

Technical report No 41

# Annual European Community Greenhouse Gas Inventory 1990-1998

Submission to the secretariat of the UNFCCC

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# 1. Introduction

The European Community, as the only regional economic integration organisation which is a Party to the UNFCCC, has to report annually greenhouse gas inventories for the area covered by its Member States. The European Community (EC, or EU15) greenhouse gas inventory has to be submitted to the UNFCCC by 15 April each year. This report presents greenhouse gas inventories for the European Community as a whole (EU15) for 1990-1998 and for its individual Member States for 1990 and 1994-1998. Table 1 gives an overview of the main aggregates of EC greenhouse gas emissions for 1990-1998.

**Table 1: Overview of greenhouse gas emissions in the EC from 1990 to 1998**

GREENHOUSE GAS EMISSIONS	1990	199	1992	1993	1994	1995	1996	1997	1998
	CO <sub>2</sub> equivalent (Gg)								
Net CO <sub>2</sub> emissions/removals	310579	312455	3056590	2987329	3009543	3056460	314357	308147	312388
CO <sub>2</sub> emissions (without LUCF)	332048	3348636	3268949	3205347	321738	3260298	3335895	3278534	3327520
CH <sub>4</sub>	439844	42816	41367	397478	38689	384725	37421	370375	367466
N <sub>2</sub> O	398652	39177	376572	36331	375459	376838	39168	389362	35956
Total (with net CO <sub>2</sub> emissions/removals)	3944290	3944489	384684	374812	377189	381802	3909467	384120	3850906
Total (without LUCF)	414950	415861	405051	3957560	397051	401161	4092358	4030272	4045632

The EC greenhouse gas inventory has been compiled on the basis of data delivered by the Member States under Council Decision 99/296/EC for a *Monitoring Mechanism of Community CO<sub>2</sub> and other Greenhouse Gas Emissions*. Member States data have been considered as available to the Commission by 1 April 2000. Since the data are revised and updated for all years, they replace EC data previously published, in particular, in the 1999 submission to the UNFCCC Secretariat *Annual European Community Greenhouse Gas Inventory 1990-1996* (Commission, with EEA, 1999) and in the report *Overview of National Programmes to Reduce Greenhouse Gas Emissions* (EEA, 1999).

The introduction of this report presents the legal basis of the compilation of the EC greenhouse gas inventory in addition to information on data gaps and reporting methods and formats. Annex A includes currently available estimates of EC greenhouse gas data for 1990-1998. Annex B presents tables on national greenhouse gas inventories for each Member State for 1990 and 1994-1998 (published in a separate document to this report).

## 1.1. The EC Monitoring Mechanism

After having signed the United Nations Framework Convention on Climate Change (UNFCCC), the European Community adopted in June 1993 Council Decision 93/389/EEC<sup>1</sup> for a *Monitoring Mechanism of Community CO<sub>2</sub> and other Greenhouse Gas Emissions*. The purpose of this Decision was to establish an instrument to monitor and assess regularly progress towards stabilisation of CO<sub>2</sub> emissions by 2000 at 1990 levels in the European Community.

In the Kyoto Protocol, adopted in December 1997, the European Community and its Member States agreed on an 8% reduction of their anthropogenic greenhouse gas emissions by 2008-2012 relative to the 1990 emission level. In the EC burden sharing arrangement (June 1998), EU Member States agreed on different emission targets for each Member State, according to different economic circumstances with the ultimate goal to assure fulfilment of the EC commitments in the Kyoto Protocol.

The Monitoring Mechanism was amended by Council Decision 99/296/EC of 26 April 1999<sup>2</sup>. The major modifications of the Decision, in accordance with the requirements of the Kyoto Protocol, are: (1) consideration of the quantified emission limitation and reduction commitments by 2008-2012 agreed upon in the Protocol; (2) extension to all six greenhouse gases listed in Annex A to the Kyoto Protocol (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>); (3) extended reporting and progress assessment requirements for Member States and the European Commission.

Under the Monitoring Mechanism, Member States shall report to the Commission each year, not later than 31 December:

- their anthropogenic CO<sub>2</sub> emissions and removal by sinks for the previous calendar year;
- final national inventory data on emissions by sources and removals by sinks for the other greenhouse gases for the previous year but one and provisional emission data (inventories) for the previous year.

Other greenhouse gases include the five other Kyoto Protocol greenhouse gases: methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>). In addition, annual information on emissions of the following gases shall be provided: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), non methane volatile organic compounds (NMVOCs) and sulphur oxides, in line with the reporting requirements under the UNFCCC. The methodologies applied should be in accordance with those accepted by the IPCC and agreed upon by the UNFCCC Conference of the Parties.

Based on the data provided by the Member States, the Commission has to establish the Community greenhouse gas inventory and circulate this to all Member States by 1 March each year. This procedure aims at achieving best available Member States' data on greenhouse gas emissions for the compilation of the annual EC greenhouse gas inventory.

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<sup>1</sup> OJ L 167, 9.7.1993, p. 31

<sup>2</sup> OJ L 117, 5.5.1999, p. 35

The European Environment Agency (EEA) assists the Commission in the compilation of the annual EC inventory through the work of its European Topic Centre on Air Emissions (ETC/AE). These activities result in:

- Draft EC inventory by 1 March to be circulated to the Member States
- Final EC inventory by 15 April to be submitted by the Commission to the UNFCCC Secretariat (this report)

## 1.2. Data basis

The compilation of Member States' data into a complete EC inventory covering all 15 Member States depends on the availability of the relevant national inventories. Table 2 illustrates that by 1 April 2000, all Member States had reported data for 1998. Therefore, the EC is able to deliver a complete inventory for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions for 1998.

**Table 2: Latest data and reporting formats available from Member States by 1 April 2000**

EC Member State	Latest data available	Reporting format
Austria	1998	IPCC 96 Table 7A
Belgium	1998	CRF Table 1.A
Denmark	1998	IPCC 96 Table 7A
Finland	1998	CRF Table 1.A
France	1998	IPCC 96 Table 7A
Germany	1998	CRF Table 1.A
Greece	1998	IPCC 96 Table 7A
Ireland	1998	IPCC 96 Table 7A
Italy	1998	CRF Table 1.A
Luxembourg	1998	IPCC 96 Table 7A
Netherlands	1998	IPCC 96 Table 7A
Portugal	1998	IPCC 96 Table 7A
Spain	1998	CRF Table 1.A
Sweden	1998	CRF Table 1.A
United Kingdom	1998	IPCC 96 Table 7A

**Data gaps on CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O:** A data gap filling procedure was used for Luxembourg for the years 1991-1993, in order to obtain complete 1991-1998 inventories for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions:

1. Emissions reported for the most recent previous year were taken as first estimates.
2. For CO<sub>2</sub> emissions from fossil fuel combustion, however, the latest estimates reported by the Member States in combination with trend information for more recent years from latest calculations of CO<sub>2</sub> emissions from fossil fuels by Eurostat have been used (Eurostat, 2000). The Eurostat estimates are compiled using the IPCC Reference Approach and consistent energy balance data, which are regularly collected by Eurostat from the EU Member States. The trend information of Eurostat CO<sub>2</sub> emission estimates from fossil fuels has been used to extrapolate CO<sub>2</sub> emission data for the CRF category 1 'Energy'.

**Data gaps on industrial gases:** Uncertainties in industrial greenhouse gas emission estimates (HFCs, PFCs, SF<sub>6</sub>) remain high for two reasons. (1) data gaps on industrial greenhouse gases as reported by Member States by 1 April 2000 still are considerable (Table 3); (2) several Member States did not report chemical specification of HFCs and PFCs; in this case, average global warming potentials based on information from various EU Member States had to be used, in order to calculate CO<sub>2</sub> equivalent emissions of industrial gases. Data gaps on industrial

greenhouse gases have not been filled; therefore, data as submitted by Member States is not included in EU totals in Annex A, but presented separately in Table 3.

The uncertainty and also the important remaining data gaps due to incomplete reporting by Member States, in industrial greenhouse gas emissions is illustrated by comparing data as reported by the Member States with the results of two recent studies: *Economic Evaluation of Emissions Reductions of HFCs, PFCs and SF<sub>6</sub> in Europe* (Ecofys, 2000) and *Opportunities to minimise emissions of HFCs from the European Union* (March Consulting, 1998).

For the year 1995, Ecofys and March Consulting estimate total HFC emissions for the EC to be 35 and 41 million tons of CO<sub>2</sub> equivalents respectively. Data as reported by most, but not all, Member States amounted to 16 million tons for the EU as a whole in that year. Therefore, total HFC emissions as reported by Member States were 54 % and 61 % below total EC emission estimates as prepared independently by Ecofys and March Consulting respectively.



**Table 3: Actual HFC, PFC and SF<sub>6</sub> emissions as reported by Member States  
by 1 April 2000 in CO<sub>2</sub> equivalents (Gg)**

EC Member State		1990	1991	1992	1993	1994	1995	1996	1997	1998
Austria	HFC	-	-	-	-	-	543	-	-	779
	PFC	-	-	-	-	-	16	-	-	21
	SF <sub>6</sub>	-	-	-	-	-	1142	-	-	968
Belgium	HFC	-	-	-	-	-	332	418	527	527
	PFC	63	-	-	-	-	-	-	-	-
	SF <sub>6</sub>	335	-	-	-	-	206	206	239	206
Denmark	HFC	0	0	4	96	134	244	389	430	455
	PFC	0	0	0	0	0	1	3	8	17
	SF <sub>6</sub>	0	0	115	133	167	140	85	170	70
Finland	HFC	-	-	-	-	-	-	-	-	-
	PFC	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub>	-	-	-	-	-	-	-	-	-
France	HFC	2252	1509	1067	808	857	1400	2441	3059	3393
	PFC	3193	2475	2150	1649	1388	1331	1386	1432	1610
	SF <sub>6</sub>	2199	2223	2247	2271	2294	2318	2366	2414	2342
Germany	HFC	2340	2340	2470	3750	3980	3130	2580	3450	3450
	PFC	2696	2352	2138	2012	1676	1764	1830	1554	1554
	SF <sub>6</sub>	3896	4350	4876	5401	5784	6243	5822	5688	5688
Greece	HFC	100	100	-	100	200	300	300	300	300
	PFC	700	700	700	-	-	-	-	-	-
	SF <sub>6</sub>	-	-	-	-	-	-	-	-	-
Ireland	HFC	-	-	-	-	-	-	-	-	-
	PFC	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub>	-	-	-	-	-	-	-	-	-
Italy	HFC	351	355	358	354	806	1247	1215	1617	1617
	PFC	233	227	201	199	208	209	122	124	125
	SF <sub>6</sub>	198	229	249	272	292	366	368	397	398
Luxembourg	HFC	-	-	-	-	-	-	-	-	-
	PFC	-	-	-	-	-	-	-	-	-
	SF <sub>6</sub>	-	-	-	-	-	-	-	-	-
Netherlands	HFC	460	436	426	474	736	798	1148	1365	1343
	PFC	2541	2499	2261	2268	2289	2156	2205	2247	2247
	SF <sub>6</sub>	-	-	-	-	-	-	-	-	-
Portugal	HFC	-	-	-	-	-	0	-	-	-
	PFC	-	-	-	-	-	157	-	-	-
	SF <sub>6</sub>	-	-	-	-	-	1	-	-	-
Spain	HFC	2894	2574	2869	2259	3886	5604	6577	8170	8452
	PFC	828	787	782	794	785	791	761	781	740
	SF <sub>6</sub>	104	107	110	112	121	144	153	169	183
Sweden	HFC	-	-	-	-	150	150	-	-	-
	PFC	-	-	-	-	420	420	-	313	303
	SF <sub>6</sub>	-	-	-	-	1243	1195	-	-	-
United Kingdom	HFC	973	1025	1074	1162	1451	1956	2472	3067	3656
	PFC	2317	1815	960	808	980	1098	910	666	658
	SF <sub>6</sub>	724	776	833	889	1061	1134	1270	1263	1289
<b>Total</b>	<b>HFC</b>	<b>9369</b>	<b>8340</b>	<b>8268</b>	<b>9002</b>	<b>12200</b>	<b>15703</b>	<b>17540</b>	<b>21984</b>	<b>23971</b>
	<b>PFC</b>	<b>12571</b>	<b>10854</b>	<b>9192</b>	<b>7729</b>	<b>7746</b>	<b>7943</b>	<b>7217</b>	<b>7125</b>	<b>7275</b>
	<b>SF<sub>6</sub></b>	<b>7456</b>	<b>7685</b>	<b>8428</b>	<b>9078</b>	<b>10961</b>	<b>12889</b>	<b>10272</b>	<b>10340</b>	<b>11144</b>

Note: Average global warming potentials based on information from various EU Member States were used in case of missing chemical specification by Member States (HFC: 1000, PFC: 7000)

For PFCs and SF<sub>6</sub>, Ecofys estimates emissions of 15 and 18 million tons of CO<sub>2</sub> equivalents respectively for 1995. Data as reported by Member States adds up to 8 and 13 million tons for PFCs and SF<sub>6</sub> respectively: This means that EC emission estimates on PFCs as submitted by Member States were 47 % and estimates on SF<sub>6</sub> emissions were 28 % below the independent estimates.

**Data gaps on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion:** For EU15, data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion in Tables *Summary 1.A* are omitted, since not all Member States reported these data. Adding up incomplete data would not provide relevant EC total emission information in this case. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) are provided for information purposes in the footnotes to Tables *Summary 1.A* in Annex A. However, for those Member States that reported CO<sub>2</sub> emissions from fossil fuels, estimated with the Reference Approach, these estimates are provided in the separate Annex B to this report.

### 1.3. Reporting method and format

The EC greenhouse gas inventory was compiled according to the recommendations for inventories set out in the UNFCCC Guidelines for the Preparation of National Communications by Parties included in Annex 1 to the Convention, Part 1: UNFCCC Reporting Guidelines on Annual Inventories. These guidelines are part of the comprehensive document UNFCCC Guidelines on Reporting and Review (document FCCC/CP/1999/7), adopted as UNFCCC COP Decision 3/CP.5. In accordance with this Decision, the IPCC 1996 Guidelines for National Greenhouse Gas Inventories have also been applied.

The tables in Annex A and B of this report present greenhouse gas emission data for the Community (EU15) and for individual Member States in the new Common Reporting Format adopted at the fifth Conference of the Parties (FCCC/CP/1999/7). For each year, two tables are presented:

1. **Summary 1.A: Summary Report for National Greenhouse Gas Inventories.** This Table summarises sectoral data for all six greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>), NO<sub>x</sub>, CO, NMVOCs and SO<sub>2</sub>. It corresponds to *IPCC Table 7A* presented in earlier EC inventory reports, but contains the following amendments (with regard to Table 7A): (1) integration of industrial greenhouse gases (HFCs, PFCs, SF<sub>6</sub>); (2) inclusion of alternative calculations of CO<sub>2</sub> emissions from energy use (reference approach); and (3) additional reporting of SO<sub>2</sub> emissions.
2. **Summary 2: CO<sub>2</sub> Equivalent Emissions Summary Report.** This Table corresponds to *IPCC Table 7B* (which was not included in earlier EC inventory reports) and presents sectoral data of each of the six greenhouse gases and of total emissions in CO<sub>2</sub> equivalents.

Table 2 summarises the reporting formats of the Member States' submissions. Where Member States continued to use IPCC Tables 7A, the data was transferred into the new format.

#### 1.4. Changes with regard to last year's submission

**Reporting year:** Since all Member States submitted data for 1998, the EC has been able, for the first time, to submit a complete EC greenhouse gas inventory for the previous but one year for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions and sinks (where relevant).

**Reporting format:** The EC submission presents emission data in Summary 1.A and Summary 2 Tables of the new Common Reporting Format (as described above), although many Member States reported in IPCC 96 Tables 7A.

**Data gaps and reference data:** In case of missing data on CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions, a specific data gap procedure has been applied, as was described on page 8 of this report. In addition, data are provided for industrial F-gases and for CO<sub>2</sub> from fossil fuels according to the Reference Approach for CO<sub>2</sub> from fossil fuel combustion. For industrial F-gases, the results of two recent studies have been presented and for the Reference Approach, Eurostat CO<sub>2</sub> emission data from fossil fuel combustion is referred to in Annex A, while Member States' own Reference Approach CO<sub>2</sub> estimates are presented in Annex B.

**Time series:** Complete time series of EC greenhouse gas emission data from 1990 to 1998 are reported in Annex A. In addition, main aggregates are presented in Table 1 above following *Table 10 Emission Trends (Summary)* of the Common Reporting Format.

**Annex A:  
UNFCCC summary reports 1.A and 2 of  
the common reporting format for the  
European Community (EU15)**

# EU15

EU15 1990

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
						P	A	P	A	P	A				
		(Gg)					CO <sub>2</sub> equivalent (Gg)						(Gg)		
<b>Total National Emissions and Removals</b>		<b>3320481</b>	<b>-214686</b>	<b>20945</b>	<b>1286</b>	-	-	-	-	-	-	<b>13320</b>	<b>49785</b>	<b>16633</b>	<b>16075</b>
<b>1. Energy</b>		<b>3156789</b>		<b>4813</b>	<b>167</b>							<b>13022</b>	<b>44374</b>	<b>8722</b>	<b>15726</b>
A. Fuel Combustion	Reference Approach	-		-	-							-	-	-	-
	Sectoral Approach	3131345		789	167							12991	44193	7413	15254
1. Energy Industries		1148052		32	55							2894	452	50	10040
2. Manufacturing Industries and Construction		635832		58	35							1652	3477	128	2791
3. Transport		692346		205	40							6992	32104	6193	674
4. Other Sectors		632981		489	36							1320	8008	1017	1500
5. Other		21694		4	1							132	151	25	82
B. Fugitive Emissions from Fuels		25405		4024	1							31	180	1309	472
1. Solid Fuels		6500		2426	-							1	96	18	163
2. Oil and Natural Gas		18944		1598	1							31	85	1291	309
<b>2. Industrial Processes</b>		<b>150780</b>		<b>22</b>	<b>357</b>	-	-	-	-	-	-	<b>192</b>	<b>3510</b>	<b>1011</b>	<b>325</b>
A. Mineral Products		107214		0	-	-	-	-	-	-	-	43	28	211	40
B. Chemical Industry		12366		7	353	-	-	-	-	-	-	86	61	374	122
C. Metal Production		23666		7	0	-	-	-	-	-	-	24	3243	18	73
D. Other Production		1260		-	-	-	-	-	-	-	-	6	1	225	11
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		4454		4	-	-	-	-	-	-	-	24	158	162	35

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
					P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> e equivalent (Gg)						(Gg)			
<b>3. Solvent and Other Product Use</b>	<b>6809</b>		<b>2</b>	<b>10</b>							<b>0</b>	<b>2</b>	<b>4270</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>9074</b>	<b>713</b>							<b>37</b>	<b>519</b>	<b>936</b>	<b>1</b>
A. Enteric Fermentation	-		6733	-							-	-	-	-
B. Manure Management	-		2013	95							-	-	1	-
C. Rice Cultivation	-		109	1							0	-	0	-
D. Agricultural Soils	-	-	194	617							17	-	863	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		25	1							21	519	72	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-214686</b>	<b>170</b>	<b>19</b>							<b>20</b>	<b>630</b>	<b>1590</b>	<b>1</b>
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-260954	54	0							13	471	30	-
B. Forest and Grassland Conversion	11950		18	0							5	160	10	1
C. Abandonment of Managed Lands	-	-122	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	31631	-	-	-							-	-	-	-
E. Other	-	2808	98	18							2	-	1549	-
<b>6. Waste</b>	<b>5403</b>		<b>6865</b>	<b>16</b>							<b>49</b>	<b>749</b>	<b>106</b>	<b>22</b>
A. Solid Waste Disposal on Land	264		6415	0							3	54	43	1
B. Wastewater Handling	-		337	13							-	-	4	-
C. Waste Incineration	5040		40	3							45	695	45	21
D. Other	100		75	-							-	-	12	-
<b>7. Other</b>	<b>600</b>	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>	
					P	A	P	A	P	A					
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)				
<b>Memo Items:</b>															
<b>International Bunkers</b>	<b>166631</b>		<b>10</b>	<b>5</b>							<b>1470</b>	<b>295</b>	<b>180</b>	<b>943</b>	
Aviation	58818		4	1							221	179	64	14	
Marine	107813		6	4							1249	116	116	929	
<b>Multilateral Operations</b>	-		-	-							-	-	-	-	
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>137965</b>														

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3088476 Gg for 1990.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3105794</b>	<b>439844</b>	<b>398652</b>	-	-	-	<b>3944290</b>
<b>1. Energy</b>	<b>3156789</b>	<b>101067</b>	<b>51916</b>				<b>3309773</b>
A. Fuel Combustion (Sectoral Approach)	3131345	16565	51672				3199581
1. Energy Industries	1148052	667	17135				1165853
2. Manufacturing Industries and Construction	635832	1223	10950				648005
3. Transport	692346	4312	12326				708985
4. Other Sectors	632981	10262	11310				654552
5. Other	21694	83	295				22071
B. Fugitive Emissions from Fuels	25405	84504	241				110151
1. Solid Fuels	6500	50951	-				57452
2. Oil and Natural Gas	18944	33553	241				52739
<b>2. Industrial Processes</b>	<b>150780</b>	<b>467</b>	<b>110532</b>	-	-	-	<b>261779</b>
A. Mineral Products	107214	1	-	-	-	-	107214
B. Chemical Industry	12366	145	109580	-	-	-	122091
C. Metal Production	23666	157	22	-	-	-	23845
D. Other Production	1260	-	-	-	-	-	1260
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
G. Other	4454	84	-	-	-	-	4538
<b>3. Solvent and Other Product Use</b>	<b>6809</b>	<b>42</b>	<b>3209</b>				<b>10059</b>
<b>4. Agriculture</b>	-	<b>190561</b>	<b>220987</b>				<b>411548</b>
A. Enteric Fermentation	-	141393	-				141393
B. Manure Management	-	42279	29349				71627
C. Rice Cultivation	-	2298	295				2593
D. Agricultural Soils	-	4072	191122				195195
E. Prescribed Burning of Savannas	-	-	-				0
F. Field Burning of Agricultural Residues	-	518	188				706
G. Other	-	-	-				0
<b>5. Land-Use Change and Forestry</b>	<b>-214686</b>	<b>3569</b>	<b>5899</b>				<b>-205219</b>



Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>5403</b>	<b>144158</b>	<b>4965</b>				<b>154525</b>
A. Solid Waste Disposal on Land	264	134705	112				135080
B. Wastewater Handling	-	7081	4104				11185
C. Waste Incineration	5040	836	780				6656
D. Other	100	1581	-				1681
<b>7. Other</b>	<b>600</b>	<b>-</b>	<b>1178</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1778</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>166631</b>	<b>213</b>	<b>1520</b>				<b>168363</b>
A. Aviation	58818	84	323				59224
Marine	107813	132	1197				109142
<b>Multilateral Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>				<b>0</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>137965</b>						<b>137965</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	<b>CO<sub>2</sub> equivalent (Gg)</b>					
A. Changes in Forest and Other Woody Biomass Stocks	66322	327276	-260954	1132	130	-259692
B. Forest and Grassland Conversion	13862	1912	11950	383	38	12372
C. Abandonment of Managed Lands	-	122	-122	-	-	-122
D. CO <sub>2</sub> Emissions and Removals from Soil	36524	4893	31631	-	-	31631
E. Other	3908	1100	2808	2054	5730	10593
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	118103	332790	-214686	3569	5899	-205219

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4149509
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3944290

EU15 1991

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
						P	A	P	A	P	A				
		(Gg)					CO <sub>2</sub> equivalent (Gg)					(Gg)			
<b>Total National Emissions and Removals</b>		<b>3348636</b>	<b>-224081</b>	<b>20389</b>	<b>1264</b>	-	-	-	-	-	-	<b>13303</b>	<b>48652</b>	<b>16174</b>	<b>14605</b>
<b>1. Energy</b>		<b>3192205</b>		<b>4720</b>	<b>173</b>							<b>13004</b>	<b>43396</b>	<b>8461</b>	<b>14279</b>
A. Fuel Combustion	Reference Approach	1407421		-	-							-	-	-	-
	Sectoral Approach	3168491		783	172							12974	43225	7189	13978
1. Energy Industries		1133010		32	55							2822	445	52	9468
2. Manufacturing Industries and Construction		600808		52	33							1646	3356	128	2432
3. Transport		694004		193	40							7052	31524	5969	654
4. Other Sectors		671277		485	37							1348	7794	1028	1222
5. Other		68993		20	6							106	106	14	56
B. Fugitive Emissions from Fuels		23724		3897	1							31	171	1271	302
1. Solid Fuels		5800		2319	-							0	99	16	16
2. Oil and Natural Gas		17924		1618	1							30	72	1255	285
<b>2. Industrial Processes</b>		<b>142119</b>		<b>22</b>	<b>352</b>	-	-	-	-	-	-	<b>180</b>	<b>3009</b>	<b>1013</b>	<b>302</b>
A. Mineral Products		101796		0	-	-	-	-	-	-	-	44	29	240	41
B. Chemical Industry		11640		7	348	-	-	-	-	-	-	66	51	351	110
C. Metal Production		20483		11	0	-	-	-	-	-	-	21	2774	17	65
D. Other Production		1049		-	-	-	-	-	-	-	-	6	1	221	9
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		2897		4	-	-	-	-	-	-	-	14	128	123	31

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
					P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>3. Solvent and Other Product Use</b>	<b>6751</b>		<b>2</b>	<b>10</b>							<b>0</b>	<b>2</b>	<b>4147</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>8851</b>	<b>689</b>							<b>38</b>	<b>537</b>	<b>879</b>	<b>1</b>
A. Enteric Fermentation	-		6593	-							-	-	-	-
B. Manure Management	-		1933	91							-	-	1	-
C. Rice Cultivation	-		107	1							0	-	0	-
D. Agricultural Soils	<b>1425</b>	-	194	596							16	-	810	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		26	1							21	537	67	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-224081</b>	<b>190</b>	<b>19</b>							<b>25</b>	<b>800</b>	<b>1558</b>	<b>0</b>
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-269691	79	1							19	695	45	-
B. Forest and Grassland Conversion	11053		12	0							3	105	2	0
C. Abandonment of Managed Lands	-	-128	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	31902		-	-							-	-	-	-
E. Other	-	2783	98	19							2	-	1511	-
<b>6. Waste</b>	<b>5520</b>		<b>6604</b>	<b>17</b>							<b>57</b>	<b>908</b>	<b>117</b>	<b>22</b>
A. Solid Waste Disposal on Land	322		6175	0							3	58	45	1
B. Wastewater Handling	-		310	14							-	-	4	-
C. Waste Incineration	5098		47	3							53	850	51	21
D. Other	100		74	0							-	-	15	-
<b>7. Other</b>	<b>615</b>	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-

## Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	emissions	removals			P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Memo Items:</b>														
<b>International Bunkers</b>	<b>166127</b>		<b>10</b>	<b>5</b>							<b>1436</b>	<b>282</b>	<b>179</b>	<b>909</b>
Aviation	58808		5	1							216	172	61	15
Marine	107318		5	3							1220	110	117	895
<b>Multilateral Operations</b>	-		-	-							-	-	-	-
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>120808</b>													

### Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

In order to obtain a complete EC inventory for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions, for Luxembourg the following data gap filling procedure was used: Emissions reported for 1990 were taken as first estimates. However, for CO<sub>2</sub> emissions from fossil fuel combustion (CRF category 1 'Energy'), the 1990 estimates in combination with trend information for 1991 from latest calculations of CO<sub>2</sub> emissions from fossil fuels by Eurostat have been used (Eurostat, 2000).

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3114154 Gg for 1991.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3124554.93</b>	<b>428163.70</b>	<b>391770.50</b>	-	-	-	<b>3944489.14</b>
<b>1. Energy</b>	<b>3192205.42</b>	<b>99115.55</b>	<b>53548.55</b>				<b>3344869.52</b>
A. Fuel Combustion (Sectoral Approach)	3168491.08	16438.86	53288.15				3238218.10
1. Energy Industries	1133009.60	680.76	17096.07				1150786.44
2. Manufacturing Industries and Construction	600808.46	1101.65	10354.04				612264.15
3. Transport	694004.26	4044.46	12550.81				710599.53
4. Other Sectors	671276.57	10183.56	11512.86				692972.99
5. Other	68992.70	426.33	1774.37				71193.39
B. Fugitive Emissions from Fuels	23724.35	81836.90	260.40				105821.64
1. Solid Fuels	5800.39	48693.15	-				54493.54
2. Oil and Natural Gas	17923.96	33983.33	260.40				52167.68
<b>2. Industrial Processes</b>	<b>142119.41</b>	<b>458.09</b>	<b>109145.18</b>	-	-	-	<b>251722.68</b>
A. Mineral Products	101795.90	0.76	-	-	-	-	101796.66
B. Chemical Industry	11640.38	143.60	107978.18	-	-	-	119762.16
C. Metal Production	20482.72	227.63	20.00	-	-	-	20730.35
D. Other Production	1049.41	-	-	-	-	-	1049.41
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0.00
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0.00
G. Other	2897.00	86.10	-	-	-	-	2983.10
<b>3. Solvent and Other Product Use</b>	<b>6750.56</b>	<b>42.00</b>	<b>3217.80</b>				<b>10010.36</b>
<b>4. Agriculture</b>	-	<b>185876.05</b>	<b>213441.34</b>				<b>399317.38</b>
A. Enteric Fermentation	-	138446.29	-				138446.29
B. Manure Management	-	40586.71	28136.66				68723.38
C. Rice Cultivation	-	2240.60	305.09				2545.70
D. Agricultural Soils	1424.95	4066.21	184787.22				190278.39
E. Prescribed Burning of Savannas	-	-	-				0.00
F. Field Burning of Agricultural Residues	-	536.24	209.25				745.49
G. Other	-	-	-				0.00
<b>5. Land-Use Change and Forestry</b>	<b>-224080.81</b>	<b>3987.72</b>	<b>5971.18</b>				<b>-214121.91</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>5519.74</b>	<b>138685.98</b>	<b>5299.45</b>				<b>149505.17</b>
A. Solid Waste Disposal on Land	322.25	129675.68	115.64				130113.56
B. Wastewater Handling	-	6508.56	4362.08				10870.64
C. Waste Incineration	5098.49	990.36	818.02				6906.86
D. Other	100.00	1553.59	6.82				1660.41
<b>7. Other</b>	<b>614.76</b>	<b>-</b>	<b>1178.00</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1792.76</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>166126.73</b>	<b>208.68</b>	<b>1446.10</b>				<b>167781.50</b>
A. Aviation	58808.42	103.46	451.14				59363.02
Marine	107318.31	105.22	994.95				108418.48
<b>Multilateral Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>				<b>0.00</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>120808.48</b>						<b>120808.48</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	72800.00	342490.53	-269690.53	1669.40	184.83	-267836.30
B. Forest and Grassland Conversion	12965.61	1912.80	11052.81	253.12	25.00	11330.92
C. Abandonment of Managed Lands	-	128.02	-128.02	-	-	-128.02
D. CO <sub>2</sub> Emissions and Removals from Soil	36511.94	4609.61	31902.33	-	-	31902.33
E. Other	3882.60	1100.00	2782.60	2065.20	5761.35	10609.15
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	125851.56	349932.37	-224080.81	3987.72	5971.18	-214121.91

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4158611.05
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3944489.14

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Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
		emissions	removals			P	A	P	A	P	A				
		(Gg)					CO <sub>2</sub> equivalent (Gg)					(Gg)			
<b>Total National Emissions and Removals</b>		<b>3268949</b>	<b>-212359</b>	<b>19699</b>	<b>1215</b>	-	-	-	-	-	-	<b>12954</b>	<b>46041</b>	<b>15539</b>	<b>13468</b>
<b>1. Energy</b>		<b>3117973</b>		<b>4593</b>	<b>173</b>							<b>12693</b>	<b>41525</b>	<b>8176</b>	<b>13166</b>
A. Fuel Combustion	Reference Approach	1360798		-	-							-	-	-	-
	Sectoral Approach	3098057		733	172							12663	41371	6950	12870
1. Energy Industries		1116580		34	55							2646	425	52	8796
2. Manufacturing Industries and Construction		591243		53	34							1564	3264	126	2237
3. Transport		729389		190	46							7047	30496	5782	638
4. Other Sectors		647251		452	36							1307	7078	968	1008
5. Other		13224		3	0							101	109	24	39
B. Fugitive Emissions from Fuels		19926		3859	1							30	154	1226	295
1. Solid Fuels		2176		2245	-							0	92	15	14
2. Oil and Natural Gas		17750		1615	1							30	62	1211	282
<b>2. Industrial Processes</b>		<b>138750</b>		<b>22</b>	<b>332</b>	-	-	-	-	-	-	<b>162</b>	<b>2924</b>	<b>1003</b>	<b>278</b>
A. Mineral Products		99374		0	-	-	-	-	-	-	-	43	30	239	42
B. Chemical Industry		10669		7	325	-	-	-	-	-	-	55	57	353	96
C. Metal Production		18520		6	0	-	-	-	-	-	-	20	2678	17	59
D. Other Production		1331		-	-	-	-	-	-	-	-	6	1	227	9
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		3077		4	-	-	-	-	-	-	-	13	101	117	27

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
					P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>3. Solvent and Other Product Use</b>	<b>6514</b>		<b>2</b>	<b>10</b>							<b>0</b>	<b>2</b>	<b>3968</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>8686</b>	<b>660</b>							<b>32</b>	<b>414</b>	<b>812</b>	<b>1</b>
A. Enteric Fermentation	-		6438	-							-	-	-	-
B. Manure Management	-		1926	90							-	-	1	-
C. Rice Cultivation	-		106	1							0	-	0	-
D. Agricultural Soils	-	-	195	569							16	-	756	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		20	0							17	414	54	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-212359</b>	<b>133</b>	<b>19</b>							<b>12</b>	<b>334</b>	<b>1462</b>	<b>0</b>
A. Changes in Forest and Other Woody Biomass Stock	-	-257310	25	0							6	219	14	-
B. Forest and Grassland Conversion	10893		13	0							3	115	3	0
C. Abandonment of Managed Lands	-	-136	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	31459		-	-							-	-	-	-
E. Other	-	2735	95	19							2	-	1445	-
<b>6. Waste</b>	<b>5712</b>		<b>6264</b>	<b>17</b>							<b>56</b>	<b>842</b>	<b>116</b>	<b>24</b>
A. Solid Waste Disposal on Land	370		5822	0							4	61	46	1
B. Wastewater Handling	-		312	14							-	-	4	0
C. Waste Incineration	5242		45	3							51	780	49	22
D. Other	100		87	0							-	-	18	-
<b>7. Other</b>	-	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-



Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	emissions	removals			P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Memo Items:</b>														
<b>International Bunkers</b>	<b>172359</b>		<b>10</b>	<b>5</b>							<b>1479</b>	<b>307</b>	<b>187</b>	<b>883</b>
Aviation	64432		4	1							238	189	66	17
Marine	107927		6	4							1241	118	121	867
<b>Multilateral Operations</b>	-		-	-							-	-	-	-
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>120110</b>													

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

In order to obtain a complete EC inventory for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions, for Luxembourg the following data gap filling procedure was used: Emissions reported for 1990 were taken as first estimates. However, for CO<sub>2</sub> emissions from fossil fuel combustion (CRF category 1 'Energy'), the 1990 estimates in combination with trend information for 1992 from latest calculations of CO<sub>2</sub> emissions from fossil fuels by Eurostat have been used (Eurostat, 2000).

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3071595 Gg for 1992.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
CATEGORIES	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3056589.88</b>	<b>413678.42</b>	<b>376572.34</b>	-	-	-	<b>3846840.64</b>
<b>1. Energy</b>	<b>3117973.13</b>	<b>96452.43</b>	<b>53544.51</b>				<b>3267970.07</b>
A. Fuel Combustion (Sectoral Approach)	3098056.71	15403.40	53271.40				3166731.51
1. Energy Industries	1116580.03	718.80	17124.43				1134423.26
2. Manufacturing Industries and Construction	591243.23	1118.37	10481.68				602843.28
3. Transport	729389.09	3991.33	14316.76				747697.17
4. Other Sectors	647251.43	9487.40	11158.49				667897.32
5. Other	13223.52	68.82	62.94				13355.28
B. Fugitive Emissions from Fuels	19926.42	81049.03	273.11				101248.56
1. Solid Fuels	2176.15	47142.01	-				49318.17
2. Oil and Natural Gas	17750.27	33907.01	273.11				51930.39
<b>2. Industrial Processes</b>	<b>138750.25</b>	<b>451.96</b>	<b>102835.51</b>	-	-	-	<b>242037.73</b>
A. Mineral Products	99374.25	0.80	-	-	-	-	99375.05
B. Chemical Industry	10668.83	145.51	100862.66	-	-	-	111677.01
C. Metal Production	18520.13	131.60	19.85	-	-	-	18671.58
D. Other Production	1331.03	-	-	-	-	-	1331.03
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0.00
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0.00
G. Other	3077.00	90.26	-	-	-	-	3167.26
<b>3. Solvent and Other Product Use</b>	<b>6514.02</b>	<b>42.00</b>	<b>3244.15</b>				<b>9800.17</b>
<b>4. Agriculture</b>	-	<b>182404.05</b>	<b>204709.30</b>				<b>387113.36</b>
A. Enteric Fermentation	-	135200.95	-				135200.95
B. Manure Management	-	40454.90	27849.12				68304.02
C. Rice Cultivation	-	2219.62	281.53				2501.16
D. Agricultural Soils	-	4095.63	176398.22				180493.85
E. Prescribed Burning of Savannas	-	-	-				0.00
F. Field Burning of Agricultural Residues	-	414.25	149.43				563.68
G. Other	-	-	-				0.00
<b>5. Land-Use Change and Forestry</b>	<b>-212359.02</b>	<b>2793.96</b>	<b>5894.28</b>				<b>-203670.78</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>5711.59</b>	<b>131533.80</b>	<b>5346.39</b>				<b>142591.78</b>
A. Solid Waste Disposal on Land	370.33	122255.80	119.02				122745.16
B. Wastewater Handling	-	6553.03	4404.98				10958.02
C. Waste Incineration	5242.26	936.57	818.66				6997.49
D. Other	100.00	1830.40	6.82				1937.22
<b>7. Other</b>	-	-	<b>1178.00</b>	-	-	-	<b>1178.00</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>172359.11</b>	<b>212.56</b>	<b>1467.48</b>				<b>174039.16</b>
A. Aviation	64431.95	87.84	347.20				64866.99
Marine	107927.16	124.94	1089.28				109141.38
<b>Multilateral Operations</b>	-	-	-				<b>0.00</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>120109.93</b>						<b>120109.93</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	68588.00	325898.17	-257310.17	527.20	68.91	-256714.06
B. Forest and Grassland Conversion	12807.10	1913.60	10893.50	276.05	26.82	11196.36
C. Abandonment of Managed Lands	-	136.48	-136.48	-	-	-136.48
D. CO <sub>2</sub> Emissions and Removals from Soil	36052.24	4593.00	31459.24	-	-	31459.24
E. Other	3834.90	1100.00	2734.90	1990.72	5801.65	10527.27
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	120972.89	333331.90	-212359.02	2793.96	5894.28	-203670.78

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4050511.42
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3846840.64

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Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>	
							P	A	P	A	P	A				
		(Gg)					CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Total National Emissions and Removals</b>		<b>3205347</b>	<b>-218018</b>	<b>18928</b>	<b>1172</b>	-	-	-	-	-	-	<b>12331</b>	<b>43754</b>	<b>14852</b>	<b>12290</b>	
<b>1. Energy</b>		<b>3060106</b>		<b>4153</b>	<b>172</b>							<b>12088</b>	<b>39564</b>	<b>7741</b>	<b>12012</b>	
A. Fuel Combustion	Reference Approach	1346864		-	-							-	-	-	-	
	Sectoral Approach	3040374		719	171							12058	39431	6605	11696	
1. Energy Industries		1061719		35	55							2399	408	51	7906	
2. Manufacturing Industries and Construction		571925		49	30							1473	3189	118	2019	
3. Transport		734907		184	51							6799	28863	5476	654	
4. Other Sectors		656832		437	35							1287	6873	940	943	
5. Other		14683		13	0							100	99	23	26	
B. Fugitive Emissions from Fuels		19683		3433	1							30	132	1135	317	
1. Solid Fuels		1940		1809	-							0	81	13	14	
2. Oil and Natural Gas		17743		1625	1							30	51	1122	303	
<b>2. Industrial Processes</b>		<b>133357</b>		<b>23</b>	<b>301</b>	-	-	-	-	-	-	<b>151</b>	<b>2801</b>	<b>991</b>	<b>254</b>	
A. Mineral Products		95002		0	-	-	-	-	-	-	-	42	30	254	37	
B. Chemical Industry		10659		7	294	-	-	-	-	-	-	43	56	345	84	
C. Metal Production		18482		6	0	-	-	-	-	-	-	18	2558	16	58	
D. Other Production		1164		-	-	-	-	-	-	-	-	5	1	224	7	
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-	
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-	
G. Other		2597		5	-	-	-	-	-	-	-	15	100	101	23	

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A						
<b>3. Solvent and Other Product Use</b>	<b>6175</b>		<b>2</b>	<b>11</b>							<b>0</b>	<b>2</b>	<b>3880</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>8612</b>	<b>648</b>							<b>26</b>	<b>267</b>	<b>735</b>	<b>1</b>
A. Enteric Fermentation	-		6397	-							-	-	-	-
B. Manure Management	-		1902	92							-	-	1	-
C. Rice Cultivation	-		106	1							0	-	0	-
D. Agricultural Soils	-	-	194	556							14	-	698	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		13	0							12	267	36	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-218018</b>	<b>128</b>	<b>19</b>							<b>10</b>	<b>294</b>	<b>1388</b>	<b>1</b>
A. Changes in Forest and Other Woody Biomass Stock	-	-263163	18	0							4	153	10	-
B. Forest and Grassland Conversion	11903		16	0							4	141	7	1
C. Abandonment of Managed Lands	-	-148	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	30703		-	-							-	-	-	-
E. Other	-	2687	95	19							2	-	1371	-
<b>6. Waste</b>	<b>5709</b>		<b>6010</b>	<b>18</b>							<b>57</b>	<b>827</b>	<b>118</b>	<b>22</b>
A. Solid Waste Disposal on Land	358		5479	0							3	60	46	1
B. Wastewater Handling	-		383	15							-	-	4	-
C. Waste Incineration	5252		44	3							52	767	47	21
D. Other	100		105	-							-	-	21	-
<b>7. Other</b>	-	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-

### Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>	
					P	A	P	A	P	A					
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)				
<b>Memo Items:</b>															
<b>International Bunkers</b>	<b>182295</b>		<b>10</b>	<b>5</b>							<b>1556</b>	<b>333</b>	<b>190</b>	<b>959</b>	
Aviation	70730		4	1							270	203	71	17	
Marine	111566		6	4							1286	129	119	941	
<b>Multilateral Operations</b>	-		-	-							-	-	-	-	
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>121834</b>														

**Notes:**

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

In order to obtain a complete EC inventory for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions, for Luxembourg the following data gap filling procedure was used: Emissions reported for 1990 were taken as first estimates. However, for CO<sub>2</sub> emissions from fossil fuel combustion (CRF category 1 'Energy'), the 1990 estimates in combination with trend information for 1993 from latest calculations of CO<sub>2</sub> emissions from fossil fuels by Eurostat have been used (Eurostat, 2000).

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3018383 Gg for 1993.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

## Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>2987329.29</b>	<b>397477.51</b>	<b>363313.90</b>	-	-	-	<b>3748120.70</b>
<b>1. Energy</b>	<b>3060105.86</b>	<b>87207.20</b>	<b>53314.99</b>				<b>3200628.05</b>
A. Fuel Combustion (Sectoral Approach)	3040374.34	15106.12	53045.85				3108526.31
1. Energy Industries	1061718.69	736.08	16919.55				1079374.32
2. Manufacturing Industries and Construction	571925.13	1038.34	9234.67				582198.15
3. Transport	734907.10	3872.70	15896.03				754675.84
4. Other Sectors	656831.87	9182.09	10959.95				676973.90
5. Other	14683.05	278.81	69.75				15031.61
B. Fugitive Emissions from Fuels	19682.52	72099.18	272.24				92053.94
1. Solid Fuels	1939.61	37984.24	-				39923.85
2. Oil and Natural Gas	17742.91	34117.05	272.24				52132.19
<b>2. Industrial Processes</b>	<b>133356.77</b>	<b>476.29</b>	<b>93228.53</b>	-	-	-	<b>227061.60</b>
A. Mineral Products	95002.49	0.84	-	-	-	-	95003.33
B. Chemical Industry	10658.60	142.30	91255.25	-	-	-	102056.15
C. Metal Production	18481.65	133.64	20.28	-	-	-	18635.56
D. Other Production	1164.03	-	-	-	-	-	1164.03
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0.00
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0.00
G. Other	2597.00	115.31	-	-	-	-	2712.31
<b>3. Solvent and Other Product Use</b>	<b>6175.21</b>	<b>42.00</b>	<b>3258.10</b>				<b>9475.31</b>
<b>4. Agriculture</b>	-	<b>180847.45</b>	<b>200974.47</b>				<b>381821.92</b>
A. Enteric Fermentation	-	134329.27	-				134329.27
B. Manure Management	-	39951.81	28440.25				68392.05
C. Rice Cultivation	-	2223.53	184.87				2408.40
D. Agricultural Soils	-	4075.25	172240.62				176315.88
E. Prescribed Burning of Savannas	-	-	-				0.00
F. Field Burning of Agricultural Residues	-	267.80	108.73				376.54
G. Other	-	-	-				0.00
<b>5. Land-Use Change and Forestry</b>	<b>-218017.64</b>	<b>2696.49</b>	<b>5881.94</b>				<b>-209439.22</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>5708.99</b>	<b>126208.29</b>	<b>5508.87</b>				<b>137426.15</b>
A. Solid Waste Disposal on Land	357.88	115061.61	118.15				115537.64
B. Wastewater Handling	-	8042.83	4559.00				12601.83
C. Waste Incineration	5252.11	933.05	831.72				7016.87
D. Other	100.00	2212.80	-				2312.80
<b>7. Other</b>	-	-	<b>1178.00</b>	-	-	-	<b>1178.00</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>182294.89</b>	<b>212.75</b>	<b>1566.77</b>				<b>184074.42</b>
A. Aviation	70729.68	90.44	429.25				71249.37
Marine	111566.21	122.31	1137.52				112826.04
<b>Multilateral Operations</b>	-	-	-				<b>0.00</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>121834.34</b>						<b>121834.34</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	65339.00	328501.91	-263162.91	370.27	52.98	-262739.66
B. Forest and Grassland Conversion	13817.35	1914.40	11902.95	337.15	32.88	12272.99
C. Abandonment of Managed Lands	-	147.80	-147.80	-	-	-147.80
D. CO <sub>2</sub> Emissions and Removals from Soil	35495.92	4793.00	30702.92	-	-	30702.92
E. Other	3787.21	1100.00	2687.21	1989.06	5796.07	10472.34
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	118145.30	336162.94	-218017.64	2696.49	5881.94	-209439.22

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	3957559.91
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3748120.70



EU15 1994

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
						P	A	P	A	P	A				
		(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Total National Emissions and Removals</b>		<b>3217380</b>	<b>-207837</b>	<b>18423</b>	<b>1211</b>	-	-	-	-	-	-	<b>11904</b>	<b>41869</b>	<b>14732</b>	<b>11019</b>
<b>1. Energy</b>		<b>3063416</b>		<b>3787</b>	<b>179</b>							<b>11665</b>	<b>37385</b>	<b>7393</b>	<b>10787</b>
A. Fuel Combustion	Reference Approach	-		-	-							-	-	-	-
	Sectoral Approach	3041560		681	178							11633	37220	6256	10504
1. Energy Industries		1063530		36	53							2290	389	52	7093
2. Manufacturing Industries and Construction		594131		51	31							1443	3396	120	1806
3. Transport		742131		181	57							6551	26804	5143	654
4. Other Sectors		629095		398	33							1256	6540	918	778
5. Other		12481		14	4							91	93	22	17
B. Fugitive Emissions from Fuels		21901		3106	1							32	165	1137	283
1. Solid Fuels		1787		1510	-							0	85	13	11
2. Oil and Natural Gas		20114		1597	1							32	80	1124	272
<b>2. Industrial Processes</b>		<b>142395</b>		<b>24</b>	<b>314</b>	-	-	-	-	-	-	<b>147</b>	<b>3149</b>	<b>954</b>	<b>210</b>
A. Mineral Products		99680		1	-	-	-	-	-	-	-	42	30	237	38
B. Chemical Industry		10769		7	309	-	-	-	-	-	-	43	54	337	79
C. Metal Production		22267		6	0	-	-	-	-	-	-	18	2885	15	53
D. Other Production		1155		-	-	-	-	-	-	-	-	6	1	230	5
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		3050		6	-	-	-	-	-	-	-	10	102	89	35

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A						
<b>3. Solvent and Other Product Use</b>	<b>6207</b>		<b>2</b>	<b>11</b>							<b>0</b>	<b>2</b>	<b>3891</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>8593</b>	<b>664</b>							<b>27</b>	<b>259</b>	<b>800</b>	<b>1</b>
A. Enteric Fermentation	-		6360	8							-	-	-	-
B. Manure Management	-		1911	91							-	-	1	-
C. Rice Cultivation	-		115	1							0	-	0	-
D. Agricultural Soils	-	-	195	564							16	-	766	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		12	0							12	259	33	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-207837</b>	<b>126</b>	<b>21</b>							<b>10</b>	<b>274</b>	<b>1579</b>	<b>0</b>
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-249463	18	0							4	155	10	-
B. Forest and Grassland Conversion	11326		14	0							3	118	3	0
C. Abandonment of Managed Lands	-	-157	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	27698		-	-							-	-	-	-
E. Other	-	2759	94	21							2	-	1566	-
<b>6. Waste</b>	<b>5362</b>		<b>5891</b>	<b>18</b>							<b>54</b>	<b>800</b>	<b>117</b>	<b>21</b>
A. Solid Waste Disposal on Land	290		5439	0							3	54	44	1
B. Wastewater Handling	-		308	15							-	-	3	-
C. Waste Incineration	5072		43	3							51	746	46	20
D. Other	-		101	-							-	-	24	-
<b>7. Other</b>	-	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A	P	A				
<b>Memo Items:</b>														
<b>International Bunkers</b>	<b>180485</b>		<b>10</b>	<b>5</b>							<b>1515</b>	<b>339</b>	<b>187</b>	<b>896</b>
Aviation	72118		5	1							280	216	79	19
Marine	108368		6	4							1236	123	109	877
<b>Multilateral Operations</b>	-		-	-							-	-	-	-
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>125426</b>													

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 2997276 Gg for 1994.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

## Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3009543</b>	<b>386891</b>	<b>375459</b>	-	-	-	<b>3771892</b>
<b>1. Energy</b>	<b>3063416</b>	<b>79531</b>	<b>55526</b>				<b>3198473</b>
A. Fuel Combustion (Sectoral Approach)	3041560	14297	55135				3110992
1. Energy Industries	1063530	765	16424				1080720
2. Manufacturing Industries and Construction	594131	1079	9490				604699
3. Transport	742131	3799	17796				763725
4. Other Sectors	629095	8360	10152				647606
5. Other	12481	299	1307				14087
B. Fugitive Emissions from Fuels	21901	65232	401				87533
1. Solid Fuels	1787	31703	-				33490
2. Oil and Natural Gas	20114	33531	401				54046
<b>2. Industrial Processes</b>	<b>142395</b>	<b>514</b>	<b>97400</b>	-	-	-	<b>240309</b>
A. Mineral Products	99680	28	-	-	-	-	99708
B. Chemical Industry	10769	152	95735	-	-	-	106657
C. Metal Production	22267	125	22	-	-	-	22415
D. Other Production	1155	-	-	-	-	-	1155
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
G. Other	3050	124	-	-	-	-	3174
<b>3. Solvent and Other Product Use</b>	<b>6207</b>	<b>48</b>	<b>3334</b>				<b>9589</b>
<b>4. Agriculture</b>	-	<b>180447</b>	<b>205967</b>				<b>386414</b>
A. Enteric Fermentation	-	133568	2480				136048
B. Manure Management	-	40124	28100				68224
C. Rice Cultivation	-	2407	318				2725
D. Agricultural Soils	-	4090	174935				179026
E. Prescribed Burning of Savannas	-	-	-				0
F. Field Burning of Agricultural Residues	-	258	134				392
G. Other	-	-	-				0
<b>5. Land-Use Change and Forestry</b>	<b>-207837</b>	<b>2636</b>	<b>6581</b>				<b>-198620</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>5362</b>	<b>123715</b>	<b>5504</b>				<b>134581</b>
A. Solid Waste Disposal on Land	290	114210	113				114614
B. Wastewater Handling	-	6462	4580				11041
C. Waste Incineration	5072	912	811				6795
D. Other	-	2131	-				2131
<b>7. Other</b>	<b>-</b>	<b>-</b>	<b>1178</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1178</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>180485</b>	<b>217</b>	<b>1579</b>				<b>182281</b>
A. Aviation	72118	98	406				72621
Marine	108368	119	1172				109659
<b>Multilateral Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>				<b>0</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>125426</b>						<b>125426</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	64795	314258	-249463	375	53	-249034
B. Forest and Grassland Conversion	13241	1915	11326	284	27	11637
C. Abandonment of Managed Lands	-	157	-157	-	-	-157
D. CO <sub>2</sub> Emissions and Removals from Soil	32855	5157	27698	-	-	27698
E. Other	3859	1100	2759	1977	6500	11235
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	114376	322213	-207837	2636	6581	-198620

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	3970512
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3771892

EU15 1995

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
						P	A	P	A	P	A				
		(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Total National Emissions and Removals</b>		<b>3260298</b>	<b>-203838</b>	<b>18320</b>	<b>1216</b>	-	-	-	-	-	-	<b>11569</b>	<b>40936</b>	<b>14321</b>	<b>10070</b>
<b>1. Energy</b>		<b>3101383</b>		<b>3779</b>	<b>187</b>							<b>11320</b>	<b>35931</b>	<b>7050</b>	<b>9852</b>
A. Fuel Combustion	Reference Approach	-		-	-							-	-	-	-
	Sectoral Approach	3077923		670	186							11288	35793	6007	9581
1. Energy Industries		1070474		42	57							2219	387	60	6409
2. Manufacturing Industries and Construction		606384		53	32							1419	3278	117	1787
3. Transport		748803		176	62							6280	25696	4922	553
4. Other Sectors		638214		397	34							1280	6340	897	666
5. Other		13851		2	1							91	92	11	14
B. Fugitive Emissions from Fuels		23489		3109	1							32	138	1043	271
1. Solid Fuels		5486		1567	-							1	91	13	8
2. Oil and Natural Gas		18043		1542	1							31	47	1030	263
<b>2. Industrial Processes</b>		<b>145803</b>		<b>24</b>	<b>313</b>	-	-	-	-	-	-	<b>147</b>	<b>3327</b>	<b>964</b>	<b>196</b>
A. Mineral Products		100405		1	-	-	-	-	-	-	-	45	24	248	43
B. Chemical Industry		11547		12	308	-	-	-	-	-	-	46	77	360	85
C. Metal Production		24464		6	0	-	-	-	-	-	-	20	3148	18	53
D. Other Production		1233		-	-	-	-	-	-	-	-	6	4	238	8
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		2865		1	-	-	-	-	-	-	-	1	16	50	7

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A						
<b>3. Solvent and Other Product Use</b>	<b>6173</b>		<b>2</b>	<b>11</b>							<b>0</b>	<b>2</b>	<b>3815</b>	<b>-</b>
<b>4. Agriculture</b>	-		<b>8594</b>	<b>662</b>							<b>25</b>	<b>229</b>	<b>780</b>	<b>1</b>
A. Enteric Fermentation	-		6349	-							-	-	-	-
B. Manure Management	-		1927	88							-	-	1	-
C. Rice Cultivation	-		114	1							0	-	0	-
D. Agricultural Soils	-	-	194	573							15	-	751	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		11	0							10	229	28	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-203838</b>	<b>169</b>	<b>22</b>							<b>21</b>	<b>655</b>	<b>1593</b>	<b>0</b>
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-244972	62	0							15	544	35	-
B. Forest and Grassland Conversion	11217		13	0							3	111	2	0
C. Abandonment of Managed Lands	-	-168	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	27300	-	-	-							-	-	-	-
E. Other	-	2783	94	21							2	-	1556	-
<b>6. Waste</b>	<b>6139</b>		<b>5752</b>	<b>18</b>							<b>56</b>	<b>792</b>	<b>118</b>	<b>20</b>
A. Solid Waste Disposal on Land	124		5293	0							2	40	39	0
B. Wastewater Handling	-		307	15							-	-	4	-
C. Waste Incineration	4413		43	3							51	752	46	19
D. Other	1642		109	0							3	1	29	1
<b>7. Other</b>	<b>700</b>	-	-	<b>4</b>	-	-	-	-	-	-	-	-	<b>1</b>	<b>-</b>

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
					P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Memo Items:</b>														
<b>International Bunkers</b>	<b>184424</b>		<b>11</b>	<b>5</b>							<b>1569</b>	<b>346</b>	<b>189</b>	<b>926</b>
Aviation	74612		5	1							288	220	78	18
Marine	109812		6	4							1282	126	111	908
<b>Multilateral Operations</b>	-		-	-							-	-	-	-
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>132685</b>													

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3061312 Gg for 1995.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.



Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3056460</b>	<b>384725</b>	<b>376838</b>	-	-	-	<b>3818022</b>
<b>1. Energy</b>	<b>3101383</b>	<b>79352</b>	<b>57828</b>				<b>3238563</b>
A. Fuel Combustion (Sectoral Approach)	3077923	14066	57581				3149570
1. Energy Industries	1070474	881	17538				1088893
2. Manufacturing Industries and Construction	606384	1120	9937				617442
3. Transport	748803	3688	19167				771658
4. Other Sectors	638214	8330	10682				657226
5. Other	13851	47	287				14185
B. Fugitive Emissions from Fuels	23489	65289	251				89028
1. Solid Fuels	5486	32910	-				38396
2. Oil and Natural Gas	18043	32379	251				50673
<b>2. Industrial Processes</b>	<b>145803</b>	<b>504</b>	<b>96957</b>	-	-	-	<b>243264</b>
A. Mineral Products	100405	30	-	-	-	-	100436
B. Chemical Industry	11547	255	95424	-	-	-	107226
C. Metal Production	24464	124	24	-	-	-	24612
D. Other Production	1233	-	-	-	-	-	1233
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
G. Other	2865	14	-	-	-	-	2879
<b>3. Solvent and Other Product Use</b>	<b>6173</b>	<b>42</b>	<b>3346</b>				<b>9561</b>
<b>4. Agriculture</b>	-	<b>180479</b>	<b>205258</b>				<b>385738</b>
A. Enteric Fermentation	-	133335	-				133335
B. Manure Management	-	40465	27434				67898
C. Rice Cultivation	-	2388	210				2599
D. Agricultural Soils	-	4074	177518				181591
E. Prescribed Burning of Savannas	-	-	-				0
F. Field Burning of Agricultural Residues	-	228	94				322
G. Other	-	-	-				0
<b>5. Land-Use Change and Forestry</b>	<b>-203838</b>	<b>3550</b>	<b>6697</b>				<b>-193591</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>6139</b>	<b>120793</b>	<b>5541</b>				<b>132474</b>
A. Solid Waste Disposal on Land	124	111148	101				111374
B. Wastewater Handling	-	6452	4599				11051
C. Waste Incineration	4413	909	810				6132
D. Other	1642	2284	31				3957
<b>7. Other</b>	<b>700</b>	<b>-</b>	<b>1189</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1889</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>184424</b>	<b>227</b>	<b>1532</b>				<b>186183</b>
A. Aviation	74612	102	396				75110
Marine	109812	125	1136				111073
<b>Multilateral Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>				<b>0</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>132685</b>						<b>132685</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	67777	312749	-244972	1305	132	-243534
B. Forest and Grassland Conversion	13133	1916	11217	266	25	11509
C. Abandonment of Managed Lands	-	168	-168	-	-	-168
D. CO <sub>2</sub> Emissions and Removals from Soil	32377	5077	27300	-	-	27300
E. Other	3883	1100	2783	1979	6540	11302
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	116755	320593	-203838	3550	6697	-193591

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4011613
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3818022

EU15 1996

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
						P	A	P	A	P	A				
		(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Total National Emissions and Removals</b>		<b>3335895</b>	<b>-192320</b>	<b>17820</b>	<b>1263</b>	-	-	-	-	-	-	<b>11138</b>	<b>38879</b>	<b>13617</b>	<b>8816</b>
<b>1. Energy</b>		<b>3179346</b>		<b>3639</b>	<b>192</b>							<b>10889</b>	<b>34425</b>	<b>6701</b>	<b>8566</b>
A. Fuel Combustion	Reference Approach	-		-	-							-	-	-	-
	Sectoral Approach	3155485		686	191							10858	34289	5665	8304
1. Energy Industries		1076937		45	59							2110	409	63	5454
2. Manufacturing Industries and Construction		595737		51	30							1405	3081	134	1568
3. Transport		766744		169	67							5925	24236	4545	472
4. Other Sectors		703780		417	35							1353	6512	915	648
5. Other		12291		2	1							65	51	8	13
B. Fugitive Emissions from Fuels		23859		2953	1							31	136	1036	262
1. Solid Fuels		5128		1391	-							1	91	13	9
2. Oil and Natural Gas		18752		1562	1							30	46	1023	254
<b>2. Industrial Processes</b>		<b>142946</b>		<b>23</b>	<b>322</b>	-	-	-	-	-	-	<b>151</b>	<b>3047</b>	<b>912</b>	<b>229</b>
A. Mineral Products		100406		0	-	-	-	-	-	-	-	44	20	215	53
B. Chemical Industry		11556		13	320	-	-	-	-	-	-	51	91	359	83
C. Metal Production		23743		6	0	-	-	-	-	-	-	30	2909	19	64
D. Other Production		1675		0	-	-	-	-	-	-	-	6	5	273	19
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		4725		1	-	-	-	-	-	-	-	13	23	47	9

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A						
<b>3. Solvent and Other Product Use</b>	<b>6250</b>		<b>2</b>	<b>11</b>							<b>0</b>	<b>2</b>	<b>3728</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>8581</b>	<b>696</b>							<b>30</b>	<b>275</b>	<b>709</b>	<b>1</b>
A. Enteric Fermentation	-		6342	-							-	-	-	-
B. Manure Management	-		1912	96							-	-	1	-
C. Rice Cultivation	-		119	1							0	-	0	-
D. Agricultural Soils	-	-	194	598							17	-	671	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		13	0							12	275	38	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-192320</b>	<b>133</b>	<b>21</b>							<b>12</b>	<b>336</b>	<b>1448</b>	<b>0</b>
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-233643	26	0							6	231	15	-
B. Forest and Grassland Conversion	10844		12	0							3	104	1	0
C. Abandonment of Managed Lands	-	-172	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	27985	-	-	-							-	-	-	-
E. Other	-	2666	95	21							2	-	1432	-
<b>6. Waste</b>	<b>6634</b>		<b>5443</b>	<b>18</b>							<b>55</b>	<b>794</b>	<b>118</b>	<b>20</b>
A. Solid Waste Disposal on Land	82		4955	0							2	36	37	0
B. Wastewater Handling	3		311	15							-	-	4	-
C. Waste Incineration	4681		44	3							51	757	47	19
D. Other	1868		133	0							2	1	31	1
<b>7. Other</b>	<b>700</b>	-	-	<b>4</b>	-	-	-	-	-	-	-	-	<b>1</b>	-

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>	
					P	A	P	A	P	A					
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)				
<b>Memo Items:</b>															
<b>International Bunkers</b>	<b>195064</b>		<b>11</b>	<b>5</b>							<b>1651</b>	<b>338</b>	<b>194</b>	<b>1003</b>	
Aviation	77020		5	1							298	218	80	19	
Marine	118044		6	4							1354	120	114	984	
<b>Multilateral Operations</b>	-		-	-							-	-	-	-	
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>160680</b>														

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3149062 Gg for 1996.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3143575</b>	<b>374211</b>	<b>391682</b>	-	-	-	<b>3909467</b>
<b>1. Energy</b>	<b>3179346</b>	<b>76411</b>	<b>59540</b>				<b>3315297</b>
A. Fuel Combustion (Sectoral Approach)	3155485	14404	59254				3229143
1. Energy Industries	1076937	949	18248				1096134
2. Manufacturing Industries and Construction	595737	1076	9432				606245
3. Transport	766744	3558	20616				790918
4. Other Sectors	703780	8753	10982				723515
5. Other	12291	45	283				12618
B. Fugitive Emissions from Fuels	23859	62007	286				86153
1. Solid Fuels	5128	29214	-				34342
2. Oil and Natural Gas	18752	32793	286				51831
<b>2. Industrial Processes</b>	<b>142946</b>	<b>489</b>	<b>99920</b>	-	-	-	<b>243355</b>
A. Mineral Products	100406	5	-	-	-	-	100411
B. Chemical Industry	11556	263	99090	-	-	-	110909
C. Metal Production	23743	126	24	-	-	-	23894
D. Other Production	1675	2	-	-	-	-	1677
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
G. Other	4725	13	-	-	-	-	4738
<b>3. Solvent and Other Product Use</b>	<b>6250</b>	<b>42</b>	<b>3370</b>				<b>9662</b>
<b>4. Agriculture</b>	-	<b>180193</b>	<b>215765</b>				<b>395959</b>
A. Enteric Fermentation	-	133181	-				133181
B. Manure Management	-	40148	29839				69987
C. Rice Cultivation	-	2507	384				2891
D. Agricultural Soils	-	4066	185426				189492
E. Prescribed Burning of Savannas	-	-	-				0
F. Field Burning of Agricultural Residues	-	275	114				388
G. Other	-	-	-				0
<b>5. Land-Use Change and Forestry</b>	<b>-192320</b>	<b>2791</b>	<b>6638</b>				<b>-182891</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>6634</b>	<b>114307</b>	<b>5564</b>				<b>126505</b>
A. Solid Waste Disposal on Land	82	104058	99				104238
B. Wastewater Handling	3	6534	4621				11158
C. Waste Incineration	4681	924	814				6418
D. Other	1868	2792	31				4691
<b>7. Other</b>	<b>700</b>	-	<b>1189</b>	-	-	-	<b>1889</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>195064</b>	<b>237</b>	<b>1617</b>				<b>196917</b>
Aviation	77020	102	413				77535
Marine	118044	134	1172				119351
<b>Multilateral Operations</b>	-	-	-				<b>0</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>160680</b>						<b>160680</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	68286	301929	-233643	555	56	-233032
B. Forest and Grassland Conversion	12765	1921	10844	251	24	11119
C. Abandonment of Managed Lands	-	172	-172	-	-	-172
D. CO <sub>2</sub> Emissions and Removals from Soil	33151	5166	27985	-	-	27985
E. Other	3766	1100	2666	1985	6558	11209
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	117501	309821	-192320	2791	6638	-182891

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4092358
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3909467

EU15 1997

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
		(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
		P	A	P	A	P	A	P	A						
<b>Total National Emissions and Removals</b>		<b>3278534</b>	<b>-197064</b>	<b>17637</b>	<b>1256</b>	-	-	-	-	-	-	<b>10665</b>	<b>36984</b>	<b>13342</b>	<b>8117</b>
<b>1. Energy</b>		<b>3119223</b>		<b>3582</b>	<b>195</b>							<b>10440</b>	<b>32564</b>	<b>6334</b>	<b>7909</b>
A. Fuel Combustion	Reference Approach	-		-	-							-	-	-	-
	Sectoral Approach	3095882		652	194							10409	32431	5321	7649
1. Energy Industries		1017219		44	55							1950	344	51	5111
2. Manufacturing Industries and Construction		596566		51	29							1443	3164	124	1478
3. Transport		766322		160	68							5642	22718	4285	313
4. Other Sectors		641496		374	34							1307	6150	851	573
5. Other		14546		1	0							67	56	9	10
B. Fugitive Emissions from Fuels		23341		2930	0							31	133	1013	260
1. Solid Fuels		5256		1411	-							1	91	12	4
2. Oil and Natural Gas		18115		1519	0							30	42	1001	257
<b>2. Industrial Processes</b>		<b>145713</b>		<b>20</b>	<b>312</b>	-	-	-	-	-	-	<b>130</b>	<b>3086</b>	<b>967</b>	<b>186</b>
A. Mineral Products		106009		0	-	-	-	-	-	-	-	45	23	286	43
B. Chemical Industry		11490		10	310	-	-	-	-	-	-	42	77	354	72
C. Metal Production		24298		6	0	-	-	-	-	-	-	27	2969	19	53
D. Other Production		1177		0	-	-	-	-	-	-	-	17	16	264	18
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		1844		0	-	-	-	-	-	-	-	0	1	44	0



Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A						
<b>3. Solvent and Other Product Use</b>	<b>6416</b>		<b>2</b>	<b>11</b>							<b>0</b>	<b>2</b>	<b>3732</b>	<b>0</b>
<b>4. Agriculture</b>	-		<b>8556</b>	<b>699</b>							<b>30</b>	<b>276</b>	<b>721</b>	<b>1</b>
A. Enteric Fermentation	-		6339	-							-	-	-	-
B. Manure Management	-		1893	95							-	-	1	-
C. Rice Cultivation	-		119	1							0	-	0	-
D. Agricultural Soils	-	-	192	602							17	-	684	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		13	0							12	276	37	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-197064</b>	<b>113</b>	<b>18</b>							<b>8</b>	<b>207</b>	<b>1466</b>	<b>0</b>
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-234115	9	0							2	83	5	-
B. Forest and Grassland Conversion	11496		14	0							4	124	4	0
C. Abandonment of Managed Lands	-	-186	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	28908		-	-							-	-	-	-
E. Other	-	-785	90	18							2	-	1457	-
<b>6. Waste</b>	<b>6631</b>		<b>5363</b>	<b>18</b>							<b>56</b>	<b>850</b>	<b>123</b>	<b>19</b>
A. Solid Waste Disposal on Land	65		4836	0							2	35	36	0
B. Wastewater Handling	-		318	15							-	-	4	-
C. Waste Incineration	4083		46	3							52	815	50	18
D. Other	2483		163	0							2	1	33	1
<b>7. Other</b>	<b>600</b>	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
					P	A	P	A	P	A				
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
<b>Memo Items:</b>														
<b>International Bunkers</b>	<b>209675</b>		<b>12</b>	<b>6</b>							<b>1767</b>	<b>356</b>	<b>210</b>	<b>1090</b>
Aviation	81107		5	2							311	233	85	21
Marine	126268		6	3							1456	124	125	1070
<b>Multilateral Operations</b>	-		-	-							-	-	-	-
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>135877</b>													

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data. Instead, latest Eurostat calculations of CO<sub>2</sub> emissions from fossil fuels (Eurostat, 2000) may be used as reference estimate. Eurostat estimates of CO<sub>2</sub> emissions from fossil fuels are 3058394 Gg for 1997.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3081470</b>	<b>370375</b>	<b>389362</b>	-	-	-	<b>3841207</b>
<b>1. Energy</b>	<b>3119223</b>	<b>75220</b>	<b>60313</b>				<b>3254755</b>
A. Fuel Combustion (Sectoral Approach)	3095882	13697	60238				3169817
1. Energy Industries	1017219	914	17019				1035152
2. Manufacturing Industries and Construction	596566	1065	9141				606772
3. Transport	766322	3361	21219				790902
4. Other Sectors	641496	7847	10434				659777
5. Other	14546	14	96				14656
B. Fugitive Emissions from Fuels	23341	61522	75				84938
1. Solid Fuels	5256	29622	-				34878
2. Oil and Natural Gas	18115	31900	75				50090
<b>2. Industrial Processes</b>	<b>145713</b>	<b>425</b>	<b>96784</b>	-	-	-	<b>242921</b>
A. Mineral Products	106009	3	-	-	-	-	106012
B. Chemical Industry	11490	212	95953	-	-	-	107655
C. Metal Production	24298	120	25	-	-	-	24443
D. Other Production	1177	2	-	-	-	-	1179
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
G. Other	1844	2	-	-	-	-	1846
<b>3. Solvent and Other Product Use</b>	<b>6416</b>	<b>42</b>	<b>3370</b>				<b>9828</b>
<b>4. Agriculture</b>	-	<b>179684</b>	<b>216541</b>				<b>396225</b>
A. Enteric Fermentation	-	133112	-				133112
B. Manure Management	-	39754	29504				69258
C. Rice Cultivation	-	2502	415				2916
D. Agricultural Soils	-	4040	186543				190583
E. Prescribed Burning of Savannas	-	-	-				0
F. Field Burning of Agricultural Residues	-	276	112				389
G. Other	-	-	-				0
<b>5. Land-Use Change and Forestry</b>	<b>-197064</b>	<b>2377</b>	<b>5622</b>				<b>-189065</b>

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>6631</b>	<b>112628</b>	<b>5549</b>				<b>124808</b>
A. Solid Waste Disposal on Land	65	101548	98				101711
B. Wastewater Handling	-	6676	4671				11346
C. Waste Incineration	4083	975	777				5835
D. Other	2483	3427	31				5941
<b>7. Other</b>	<b>600</b>	-	<b>1178</b>	-	-	-	<b>1778</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>209675</b>	<b>252</b>	<b>1767</b>				<b>211694</b>
Aviation	81107	111	481				81699
Marine	126268	116	976				127360
<b>Multilateral Operations</b>	-	-	-				<b>0</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>135877</b>						<b>135877</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	69762	303877	-234115	199	20	-233896
B. Forest and Grassland Conversion	13421	1925	11496	297	28	11821
C. Abandonment of Managed Lands	-	186	-186	-	-	-186
D. CO <sub>2</sub> Emissions and Removals from Soil	34052	5144	28908	-	-	28908
E. Other	3675	4460	-785	1881	5574	6670
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	118105	315168	-197064	2377	5622	-189065

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4030272
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3841207

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Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
						P	A	P	A	P	A				
		(Gg)					CO <sub>2</sub> equivalent (Gg)						(Gg)		
<b>Total National Emissions and Removals</b>		<b>3327520</b>	<b>-203641</b>	<b>17498</b>	<b>1160</b>	-	-	-	-	-	-	<b>8981</b>	<b>29680</b>	<b>11020</b>	<b>6986</b>
<b>1. Energy</b>		<b>3163825</b>		<b>3541</b>	<b>178</b>							<b>8772</b>	<b>25588</b>	<b>4850</b>	<b>6812</b>
A. Fuel Combustion	Reference Approach	-		-	-							-	-	-	-
	Sectoral Approach	3130620		688	177							8749	25478	3997	6594
1. Energy Industries		1076337		69	43							1700	330	46	4422
2. Manufacturing Industries and Construction		599878		60	26							1206	2483	111	1224
3. Transport		798166		162	79							4651	16924	2986	278
4. Other Sectors		652164		395	29							1139	5689	846	486
5. Other		14075		2	1							53	52	8	9
B. Fugitive Emissions from Fuels		23205		2853	0							24	111	853	218
1. Solid Fuels		5207		1347	-							1	78	9	1
2. Oil and Natural Gas		17999		1506	0							23	33	844	216
<b>2. Industrial Processes</b>		<b>146815</b>		<b>27</b>	<b>230</b>	-	-	-	-	-	-	<b>126</b>	<b>2762</b>	<b>884</b>	<b>155</b>
A. Mineral Products		110536		0	0	-	-	-	-	-	-	45	23	274	26
B. Chemical Industry		11235		8	230	-	-	-	-	-	-	40	65	300	66
C. Metal Production		22383		18	0	-	-	-	-	-	-	24	2658	16	48
D. Other Production		712		0	0	-	-	-	-	-	-	16	15	254	14
E. Production of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
F. Consumption of Halocarbons and SF <sub>6</sub>		-		-	-	-	-	-	-	-	-	-	-	-	-
G. Other		1954		0	-	-	-	-	-	-	-	0	1	41	0

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)			
	P	A	P	A	P	A	P	A						
<b>3. Solvent and Other Product Use</b>	<b>6260</b>		<b>2</b>	<b>11</b>							<b>0</b>	<b>2</b>	<b>3174</b>	-
<b>4. Agriculture</b>	-		<b>8527</b>	<b>701</b>							<b>29</b>	<b>251</b>	<b>718</b>	<b>1</b>
A. Enteric Fermentation	-		6307	-							-	-	-	-
B. Manure Management	-		1897	97							-	-	-	-
C. Rice Cultivation	-		117	1							0	-	0	-
D. Agricultural Soils	<b>1380</b>	-	192	603							17	-	682	-
E. Prescribed Burning of Savannas	-		-	-							-	-	-	-
F. Field Burning of Agricultural Residues	-		13	0							11	251	36	1
G. Other	-		-	-							-	-	-	-
<b>5. Land-Use Change and Forestry</b>	-	<b>-203641</b>	<b>152</b>	<b>18</b>							<b>17</b>	<b>521</b>	<b>1294</b>	-
A. Changes in Forest & Oth. Woody Biom. Stocks	-	-241032	48	0							12	423	27	-
B. Forest and Grassland Conversion	11491		14	0							3	98	-	-
C. Abandonment of Managed Lands	-	-186	-	-							-	-	-	-
D. CO <sub>2</sub> Emissions and Removals from Soil	29402	-	-	-							-	-	-	-
E. Other	-	-933	90	18							2	-	1267	-
<b>6. Waste</b>	<b>6539</b>		<b>5250</b>	<b>18</b>							<b>37</b>	<b>555</b>	<b>99</b>	<b>18</b>
A. Solid Waste Disposal on Land	62		4723	0							2	34	27	0
B. Wastewater Handling	-		311	15							-	-	4	-
C. Waste Incineration	4165		47	3							33	521	31	17
D. Other	2312		169	0							2	0	36	1
<b>7. Other</b>	<b>2655</b>	-	-	<b>4</b>	-	-	-	-	-	-	-	-	-	-

Summary 1.A: Summary report for national greenhouse gas inventories (IPCC table 7A) (Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>	
	(Gg)				CO <sub>2</sub> equivalent (Gg)						(Gg)				
	P	A	P	A	P	A	P	A	P	A					
<b>Memo Items:</b>															
<b>International Bunkers</b>	<b>221924</b>		<b>13</b>	<b>7</b>							<b>1704</b>	<b>369</b>	<b>222</b>	<b>1076</b>	
Aviation	88997		6	2							321	245	88	21	
Marine	132927		7	4							1383	124	134	1056	
<b>Multilateral Operations</b>	-		-	-							-	-	-	-	
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>158092</b>														

Notes:

Totals and sub-totals of the EC inventory are the sum of Member States' emissions. In case totals and sub-totals do not add up, this is due to different completeness of Member States' submissions.

Data on the Reference Approach for CO<sub>2</sub> from fossil fuel combustion is omitted in the EU15 tables, as not all Member States reported these data.

Category 5 'Land-Use Change and Forestry' provides 'net' emissions (Member States emissions minus Member States removals) of CO<sub>2</sub> following CRF recommendations. For calculation details see Summary 2.

As not all Member States reported data for industrial F-gases, they are omitted in Annex A. Instead, they are presented in Table 3 of the introduction and in Annex B.

Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)</b>	<b>3123880</b>	<b>367466</b>	<b>359561</b>	-	-	-	<b>3850906</b>
<b>1. Energy</b>	<b>3163825</b>	<b>74353</b>	<b>55041</b>				<b>3293219</b>
A. Fuel Combustion (Sectoral Approach)	3130620	14447	54963				3200030
1. Energy Industries	1076337	1453	13452				1091242
2. Manufacturing Industries and Construction	599878	1264	8050				609192
3. Transport	798166	3400	24420				825986
4. Other Sectors	652164	8293	8896				669353
5. Other	14075	36	204				14316
B. Fugitive Emissions from Fuels	23205	59906	78				83189
1. Solid Fuels	5207	28282	-				33488
2. Oil and Natural Gas	17999	31624	78				49701
<b>2. Industrial Processes</b>	<b>146815</b>	<b>562</b>	<b>71268</b>	-	-	-	<b>218645</b>
A. Mineral Products	110536	3	15	-	-	-	110554
B. Chemical Industry	11235	168	71181	-	-	-	82584
C. Metal Production	22383	379	29	-	-	-	22791
D. Other Production	712	9	43	-	-	-	765
E. Production of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
F. Consumption of Halocarbons and SF <sub>6</sub>	-	-	-	-	-	-	0
G. Other	1954	2	-	-	-	-	1956
<b>3. Solvent and Other Product Use</b>	<b>6260</b>	<b>40</b>	<b>3370</b>				<b>9669</b>
<b>4. Agriculture</b>	<b>-</b>	<b>179069</b>	<b>217317</b>				<b>396387</b>
A. Enteric Fermentation	-	132447	-				132447
B. Manure Management	-	39845	29953				69798
C. Rice Cultivation	-	2464	377				2842
D. Agricultural Soils	1380	4040	186878				192298
E. Prescribed Burning of Savannas	-	-	-				0
F. Field Burning of Agricultural Residues	-	274	112				385
G. Other	-	-	-				0
<b>5. Land-Use Change and Forestry</b>	<b>-203641</b>	<b>3194</b>	<b>5720</b>				<b>-194727</b>



Summary 2: Summary report for CO<sub>2</sub> equivalent emissions (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>6. Waste</b>	<b>6539</b>	<b>110247</b>	<b>5660</b>				<b>122446</b>
A. Solid Waste Disposal on Land	62	99181	97				99340
B. Wastewater Handling	-	6536	4690				11226
C. Waste Incineration	4165	986	785				5936
D. Other	2312	3547	118				5976
<b>7. Other</b>	<b>2655</b>	<b>-</b>	<b>1178</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3833</b>
<b>Memo Items:</b>							
<b>International Bunkers</b>	<b>221924</b>	<b>277</b>	<b>2042</b>				<b>224243</b>
Aviation	88997	133	701				89831
Marine	132927	144	1341				134412
<b>Multilateral Operations</b>	<b>-</b>	<b>-</b>	<b>-</b>				<b>0</b>
<b>CO<sub>2</sub> Emissions from Biomass</b>	<b>158092</b>						<b>158092</b>

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CO <sub>2</sub>	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
	emissions	removals	emissions / removals			emissions
<b>Land-Use Change and Forestry</b>	CO <sub>2</sub> equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks	69762	310795	-241032	1014	103	-239915
B. Forest and Grassland Conversion	13421	1930	11491	297	28	11816
C. Abandonment of Managed Lands	-	186	-186	-	-	-186
D. CO <sub>2</sub> Emissions and Removals from Soil	34608	5206	29402	-	-	29402
E. Other	3527	4460	-933	1883	5589	6540
Total CO <sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry	118512	322153	-203641	3194	5720	-194727

Total CO <sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry	4045632
Total CO <sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry	3850906