTIVITY DATA AND OTHER BELATED
(Sheet	TNEFNE

GREENHOUSE GAS SOURCE	ACTIVITY DATA AND OTHER REI	RELATED	IMPLIED EMISSION	EMISSIONS	Fraction	Description Valu	Value
AND SINK CATEGORIES	INFORMATION	,	FACTORS				
	Description	value	(kg N <sub>2</sub> O-N/kg N) <sup>(1)</sup>	(Gg N <sub>2</sub> O) <sup>(2)</sup>	Fracburn	Fraction of crop residue burned	
Direct Soil Emissions					Fraceuel	Fraction of livestock N excretion in excrements human for fine	
Synthetic Fertilizers	Use of synthetic fertilizers (kg N/yr)				Frac <sub>GASF</sub>	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH, and NOx	
Animal Wastes Applied to Soils	Manure from daily spread <sup>(3)</sup> (kg N/yr)				Fracgasm	Fraction of livestock N excretion that volatilizes as NH <sub>3</sub> and NOx	
N-fixing Crops	Dry pulses and soybeans produced <sup>(4)</sup> (kg dry biomass/yr)				Fracgraz	Fraction of livestock N excreted and deposited onto soil during grazing	
Crop residue	Dry production of other crops <sup>(4)</sup> (kg dry biomass/yr)			:	Frac <sub>LEACH</sub>	Fraction of N input to soils that is lost through leaching and runoff	
Cultivation of Histosols	Area of cultivated organic soils (ha)				Frac <sub>NCRBF</sub>	Fraction of N in non-N-fixing crop	
Animal Production	N excretion on pasture range and paddock (kg N/yr)				Frac <sub>NCRO</sub>	Fraction of N in N-fixing crop	
Indirect Emissions					Frac <sub>R</sub>	Fraction or crop residue removed from the field as crop	
Atmospheric Deposition	Volatized N (NH <sub>3</sub> and NOx) from fertilizers and animal wastes (kg N/yr)				(a) Use the fr 1996 IPCC (	(a) Use the fractions as specified on pages 4.92 - 4.113 of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volum	ised
Nitrogen leaching and Run-off	N from fertilizers and animal wastes that is lost through leaching and run off (kg N/yr)				3 (Reference manual)	: manual).	
Other (please specify)							

<sup>(1)</sup> Note that the dimension of the activity data for cultivation of histosols is [kg N<sub>2</sub>O-N/ha].

<sup>(2)</sup> To convert from N<sub>2</sub>O-N to N<sub>2</sub>O emissions, multiply by 44/28.

<sup>(3)</sup> Take the value from the Sectoral background data table 4.B(b). (4) Take the value from the Sectoral background data table 4.F.

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<b>NBLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE</b>	escribed burning of savanna	neet 1 of 1)
TABL	Prescr	(Sheet

	ACT	ACTIVITY DATA AND OT	THER RELATEI	OTHER RELATED INFORMATION	Z	IMPLIED EMISSION	NOISSIME	EMISSIONS	SNOI
GREENHOUSE GAS SOURCE						FACTORS	ORS		
AND SINK CATEGORIES	Area of Savanna	Area of Savanna	Fraction of	Fraction of Biomass burned	Nitrogen	(kg/t dm)	dm)	(kg/t dm)	dm)
	Burned	biomass density	savanna burned		fraction in				
(specify ecological zone)	(k ha/yr)	(t dm/ha)		(Gg dm)	biomass	CH₄	$N_2O$	$CH_4$	$N_2O$

## Additional Information

	Living	Dead
Fraction of aboveground biomass		
Fraction oxidized		
Carbon fraction		

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE Field burning of agricultural residue (Sheet 1 of 1)

GREENHOUSE GAS	ACTIV	ACTIVITY DATA AND OTHER RELATED INFORMATION	OTHER RELA	TED INFOR	MATION	IMPLIED EMIS	IMPLIED EMISSION FACTORS	EMIS	EMISSIONS
SOURCE AND SINK									
CATEGORIES	Crop production	Residue/ Crop ratio	Dry matter fraction	Fraction burned	Nitrogen fraction in biomass	CH <sub>4</sub>	N <sub>2</sub> O	CH⁴	O <sub>2</sub> N
	(t)					(kg/t dm)	(kg/t dm)	(Gg)	(Gg)
1. Cereals									
Wheat									
Barley							Ē		
Maize									
Oats									
Rye									
Rice									
Other (please specify)									
2. Pulse (1)									
Dry bean									
Peas									
Soybeans									
Other (please specify)									
3 Tuber and Root									
Potatoes									
Other (please specify)						,			
4 Sugar Cane									
5 Other (please specify)									
									:
(1) To be used in Sectoral Backoround Data Table 4 D. Agricultural Soil	Ound Data Table 4	D. Apricultural Soil							

To be used in Sectoral Background Data Table 4 D: Agricultural Soil.

Documentation box:

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TABLE 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY (Sheet 1 of 1)

	5,	SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (GP)	: NATIONAL GREENHOU (G2)	USE GAS INVENTORIES			
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> Emissions	CO <sub>2</sub> Removals	Net CO <sub>2</sub> Emissions/ Removals	CH4	N2O	NOx	00
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 (1)							
B. Forest and Grassland Conversion (2)							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other (please specify)							
C. Abandonment of Managed Lands							
l. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other (please specify)							
D. CO <sub>2</sub> Emissions and Removals from Soil							
Cultivation of Mineral Soils							
Cultivation of Organic Soils							
Liming of Agricultural Soils							
Forest Soils	-						
Other (please specify) <sup>(3)</sup>							
E. Other (please specify)							
THE STATE OF THE S							

Dellowing the IPCC Guidelines, the harvested wood should be reported under Changes in Forest and Other Woody Biomass Stocks (see page 5.17 of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventiones, Volume 3 (Reference

Note: This table should be used by all Parties. 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, also providing suggestions for a possible Background Table suitable for their calculation method.

<sup>(2)</sup> Include only the emissions of CO<sub>2</sub> from Forest and Grassland Conversion. Associated removals should be reported under section D.

<sup>(3)</sup> Include emissions from soils not reported under sections A, B and C.

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

Changes in forest and other woody biomass stocks

(Sheet 1 of 1)

	<u> </u>		ACTIV	TY DATA	EMISSION FACTORS	ESTIMATES
GREENH CATEGO		SOURCE AND SINK	Area of Forest/Biomass Stocks	Average Annual Growth Rate	Implied Carbon Uptake Factor (t C/ha)	Carbon Uptake Increment
Tropical	Plantations	Acacia spp.	(kha)	(t dm/ha)	(t C/ha)	(Gg C)
Hopical	lamations	Eucalyptus spp.				
		Tectona grandis				
		Pinus spp Pinus caribaea				
		Mixed Hardwoods				
		Mixed Fast-Growing				
		Hardwoods		.*		
		Mixed Softwoods				
	Other Forests	Moist				
1	•	Seasonal				
l	ı	Dry				
	Other (specif	y)				
			*			-
Temperate	Plantations		•			
	Commercial	Evergreen				
		Deciduous				
	Other					
				·		
						·
Boreal	•					
Non-Fores	t Trees (speci	fy type)	Number of trees (1000s of trees)	Annual Growth Rate (kt dm/1000 trees)	Carbon Üptake Factor (t C/tree)	Carbon Uptake (Gg C)
				Tot	al Annual Growth Increment	
					Gg CO <sub>2</sub>	
			Amount of Bi	omass Removed	Carbon Emission Factor	Carbon Release
			(k	t dm)	(t C/t dm)	(Gg C)
Total biom	ass removed	in Commercial Harvest				
	l Fuelwood Co	onsumed				
	r Wood Use					
Total Bion	nass Consump	tion from Stocks (1)				
					nual Fellings (incl. Harvest)	
	*			Othe	r Changes in Carbon Stocks	
					$\operatorname{Gg}\operatorname{CO}_2$	
	, , , , , , , , , , , , , , , , , , , ,		Net	Annual Carbon Uptake	(+) or Release (-) (Gg C)	
			Net Ann	ual CO <sub>2</sub> Emissions (+) o		
(I) M. les	ma that tha are	antity of biomass burned	aff aita ia auhtmaatad	from this total		

Documentation box:			
		· ·	

TABLE 5.B SECTORAL BACKGROUND DATA TABLE FOR LAND-USE CHANGE AND FORESTRY Forest and grassland conversion (Sheet 1 of 1)

; i

		A	CTIVITYL	ACTIVITY DATA AND OTH	HER RELATED INFORMATION	) INFORMAT	NOL	IMPLIED EMISSION FACTORS	MISSION	FACTO	RS		<b>EMISSIONS</b>	SNOI	
GREENHOUS	GREENHOUSE GAS SOURCE AND	On	On and off site burning	burning	Decay of t	Decay of Above-ground Biomass(T	3iomass <sup>(1)</sup>	<u>*</u>	FACTORS						
SINK CATEGORIES	ORIES	Area	Annual	Quantity of	Α	Average	Average	Bu	Burning	Ď	Decay	I	Burning		Decay
		Converted	Net Loss	Biomass Burned	Converted	Annual Net	Quantity of	on site	Jo	off site		on site	ite	off site	
		Amuany	Aminany of biomass			L088 01	Diomass Len to				<u></u>	_			
				on Site off Site		Biomass	Decay	CO <sub>2</sub> CH <sub>4</sub>	N <sub>2</sub> O (	$CO_2$	$co_2 \mid c$	$CO_2$ $CH_4$	I₄ N <sub>2</sub> O	$CO_2$	$CO_2$
Vegetation types	es	(kha)	(kt dm)		(kha)	(t dm/ha)	(kt dm)		(Gg/ha)				(Gg)	3)	
Tropical	Wet/Very Moist								<u></u>			_	_		
	Moist, short dry season											-			
	Moist, long dry season														
	Dry														
	Montane Moist														
	Montane Dry										_				
Tropical Savanna/Grasslands	na/Grasslands														
Temperate	Coniferous											_			
	Broadleaf											_			
	Mixed Broadleaf/														
	Coniferous														
Grasslands															
Boreal	Mixed Broadleaf/														
	Coniferous				1										
	Coniferous								-						
	Forest	,													
Grasslands/Tundra	ıdra														
Other														·	
(1) A chivity data	Activity data are for default 10 wear average	3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		at delater a mine a colo	J   T	: TF	11 17 17 3;	10							

<sup>&</sup>quot;Activity data are for default 10-year average. Specify the average decay time which is appropriate for the local conditions, if other than 10 years.

#### Additional Information

Emissions/Removals (Gg)	on site	off site	Fractions	on site	off site
Immediate Carbon Release from Burning			Fraction of biomass burned		
total			Fraction which oxidizes during burning		
Delayed Emissions from Decay			Carbon fraction of aboveground biomass		
Total Annual Carbon Release			Fraction left to decay		
CO <sub>2</sub> emissions			Nitrogen-Carbon Ratio		

TABLE 5.C SECTORAL BACKGROUND DATA TABLE FOR LAND-USE CHANGE AND FORESTRY Abandonment of managed lands

(Sheet 1 of 1)

		Ç.	TWITTY DAT	TITO GIVE	ATT ATTER	INICODIAL	ivo	O to recommend and	PRILIDIA	A Triple
	:	AL	IIVII I DAI	ACTIVITY DATA AND OTHER RELATED INFORMATION	K KELAIEU	INFORMATI	OIN	LED EMISSION FAC	ESTIMATES	AIES
GREENHOUS	GREENHOUSE GAS SOURCE AND	Total Area Abandoned and	andoned and	Annual Rate of Aboveground	Aboveground	Carbon F	Carbon Fraction of	Rate of Aboveground	Annual Carbon Uptake in	on Uptake in
SINK CATEGORIES	ORIES	Regrowing (1)	ing (I)	Biomass Growth	Growth	Abovegrou	Aboveground Biomass	Biomass Carbon Uptake	Aboveground Biomass	d Biomass
		first 20 years	>20 years	first 20 years	>20 years	first 20 years	>20 years		first 20 years	>20 years
Original natural ecosystems	l ecosystems	(kha)	(kha)	(t dm/ha)	(t dm/ha)			(t C/ha/yr)	(Gg C/yr)	(Gg C/yr)
Tropical	Wet/Very Moist									
	Moist, short dry season									
	Moist, long dry season									
	Dry									
	Montane Moist									
	Montane Dry									
Tropical Savanna/Grasslands	na/Grasslands									
	Mixed									
ı cılıpcı atc	Broadleaf/Coniferous									
	Coniferous									
	Broadleaf									
Grasslands								:		
Boreal	Mixed									
	Broadleaf/Coniferous									
	Coniferous	,		-				-		
	Forest									
Grasslands/Tundra	dra									
Other										
							Total Ar	Total Annual Carbon Uptake (Gg)		

<sup>(1)</sup> If lands are regenerating to grassland, then the default assumption is that no significant changes in above-ground biomass occur.

CO2 removal (Gg)

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

CO<sub>2</sub> emissions and removals from soil

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

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(Sheet 1 of 1)				Additional Information	nation				
	ACTIVITY DATA	NO GODING WILLIAM	ESTIMATES	Climate (a)	land-use/ management		Soil type		
GREENHOUSE GAS	Land Area Land Area	IMPLIED EMISSION FACTORS	Net change in		system	λ1 λ1 λ1	oin	(၁	
SOURCE AND SINK	(year t) (year t-20)	Soil carbon (1)	Mineral Soils	ı, es		igit ivita glios wo. ivita ivita	ıcsı	etla .gari	lios
CATEGORIES	(Mha) (Mha)	content (t)   content (t-20)	(Tg C over 20 yr)		•	90 5 5	٥٨	<b>∀</b> )	
		(Mg C/ha) (Mg C/ha)				percent (	percent distribution (%)	(%)	
Cultivation of mineral soils		Net change in soil carbon in mineral soils		(e.g. tropical, dry)	(6. g. savamua)				
High activity soils				bı	(e.g. irrigated cropping)				
Low activity soils				Sies					
Sandy				λε					
Volcanic				07					
Wetland (Aquic)			-						
Other (specify)									
				ear					
Total (2)				K A					
	Land Area	Annual Loss Rate Car	Carbon Emissions from	tor					
			Organic Soils	IVEL					
	(ha)	(Mg C/ha/yr)	(Mg/yr)	uı					
Cultivation of Organic Soils		Net carbon loss from organic soils		(a) See Table 5-9 (page	5.26) of the Revised	See Table 5-9 (page 5.26) of the Revised 1996 IPCC Guidelines for National Greenhouse Gas	for Nationa	l Greenhou	se Gas
Cool temperate				Inventories, Volume 2 (Workbook)	(Workbook)				
Upland crops									
Pasture/Forest									
Warm temperate									
Upland crops									
Pasture/Forest									
Tropical									
Upland crops									
Pasture/Forest									
	Total Annual	Carbon Conversion Factor Car	Carbon Emissions from						
	Amount of Lime (Mg)		Liming (Mg C)						
Liming of agricultural soils		Total carbon emissions form liming							
Limestone Ca(CO <sub>3</sub> )	·								
Dolomite CaMg(CO <sub>3</sub> ) <sub>2</sub>									

Total annual net carbon emissions from agriculturally impacted soils (Gg Tatio of soils under native veestation to agriculturally impacted soils (Gg

(1) Ratio of soils under native vegetation to agriculturally impacted soils.
(2) Make sure that the land areas in the activity data columns are equal.

Documentation box:

amon Describes Formact for the manifeless of insentent informa-

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

	(Gg)	<u>z</u> )					
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> <sup>(1)</sup>	$\mathrm{CH}_4$	$N_2O$	NOx	00	· NMVOC	$SO_2$
Total Waste							
A. Solid Waste Disposal on Land							
1. Managed Waste Disposal on Land							
2. Unmanaged Waste Disposal Sites							
3. Other (please specify)							
							,
B. Wastewater Handling							
1. Industrial Wastewater							
2. Domestic and Commercial Waste-water							
3. Other (please specify)							
C. Waste Incineration							
D. Other (please specify)							

<sup>(1)</sup> Note that CO<sub>2</sub> from waste incineration should only be included if it stems from non-biological or inorganic waste sources.

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TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE Solid waste disposal

(Sileet 1 of 1)								Additional II
GREENHOUSE GAS SOURCE	ACTIVITY	ACTIVITY DATA AND OTHER	OTHER	IMPLIED EMISSION	MISSION	EMIS	EMISSIONS	
AND SINK CATEGORIES	RELATE	RELATED INFORMATION	TION	FACTOR	OR			Total populat
	Annual MSW at		DOC	ω <sup>†</sup> HϽ	$CO_2$	CH <sub>4</sub> <sup>(1)</sup>	$cO_2$	Urban popula
	the SWDS	MCF	degraded					Waste genera
	(t)		(t)	(t /t MSW)	(t /t MSW)	(Gg)	(Gg)	Fraction of N
1 Managed Waste Disposal on Land								Fraction of D
2 Unmanaged Waste Disposal Sites								Fraction of w.
(m <<) deep -								Fraction of w
- shallow (<5 m)								CH <sub>4</sub> oxidation
<ol><li>Other (please specify)</li></ol>								CH <sub>4</sub> fraction
(e.g. industrial wastes)								Number of S
								CH <sub>4</sub> recovere

## TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE Waste incineration

	1 of 1)	
1000	Sheet	

(2000)									
GREENHOUSE GAS SOURCE	RCE ACTIVITY DAT		MPLIED EMI	IMPLIED EMISSION FACTOR	R		EMISSIONS	SIONS	
AND SINK CATEGORIES	Amount of		,						
,	incinerated wastes $CO_2^{(3)}$ $CO_2^{(4)}$	CO <sub>2</sub> (3)	CO <sub>2</sub> (4)	CH4	O <sub>2</sub> N	CO <sub>2</sub> <sup>(3)</sup>	$CO_2^{(3)}$ $CO_2^{(4)}$ $CH_4$	CH4	N <sub>2</sub> O
	(t)	(g/t waste)	(g / t waste)	(g/t waste) (g/t waste) (g/t waste) (g/t waste)	(g / t waste)	(Gg)	(Gg)	(Gg)	(Gg)
Incinerated wastes (please specify)						-			
(biogenic) (2)									
(plastics) <sup>(3)</sup>									
			:						

MSW - Municipal Solid Waste, SWDS - Solid Waste Disposal Site, MCF - Methane Correction Factor, DOC - Degradable Organic Carbon (see section 6.2.4. of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3 (Reference Manual). MSW includes household waste, yard/garden waste, commercial/market waste, significant quantity of organic industrial solid waste (without industrial and construction waste).

Documentation box: Parties that use country specific models should note this with a brief rationale in the documentation box and fill the relevant cells only

## Additional Information

Year:

Total population (1000 inhabitants <sup>(a)</sup> ):	
Urban population (1000 persons)	
Waste generation rate (kg/capita/day):	
Fraction of MSW disposed to SWDS (%):	
Fraction of DOC in MSW:	
Fraction of wastes incinerated:	
Fraction of wastes recycled:	
CH <sub>4</sub> oxidation factor (19)	
CH <sub>4</sub> fraction in landfill gas:	
Number of SWDS recovering CH₄	
CH <sub>4</sub> recovered and flared or utilized(Gg/yr).	
CH <sub>4</sub> generation rate constant (k): (9)	
Time lag considered (yr): (b)	
Composition of landfilled waste (%):	
Paper and paperboard	
Food and garden waste	
Plastics	
Glass	
Textiles	
Other (specify)	
other - inert	
other - organic	

(a) Specify whether total or urban population is used and the rationale for doing so.
(b) See page 6.9 of the Revised 1996 IPCC Guidelines for

National Greenhouse Gas Inventories, Volume 3 (Reference

<sup>(1)</sup> Before recovery.
(2) CO<sub>2</sub> emissions from biogenic wastes are not included in the totals.
(3) CO<sub>2</sub> emissions from non-biogenic wastes are included in the totals.

<sup>(</sup>c) For Parties using Tier 2 methods.

A FOR WASTE	
ND DATA FOR	
FABLE 6.B SECTORAL BACKGROUND DATA F	
SECTORAL	handling.
<b>FABLE 6.B</b>	Wastewater

(Sheet 1 of 1)	ACTIV	I≾⊦	[A <sup>(t)</sup>	IMPLIED	IMPLIED EMISSION FACTOR	FACTOR		EMISSIONS		Treated wastewater (%):	11/245	111
E E	Total organic product		CH <sub>4</sub> recovered	CH <sup>†</sup>	(2)	O <sub>2</sub> N	CH <sup>†</sup>	(2)	N <sub>2</sub> O	Waste-water streams:	Wastewater	
AND SINK CATEGORIES	Wastewater	Sludge	and/or flared	Wastewater	Sludge		Wastewater	Sludge			output	
	(kg DC <sup>(1)</sup> /yr)		(Gg)	(kg/kg DC)	(kg/kg DC)	(kg/kg DC)   (kg/kg DC)   (kg/kg DC)	(Gg)	(Gg)	(Gg)		$(m^3)$	
										Industrial wastewater		
Domestic and Commercial Wastewater										iron and steel		
										non-ferrous		
										fertilizers		
										food and beverage		
										paper and pulp		
-						10 C 1000 C 100						ı

(kgCOD/m³)

Year:

Additional Information

Total wastewater (m³).

					paper and pulp
GREENHOUSE GAS SOURCE	ACTIVITY DATA	ATA	IMPLIED EMISSION FACTOR	EMISSIONS	organic chemicals
AND SINK CATEGORIES	Protein consumption	N fraction	$O_2N$	$N_2O$	other
	(protein in kg/person/yr)	(kg N/kg protein)	(kg N2O-N/kg sewage N produced)	(Gg)	
N <sub>2</sub> O from human sewage					

BOD (Biochemical Oxygen Demand) for Domestic/Commercial wastewater/sludge. See pages 6.14, 6.18 of the Revised 1996 IPCC Guidelines for National (1) DC - degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial wastewater and Greenhouse Gas Inventories, Volume 3 (Reference Manual).

(2) Before recovery.

Documentation box:

Handling systems:	Industrial waste-water (%) boteont	Ind. sludge treated (%)	Domestic waste-water treated (%)	Domestic sludge treated (%)
aerobic				
anaerobic				
other (specify)				

DC (kg BOD/1000 person/yr)

<sup>(</sup>a) Specify whether total or urban population is used in the calculations and the rationale for doing so. Provide both figures.

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A) (Sheet 1 of 3)

						0	VERVIE	OVERVIEW TABLE									
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	 CH4		$N_2O$		HFCs		PFCs		${ m SF}_{ m e}$		NOx		03	W <sub>N</sub>	NMVOC	1
	Estimate Quality	 Estimate Qu	Quality Es	Estimate Q	Quality E	Estimate (	Quality E	Estimate Q	Quality Es	Estimate Q	Quality E	Estimate Qu	Quality Estimate	nate Quality	Estimate	Quality	Estimate
Total National Emissions and Removals																	]]
1 Energy		$\dagger$	-	-								ŀ					ł
A Fuel Combustion Activities												<u> </u> 					
Reference Approach									-						_		
Sectoral Approach																	
1. Energy Industries																	
2. Manufacturing Industries and Construction																	
3. Transport																	
4. Other Sectors																	
5. Other (please specify)																	
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 Sulphur Hexafluoride																	
											20000		Occopology Doctorogy		000 20000000000000000000000000000000000	ael bossossossossos	

Note: To fill in the table use the notation key as given on page Tables.37 of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 1.

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A) (Sheet 2 of 3)

																ŀ	ŀ	ĺ
						OVERV	OVERVIEW TABLE	(LE										
GREENHOUSE GAS SOURCE AND SINK	$co_2$		CH₄	$N_2O$		HFCs		PFCs	${ m SF}_6$	9	NOx	×	00		NMVOC		$\mathrm{SO}_2$	
CATEGORIES	ate	Quality Estimate	ate Quality	Estimate	Y	Estimate Qua	Quality Estin	Estimate Quality	Estimate	Quality	Estimate (	Quality Es	Estimate Qu	Quality Est	Estimate Qua	Quality Estir	Estimate Qu	Quality
2 Industrial Processes (continued)	(pan																	
F. Consumption of Halocarbons and Sulphur Hexafluoride																		
Potential (1)		H																
Actual (2)																		
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 (please specify)																		
5 Land-Use Change and Forestry													,					
A Changes in Forest and Other Woody Biomass																		
Stocks																		
B Forest and Grassland Conversion																		

<sup>(1)</sup> Potential emissions based on Tier 1 Approach.

<sup>(2)</sup> Actual emissions based on Tier 2 Approach.

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)

(Sheet 3 of 3)

(6 16 6 132116)														
				OVERV	OVERVIEW TABLE									
GREENHOUSE GAS SOURCE AND SINK	CO <sub>2</sub>	CH4	$N_2O$	HFCs	PFCs	SF <sub>6</sub>	×ON	00	NMVOC	SO <sub>2</sub>				
CATEGORIES	Estimate Quality	Estimate Quality Estimate Quality		5 Land-Use Change and	_		-							
Forestry (continued)	-		<b>.</b>											
C. Abandonment of		•												
Managed Lands							••••							
D. CO <sub>2</sub> Emissions and														
Removals from Soil														
E. Other (please specify)														
6 Waste														
A. Solid Waste Disposal														
on Land						<b>.</b>								
B. Wastewater Handling						-								
C. Waste Incineration														
D. Other (please specify)														
7 Other (please specify)														
Memo Items:						-								
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO <sub>2</sub> Emissions from														
Biomass			1											

TABLE 8(a) RECALCULATION Recalculated year: (Sheet 1 of 2)

L			9			13				
			202			C114			N20	
GRE	GREENHOUSE GAS SOURCE AND SINK CATEGORIES		latest	difference <sup>(1)</sup>	previous	latest	difference <sup>(1)</sup>	previous	latest	difference <sup>(1)</sup>
		noissimons	submission		noissimans	noissimans		submission	submission	
		വളവ	CO <sub>2</sub> eq.)	(%)	(Ug CO <sub>2</sub> eq.)	ر.pa کر	(%)	(Gg CO <sub>2</sub> eq.)	) <sub>2</sub> eq.)	(%)
1. Energy	ergy									
I.A.	Fuel Combustion Activities									
1.A.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									
I.B.I.	Solid fuel									
1.B.2.	Oil and Natural Gas									
2. Inc	2. Industrial Processes									
2.A.	Mineral Products									
2.B.	Chemical Industry									
2.C.	Metal Production									
2.D.	Other Production									
2.G.	Other						,			
3. Sol	3. Solvent and Other Product Use									
4. Ag	4. Agriculture									
4.A.	Enteric Fermentation							200		
4.B.	Manure Management									
4.C.	Rice Cultivation									
4.D.	Agricultural Soils									
4.E.	Prescribed Burning of Savannas									
4.F.	Field Burning of Agricultural Residues									
4.G.	Other									
5. Lai	5. Land-Use Change and Forestry (net)									
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 <sub>2</sub> Emissions and Removals from Soil									
5.E.	Other									
<sup>(1)</sup> Estin	(1) Estimate the change due to recalculation with respect to the previous submission (previous submission = 100%). All cases of recalculation of the estimate of the source/sink category	vious submission	n (previous s	ubmission = 10	00%). All cas	es of recalcula	ation of the est	imate of the s	ource/sink cat	egory,

should be addressed and explained in Table 8(b).

TABLE 8(a) RECALCULATION

Recalculated year: (Sheet 2 of 2)

		CO <sub>2</sub>			CH4			$N_2O$	
GREENHOUSE GAS SOURCE AND SINK	previous		difference <sup>(1)</sup>		latest	difference <sup>(1)</sup>	previous	latest	difference <sup>(1)</sup>
CALEGORIES	submission	submission		submission	submission		submission	submission	
	OgO)	Gg CO <sub>2</sub> eq.)	(%)	(Gg CO <sub>2</sub> eq.)	<sub>2</sub> eq.)	(%)	(Gg CO <sub>2</sub> eq.	O <sub>2</sub> eq.)	(%)
6. Waste									
6.A. Solid Waste Disposal on Land									
6.B. Wastewater Handling									
6.C. Waste Incineration									
6.D. Other									
7. Other									
TOTALS									
Memo Items									
International Bunkers									
Multilateral Operations									
CO <sub>2</sub> Emissions from Biomass									
de ameionismo loude A		Jan			2000			i o	
Actual chilosions of		HECS			rrcs			Sr <sub>6</sub>	
	previous	latest	difference <sup>(1)</sup>		latest	difference <sup>(1)</sup>	previous	latest	difference <sup>(1)</sup>
1	submission	submission		submission	submission		submission	submission	
	OgO)	Gg CO <sub>2</sub> eq.)	(%)	(Gg CO <sub>2</sub> eq.)	,2 eq.)	(%)	(Gg CO <sub>2</sub> eq.)	O <sub>2</sub> eq.)	(%)
2.C. Aluminium production									
2.E. Production of HFC/PFC and SF <sub>6</sub>									
2.F. Consumption of HFC/PFC and SF <sub>6</sub>									
Total actual emissions									
			Frevious submission	DMISSION	Latest submission	Dmission	change		
				(Gg CO <sub>2</sub> eq.)	,2 eq.)		(%)		
OVERALL CO, EQUIVALENT EMISSIONS									

(1) Estimate the change due to recalculation with respect to the previous submission (previous submission = 100%). All cases of recalculation of the estimate of the source/sink category, should be addressed and explained in Table 8(b).

TABLE 8(b) RECALCULATION Explanatory information (Sheet 1 of 1)

	sector and source/sink GHG RECALCULATION DUE TO	ere changes in estimates Addition/removal/ replacement	Methods (2) Emission factors (2) Activity data (2)						
(Sirect 1 of 1)	Specify the sector and source/sink	category <sup>(1)</sup> where changes in estimates	have occurred:						

<sup>(1)</sup> Enter the identification code of the source/sink category (e.g. 1B1) in the first column and the name of the category (e.g. fugitive emissions from solid fuels) in the second column of the table (see 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 9(a). Include relevant changes in the assumptions and coefficients under the "Methods" column.

Documentation box: Use the documentation box to report the justifications of the changes as improvements in the accuracy, completeness and consistency of the inventory.

TABLE 9 COMPLETENESS (Sheet 1 of 2)

CH <sub>4</sub> N <sub>2</sub> O HFCs		Explanation
N <sub>2</sub> O HFCs		
HFCs		
PFCs SF <sub>6</sub>		
		Sources and sinks reported elsewhere (IE) <sup>(3)</sup>
GHG Source/sink Allo category	Allocation as per IPCC Guidelines	Allocation used by the Explanation Party

<sup>(1)</sup> Please, 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 indicator "NE" is entered in the sectoral tables.

<sup>(2)</sup> Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: waste, source: wastewater handling).

<sup>(3)</sup> Please 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 indicator "IE" is used in the sectoral tables.

TABLE 9 COMPLETENESS (Sheet 2 of 2)

į

	11	<b>,</b>	,				_	
Additional GHG emissions reported <sup>(1)</sup>	Explanation (2)		c					
Addi	ssi O							
	Source Emissions Estimated GWP Emi			,				
	СНС							

(1) Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Please include such gases in this table if they are considered in the submitted inventory.

(2) Please provide additional information on the estimation methods used and reference to the data source of GWP value.

#### TABLE 10 EMISSIONS TRENDS (CO<sub>2</sub>)

(Sheet 1 of 5)

GHG Source and Sink Categories	Emissions (Gg)											
CO2 equivalent emissions (Gg)	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998		
1. Energy	<u> </u>	<u> </u>	<del>                                     </del>	<del>                                     </del>	<del>†</del>		<del>                                     </del>	<u> </u>	<del></del>	-		
A. Fuel Combustion (Sectoral Approach)	<u> </u>			<del></del>		<b></b>				<del>                                     </del>		
Energy Industries			† · · · · ·	<u> </u>			<u> </u>	<u> </u>	<del> </del>			
Manufacturing Industries and Construction				<b>†</b>			<b>T</b>			<u> </u>		
3. Transport				<b>†</b>	1		†		<del></del>			
Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels			<b>†</b>	†	1					$\vdash$		
1. Solid Fuels							<del>                                     </del>					
2. Oil and Natural Gas		<u> </u>										
2. Industrial Processes			•									
A. Mineral Products			·									
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF <sub>6</sub>									18.5			
F. Consumption of Halocarbons and SF <sub>6</sub>		3.0								The Park of		
G. Other												
3. Solvent and Other Product Use								<u> </u>				
4. Agriculture		<u> </u>	<u> </u>		1	·						
A. Enteric Fermentation										-		
B. Manure Management	·			t —	1	<u> </u>	<del>                                     </del>					
C. Rice Cultivation												
D. Agricultural Soils		İ			İ							
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues	}											
G. Other					L		·					
5. Land-Use Change and Forestry (2)												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands				Ì								
D. CO <sub>2</sub> Emissions and Removals from Soil	1											
E. Other (please specify)												
6. Waste												
A. Solid Waste Disposal on Land		Ì										
B. Waste-water Handling												
C. Waste Incineration												
D. Other					I							
7. Other (please specify)												
Total Emissions/Removals <sup>(3)</sup>												
Total (without LUCF) <sup>(3)</sup>						<u> </u>						
		<del> </del>	<del>                                     </del>	<u> </u>	<u> </u>	-						
Memo Items:										72-13-53-36		
International Bunkers									ELECTRICAL CON-			
Aviation			<b></b>	l	<del>                                     </del>					$\vdash$		
Marine	<del> </del>			<b>——</b>	†					i		
Multilateral Operations			<b> </b>		<b>—</b>							
CO <sub>2</sub> Emissions from Biomass	<u>†                                      </u>			•								

<sup>(1)</sup> Specify the base year adopted by the Party under the Convention.

<sup>(2)</sup> Take the net emissions as reported in Table 1A. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

<sup>(3)</sup> The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO<sub>2</sub> emissions and removals from Land-Use Change and Forestry.

#### TABLE 10 EMISSIONS TRENDS (CH<sub>4</sub>)

(Sheet 2 of 5)

GHG Source and Sink Categories				En	nissions (	Gg)		70.00		
OHO Source and Shire Categories	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total Emissions									1	
1. Energy							1			
A. Fuel Combustion (Sectoral Approach)		Ì					1			
Energy Industries				İ						
Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other					<u> </u>					
B. Fugitive Emissions from Fuels					1				ļ	
1. Solid Fuels										
Oil and Natural Gas						,				
2. Industrial Processes										
A. Mineral Products			1							
B. Chemical Industry	† · · · · · · · · · · · · · · · · · · ·			<u> </u>	<del>                                     </del>		† — —			
C. Metal Production					<u> </u>					
D. Other Production			1.			· · · · · · · · · · · · · · · · · · ·			<u> </u>	
E. Production of Halocarbons and SF <sub>6</sub>		25.00.38			3 3 3 3 S		3889, 1		Season Service	
F. Consumption of Halocarbons and SF <sub>6</sub>	1	Secretary	54.52							
G. Other				10 mm 11 11 mm	3-11-6994	<u> 1868 - 1868</u>			25% 55%	
3. Solvent and Other Product Use			ļ			<u> </u>	_	· · · · · · · · · · · · · · · · · · ·		
4. Agriculture				<del>                                     </del>		<b></b>				
A. Enteric Fermentation	-									<u> </u>
B. Manure Management	-	<del> </del>				· · · ·				
C. Rice Cultivation	-	<u> </u>		<del> </del>						
D. Agricultural Soils	<u> </u>									
E. Prescribed Burning of Savannas		<del></del>	<del></del>	-	<del> </del>					<del></del>
F. Field Burning of Agricultural Residues									<b></b>	<del> </del>
G. Other			<del>                                     </del>							<del> </del>
5. Land-Use Change and Forestry			1			<u> </u>				
A. Changes in Forest and Other Woody Biomass Stocks										<b>——</b>
B. Forest and Grassland Conversion	3	<b></b>	<del>                                     </del>	<u> </u>						<b>—</b> —
C. Abandonment of Managed Lands				ļ			-			ļ
D. CO <sub>2</sub> Emissions and Removals from Soil	<del></del>				_					
E. Other (please specify)				ļ						
				<u> </u>						
6. Waste										
A. Solid Waste Disposal on Land B. Waste-water Handling			<b> </b>							
C. Waste Incineration					ļ					
D. Other				<b> </b>					·	
			ļ							
7. Other (please specify)										
Memo Items:						a ja nieges		7 VALUE 2 S	200 27 10 1	
International Bunkers	-					Jerry 21585.	113 to 3 (0.4)		143.85	
Aviation			<del>                                     </del>	<u> </u>	-		<del>                                     </del>			<del></del>
Marine			-		<del></del>		<b>—</b>			<del>                                     </del>
Multilateral Operations			<u> </u>	ļ	-	<u> </u>				<b></b>
,	ļ		-	<u> </u>				-	<u> </u>	<del>                                     </del>
CO <sub>2</sub> Emissions from Biomass			<b> </b> .	1			l			ł

<sup>(1)</sup> Fill in the base year adopted by the Party under the Convention, if different from 1990

#### TABLE 10 EMISSIONS TRENDS ( $N_2O$ )

Year:

(Sheet 3 of 5)

GHG Source and Sink Categories	Emissions (Gg)									
	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total Emissions						Î				
I. Energy				Î	Î					
A. Fuel Combustion (Sectoral Approach)			İ							
Energy Industries			ĺ							
Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas				l						
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF <sub>6</sub>										
F. Consumption of Halocarbons and SF <sub>6</sub>							1.5			
G. Other									3.1.1	
3. Solvent and Other Product Use	· ·									
l. Agriculture										
A. Enteric Fermentation									1	
B. Manure Management					<u> </u>				_	<u> </u>
C. Rice Cultivation			<u> </u>				<del>                                     </del>			<u> </u>
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 <sub>2</sub> Emissions and Removals from Soil										
E. Other (please specify)										
6. Waste										
A. Solid Waste Disposal on Land	i									
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other (please specify)										
Memo Items:										
International Bunkers		*								
Aviation										
Marine										
Multilateral Operations							-			
CO <sub>2</sub> Emissions from Biomass	1							1		

 $<sup>^{(1)}</sup>$  Fill in the base year adopted by the Party under the Convention, if different from 1990

TABLE 10 EMISSION TRENDS ( HFC, PFC and  $SF_6$ )

(Sheet 4 of 5)

GHG Source and Sink	Emissions (Gg)													
Categories	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998				
Emissions of HFCs(2)														
HFC-23														
HFC-32				<u> </u>				1						
HFC-41														
HFC-43-10mee								† · · · · ·						
HFC-125				<u> </u>										
HFC-134														
HFC-134a														
HFC-152a														
HFC-143														
HFC-143a														
HFC-227ea														
HFC-236fa														
HFC-245ca														
Emissions of PFCs(2)														
CF <sub>4</sub>														
$C_2F_6$		_												
C <sub>2</sub> F <sub>6</sub> C <sub>3</sub> F <sub>8</sub>														
$C_4F_{10}$														
c-C <sub>4</sub> F <sub>8</sub>														
C <sub>5</sub> F <sub>12</sub>										Î				
$C_6F_{14}$														
Emissions of SF <sub>6</sub> <sup>(2)</sup>														

<sup>(1)</sup> Fill in the base year adopted by the Party under the Convention, if different from 1990.

<sup>(2)</sup> Enter information on the actual emissions. Where estimates are only available for the potential emissions, specify this in a footnote.

#### TABLE 10 EMISSION TRENDS (SUMMARY)

(Sheet 5 of 5)

(										
GHG emissions	Base year <sup>(1</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
·		CO2 equ	uivalent e	emissions	(Gg)		•			
Net CO <sub>2</sub> emissions/removals						1				
CO <sub>2</sub> emissions (without LUCF) (2)										
CH <sub>4</sub>										
$N_2O$										
HFC										
PFC					,					
SF <sub>6</sub>										
Total (with net CO <sub>2</sub> emissions/remov	als)									
Total (without CO <sub>2</sub> from LUCF) (2)										

GHG emission sources/sinks	Base year <sup>(1</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
		Emission	ıs (Gg C	O <sub>2</sub> equiva	lent)					
1. Energy										
2. Industrial Processes										
3. Solvent and Other Product Use										
4. Agriculture										
5. Land-Use Change and Forestry (3)	)									
6. Waste										
7. Other										

<sup>(1)</sup> Fill in the base year adopted by the Party under the Convention, if different from 1990.

<sup>(2)</sup> The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO<sub>2</sub> emissions and removals from Land-Use Change and Forestry.

<sup>(3)</sup> Net emissions.

T.	ABLE 11 CHECK LIS	T of REP	ORTED IN	VENTOR)	Y INFOR	MATION <sup>(I)</sup>	
Pe	arty:				Year:		
П	Focal point for national GHG						
	inventories:						
Contact into:	Address:						
act	Telephone:	, , , , , , , , , , , , , , , , , , , ,	Fax:		E-mail:		
ont	Main institution preparing the						
$\Box$	inventory	<u>.</u>					
 	Date of submission:						
General info:	Base years:			PFCs, HFCs, S	SF.		
ral	Year(s) covered in the submission:			17 03, 117 03, 1	51 6		
ene	Gases covered:	<del>* :</del> .					
٥	Omissions in geographic coverage:						
П		energy	ind.processes	solvent use	LUCF	agriculture	waste
	IPCC Sectoral report tables						
;;	Background data tables	<del></del>					
Tables:							
Ta	IPCC Summary tables	IPCC Table 7	7 <u>A</u> 🗀		IPCC Table	$7B$ $\square$	
	CO 2 equivalent table						,,
	Uncertainty	IPCC Table 8.	<i>A</i>	Nat	ional informa	tion 🗌	
	Recalculation table			· <u> </u>			
	Completeness table						
2	Comparison of	Works	heet I-I	Percentage o	of difference	Explanation of	of differences
	CO <sub>2</sub> from fuel combustion						
	•	energy	ind.processes	solvent use	LUCF	agriculture	waste
	CO <sub>2</sub>			Solvem use		ug/icaliare	waste
	CH <sub>4</sub>						
.:	$N_2O$ .						
atio							
alculation:	HFC,PFC,SF <sub>6</sub>	· · · · · · · · · · · · · · · · · · ·		F		<del></del>	
Kecal	Explanations:	<u> </u>					
Ķ	CRF tables for sectors with changes Summary tables for all recalculated			· L.			
	summary tables for all recalculated vears						
	Full CRF for the recalculated base						
	year						
9		Н	FĊ	PF	C	SF	
, SF <sub>6</sub>	Disaggregation by species	Γ	7		7	J.	U
PFC	Production of Halocarbons/SF 6	. [			<del></del>	Г	<u> </u>
ائا	i i danieri de l'impedi donision g	Actual	Potential	Actual	Potential	Antual	 Potential
HF	Consumption of Halocarbons/SF 6	Асши	1 Otential	Actual	1 Oteritiai	Actual	rotentiai
_					<u> </u>	<u> </u>	ليبا
_	Potential/Actual emission ratio						
	Potential/Actual emission ratio						
	Potential/Actual emission ratio  Reference to the National Inventory  Report and/or national inventory						

CRF - Common Reporting Format. LUCF - Land-Use Change and Forestry.

<sup>(1)</sup> For each omission, give an explanation for the reasons on a separate page attached to the check-list.