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Overview of national programmes to reduce greenhouse gas emissions

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1. Introduction

1.1. The EC Monitoring Mechanism and this report

This report was prepared by the European Environment Agency at the request of the European Commission (DGXI). The report is based on data and information provided by the Member States to the Commission as required under the Decision on the EC Monitoring Mechanism.

In 1993, the Council of Ministers adopted Decision 93/389/EEC to establish a Monitoring Mechanism for anthropogenic CO_2 and other greenhouse gas emissions in the Community (excluding gases controlled by the Montreal Protocol). The purpose of the Monitoring Mechanism is to monitor whether progress by the Community as a whole is sufficient to ensure compliance with greenhouse gas emission targets laid down by the EC itself and with international legal obligations of the European Community.

According to the Monitoring Mechanism Decision the European Commission is required to report on an annual basis to the Council of Ministers and to the European Parliament on the progress towards stabilisation of CO_2 emissions in the Member States of the European Union (EU15) at 1990 levels by the year 2000, and fulfilment of the Community's commitment relating to the limitation of CO_2 emissions under the United Nations Framework Convention on Climate Change (UNFCCC, ratified by the European Community on 21 December 1993). So far, the European Commission has presented two evaluation reports (COM(94) 67 final, 10.3.1994, and COM(96) 91 final, 14.3.1996).

This report, prepared by EEA, can be seen as a contribution to the work on collection of information required for the forthcoming third evaluation report required under Decision 93/389/EEC, that the Commission will prepare and present to Council and Parliament. This report is based on information submitted by the Member States to the Commission under the Monitoring Mechanism and on the Member States' Second National Communications and subsequent Annual Submissions to the UNFCCC, as available to the Commission by April 1999. Additional sources of information used for the preparation of this report were the Community's Second Communication to the UNFCCC (July 1998), CO_2 emission estimates and GDP data from Eurostat, and EU CO_2 emissions projections from the pre-Kyoto energy scenario (COM(97)196).

After a description of the applicable emission targets and the data basis for this report, Chapter 2 presents the EU15 inventory of emissions of carbon dioxide, methane, and nitrous oxide, as well as reported removals of carbon dioxide, for the years 1990 and 1996. Detailed tables of emissions and removals of CO_2, as well as emissions of CH_4, N_2O, NO_x, CO, and NMVOCs for the years 1990, 1994, 1995, and 1996, as well as the available emission data on HFCs, PFCs and SF_6 are included in the Annexes 2A, 2B and 3B. Additionally, Chapter 3 presents an evaluation of progress towards the Community CO_2 stabilisation target and, where relevant, national targets. It reviews the content of national programmes, national emission projections (for the year 2000), and the effect of national measures. Also in Chapter 3, the pre-Kyoto (alternative) emission projections, prepared by the Commission, are described and compared with the EU15 inventory based on the Member States' own emission projections. In line with the main objective of the Monitoring Mechanism of Community CO_2 and other greenhouse gas emissions, the present report primarily focuses on the reporting and evaluation of CO_2 emissions and on the stabilisation of those CO_2 emissions by 2000 on 1990 levels by the Community as a whole (see Articles 2 (1), 5, and 6 of Decision 93/389/EEC). Chapter 4 concludes with the overall findings and conclusions.

1.2. Targets for 2000

In 1990, the Council of Ministers (joint Energy/Environment) of 29 October agreed on the objective to stabilise EU CO_2 emissions by 2000 at the 1990 emission levels.

Additionally, Article 4 of the UN Framework Convention on Climate Change (UNFCCC), adopted in Rio de Janeiro in June 1992, establishes that Annex I parties to this Convention (including all EU Member States and the European Community as parties) have to adopt policies and measures with the aim of returning their anthropogenic CO_2 and other greenhouse gas emissions, individually or jointly, by the year 2000 to 1990 levels.

The Member States of the European Community aimed at achieving this objective of stabilisation throughout the EU as a whole, which was later repeated and confirmed in the Council Decision on the Monitoring Mechanism of Community CO_2 and other greenhouse gas emissions (Council Decision 93/389/EEC). In the Decision on the Monitoring Mechanism, the stabilisation target was linked to the Community's stabilisation and reduction commitments under the UNFCCC. In order to review progress on emission reductions, Member States are obliged under the Monitoring Mechanism to prepare greenhouse gas emissions inventories and national programmes for limiting anthropogenic CO_2 emissions and submit these regularly to the European Commission. The Commission then evaluates the national programmes and reports the results to the Council and European Parliament.

The objective of stabilisation of CO_2 emissions was agreed for the European Union as a whole, but Member States contribute in different ways to achieve this target. Most, but not all, Member States have set national CO_2 limitation targets or objectives.

Five Member States aim at reducing CO_2 emissions by 2000 (or 2005) compared to emissions in 1990 (or 1988) with specific national emission reduction targets, namely, *Austria, Belgium, Denmark, Germany* and *the Netherlands*:

Austria	20 % reduction by 2005 compared to 1988 levels (in addition to the target of stabilising 2000 emissions at 1990 level)
Belgium	5 % reduction by 2000 compared to 1990 levels (corrected for temperature variations).
Denmark	5 % reduction by 2000 compared to 1990; 20 % reduction from energy and transport by 2005 compared to 1988 levels (corrected for temperature variations and calculated as if all electricity used in Denmark were produced in Denmark)
Germany	25 % reduction by 2005 compared to 1990
Netherlands	3 % reduction by 2000 compared to 1990 emissions (corrected for temperature variations); 10 % reduction for CH_4 and stabilisation of N_2O during the same period; after 2000 stabilisation on 2000 levels for CO_2

Five of the Member States have targets to stabilise their CO_2 emissions by 2000 at the 1990 level: *Austria, Italy, Luxembourg, Sweden* and the *United Kingdom*. *Sweden* intends to reduce its methane emissions from waste disposal by 30 % over the period 1990-2000. The other EU Member States have all committed themselves to limit their annual CO_2 emissions over the period 1990-2000 (to a different extent):

Finland	Limitation of the increase of CO_2 emissions from energy production and consumption by the end of the 1990's
France	Stabilisation of the per capita fossil-fuel related CO_2 emissions at less than 2 tons of carbon (=7.3 tons of CO_2) per year (considering the projected population of 59.4 million for 2000 this equals a 15 % increase of total national CO_2 emissions from 1990 to 2000)

Greece	Limitation of the increase in CO_2 emissions to 15 %, during the period 1990 to 2000
Ireland	Limitation of the increase in CO_2 emissions to 20 % during the period 1990-2000, or to 11 % if carbon sinks are also included in calculation
Portugal	Limitation of the increase in CO_2 emissions to 40 % during the period 1990-2010
Spain	Limitation of the increase in CO_2 emissions to 11 to 13 % during the period 1990-2000

1.3. Targets beyond 2000 (Kyoto Protocol)

At the third Conference of Parties (COP-3) to the UNFCCC, held in Kyoto (Japan) in December 1997, the Parties adopted the Kyoto Protocol to the UNFCCC, which sets different binding emission targets – in Annex B of this Protocol – for a number of Parties including the European Community and all of its Member States. This Protocol aims at a reduction of the aggregated emissions of six greenhouse gases by the Annex B Parties by at least 5 % from 1990 levels during the commitment period from 2008 to 2012. The six gases included in the Kyoto greenhouse gas basket are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). Emissions of the gases are expressed in CO_2-equivalents based on their 100-year global warming potential.

According to Article 3 (1) of the Protocol, the overall reduction target of at least 5 % for the Annex B countries of the Kyoto Protocol shall be achieved individually or jointly, which is of importance for the European Community and the Member States, as it recognises an European Community approach towards meeting the Community's commitments. In accordance with Article 3 (7), each Annex B Party is allowed an assigned amount of greenhouse gas emissions that it may emit over the five year commitment period 2008- 2012, relative to its carbon dioxide equivalent emissions of all six greenhouse gases in the base year 1990. The European Community and each of its Member States were assigned a yearly amount of 92 % of 1990 emissions. The EU combined reduction target is therefore minus 8 % based on 1990 levels, to be achieved during the period 2008 to 2012. In Kyoto no agreement was found on a binding reduction target for the year 2005 as had been proposed by the EU, but Article 3 (2) of the Kyoto Protocol requires Parties to make demonstrable progress by 2005.

The adoption of the Kyoto Protocol – which is still subject to a complicated process of ratification before it will enter into force – has led to the agreement on an 'EU burden sharing' mechanism, agreed upon by the Council of Ministers in June 1998 (see Table 1.1). According to this scheme, different emission targets apply for the EU Member States.

Table 1.1: Member States commitments in accordance with art. 4 of the Kyoto protocol (emission targets incl. reductions by sinks), emissions of the six-GHG-basket for 2008 to 2012 relative to 1990 base year levels, agreed upon by the Council of Ministers (EU burden sharing, June 1998)

MEMBER STATE	COMMITMENTS IN ACCORDANCE WITH ARTICLE 4 OF THE KYOTO PROTOCOL
Austria	-13 %
Belgium	-7.5 %
Denmark[1]	-21 %
Finland	0 %
France	0 %
Germany	-21 %
Greece	+25 %
Ireland	+13 %
Italy	-6.5 %
Luxembourg	-28 %
Netherlands	-6 %
Portugal	+27 %
Spain	+15 %
Sweden	+4 %
United Kingdom	-12.5 %

[1] In connection with the agreement Denmark made the following statement:

'Denmark is able to reduce its emissions by 17 % in the first commitment period compared to its 1990 level of about 80 million tonnes corrected CO_2-equivalents through domestic policies and measures and present measures adopted by the Community. In making its legal commitment to a 21 % reduction as set out in the agreement, Denmark has assumed the further elaboration and adoption of common and co-ordinated policies and measures (CCPMs) prior to the ratification of the Kyoto Protocol.'

Whereas the three new GHGs are not part of the required evaluation under the current Monitoring Mechanism, the Annexes 2A and 3B of this report present relevant data reported to the Commission by the Member States. In this context, it should be noted that the Monitoring Mechanism is currently being revised with the aim to include reporting on the three additional gases, as well as to guarantee reporting after 2000.

1.4. The emission data basis for this report

In preparing this report EEA has made use of greenhouse inventories submitted to the Commission by April 1999. This did not provide a complete EU15 inventory for CO_2 emissions for 1996 nor for 1997, as would have been expected according to the requirements under the Article 3 (2) of the (current) Monitoring Mechanism Decision. By 31 July 1997 the first national CO_2 emissions estimates for 1996 should have been submitted by the Member States to the Commission, and by 31 July 1998 the first estimates for 1997.

Most Member States submitted updated CO_2 emission estimates for 1990, differing from the second evaluation report. Changes to earlier reported 1990 data resulted from methodology improvements and the 1996 revision of the Intergovernmental Panel on Climate Change (IPCC) Guidelines for national greenhouse gas inventories. Updating the whole time series was essential for reasons of consistency and comparison to allow for a more accurate trend analysis than was possible in the second evaluation report. CO_2 projections for 2000 were submitted by all Member States.

Only a few Member States had submitted 1996 estimates by 31 July 1997 under the Monitoring Mechanism. By April 1999, twelve out of the fifteen Member States had provided 1996 estimates (accounting for 78 % of the estimated 1996 EU15 CO_2 emission total) and the

following Member States had reported their 1997 estimates: Austria, Finland, Germany, Luxembourg, Ireland, and Sweden (relevant updates for the years 1990-1996 in these latest inventories were taken into account for the preparation of this report).

A similarly incomplete record of submission of inventories is observed with regard to reporting under the UNFCCC (April 1997 deadline for the Second National Communications to the UNFCCC, and annual 15 April deadline in 1998 for the subsequent reporting of annual GHG inventories) which is a valuable source of information for the preparation of the evaluation report under the Monitoring Mechanism.

Since by April 1999, 1996 is the latest year for which a majority of Member States national inventories had been made available to the Commission by the Member States, the EU15 inventory could only be estimated by EEA for the years up to 1996.

The delay in reporting of national data and also of programmes by the Member States to the European Commission and to the Secretariat of the UNFCCC was one of the reasons for a delay in the preparation of this report (as well as of the Second National Communication of the EC to the UNFCCC, June 1998, and of the Annual EC Greenhouse Gas Inventory 1990-1996, that has been prepared for Submission to the UNFCCC in April 1999). It should be noted that the date of 31 July for submissions of annual GHG inventories for the previous year in the Council's Common Position on the revision of Decision 93/389/EEC is changed to 31 December.

As not all Member States have submitted 1996 data, the provisional EU15 inventory estimates in this report for 1996 are compiled from a mixture of different information. In order to present a EU15 1996 inventory, the inventory as reported by the relevant Member State for the most recent previous year was taken as a first estimate for the missing year. The EU15 1996 inventory is therefore based on national GHG emission data from 1996, 1995, and/or 1994:

1996	Covering 78.5 % of the total of EU15 CO_2 emissions, data from 12 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Luxembourg, the Netherlands, Sweden, and the United Kingdom
1995	Covering 20 % of the total of EU15 CO_2 emissions, data from 2 countries: Italy, and Spain
1994	Covering 1.5 % of the total of EU15 CO_2 emissions, data from 1 country: Portugal

2. The EU15 inventory of greenhouse gas emissions and removals

This chapter outlines the European Community (EU15) inventory of greenhouse gas emissions of CO_2 (carbon dioxide), CH_4 (methane) and N_2O (nitrous oxide) and removals of CO_2 for 1990 and 1996. It is intended to provide an indication of progress towards the stabilisation of CO_2 and other GHG emissions throughout the European Union. Data on the emission of HFCs, PFCs, and SF_6 as well as on the ozone precursors NMVOC, CO, and NO_x can be found in Annexes 2A and 2B. An explicit list of information sources by country can be found in the References. Supplementary information on inventory methodologies is presented in Annex 1.

The Member State emission inventories for 1990, 1994, 1995, and 1996 – as available to the Commission – are presented in Annex 3B, which presents these inventories in the format required under the United Nations Framework Convention on Climate Change laid down by the Intergovernmental Panel on Climate Change (IPCC).

It should be noted that – according to this format – emissions resulting from *international bunkers* are not included in the national emission totals. This category includes emissions from international shipping and aviation both between Member States of the European Union and third countries, as well as between the Member States themselves. As EU totals are calculated as the sum of the Member States' totals, emissions from intra-EU trans-boundary shipping and aviation are therefore not included in EU total bunker emissions.

2.1. Emissions 1990

Table 2.1 presents national and European Union emissions of the anthropogenic greenhouse gases CO_2, CH_4 and N_2O for the year 1990, which is the base year for both the Monitoring Mechanism and the targets of the UNFCCC. For CO_2, anthropogenic emissions and removals by sinks are presented. These emission data have been updated by several Member States to reflect improvements in understanding emission sources and methodologies for emission estimation as provided in the complementary IPCC Guidelines for National Greenhouse Gas Inventories and the EMEP/CORINAIR Atmospheric Emission Inventory Guidebook (see also Annex 1). The differences between these updated emission data for EU15 in 1990 and the data presented for 1990 in the Second Evaluation Report (14 March 1996) are 5.3 %, -6.5 % and 35.9 % for CO_2, CH_4 and N_2O respectively (the negative sign for CH_4 indicates a lower value for the updated version). Relevant country-specific details can be found in Annex 1 (methodology) and Annex 3B (emission inventories).

2.2. Emissions 1996

By 31 December 1998 almost all Member States (except for Portugal and Spain) had submitted data on CO_2, CH_4, and N_2O for 1995. Belgium, Denmark, France, Germany, Greece, Ireland (also 1997), Luxembourg, the Netherlands, Sweden and the United Kingdom had also provided GHG emission estimates for 1996. By April 1999, 1996 inventory data on the major greenhouse gases had been made available to the Commission for all Member States except Italy, Portugal, and Spain.

Aiming at the compilation of a complete EU15 inventory of GHG emissions for 1996, for Italy and Spain 1995 data and for Portugal 1994 data have been used as a first estimate for 1996.

Table 2.1: Anthropogenic emissions of GHG 1990 (Gigagrams)

	CO_2		CH_4	N_2O
MEMBER STATE	Emissions	Removals		
Austria	62,042	13,300	460	7
Belgium	116,090	2,057	634	31
Denmark[1]	52,277	924	421	34
Finland	59,300	30,600	358	19
France[2]	478,001	117,609	3,018	309
Germany	1,014,500	3,862	5,571	225
Greece	85,349	0	437	30
Ireland	30,719	5,160	811	29
Italy	441,653	35,891	2,329	165
Luxembourg	13,300	0	24	1
Netherlands	161,360	1,500	1,292	64
Portugal	47,123	1,152	816	14
Spain	226,423	28,970	2,181	94
Sweden	55,443	34,368	284	26
United Kingdom	614,825	11,453	4,438	215
EU-15	**3,458,405**	**286,846**	**23,074**	**1,261**

[1] The corrected CO_2 emission is 60,233 Gg (see note 1 to table 1.1)

[2] French emission data include metropolitan area and overseas territories

Table 2.2: Anthropogenic emissions of GHG 1996 (Gigagrams)

	CO_2		CH_4	N_2O
MEMBER STATE	Emissions	Removals		
Austria	64,026	13,753	447	7
Belgium	128,547	2,057	591	35
Denmark[1]	73,236	981	425	34
Finland	66,400	14,300	270	19
France[2]	493,512	128,095	2,712	297
Germany	918,932	35,006	3,573	224
Greece	91,978	0	457	29
Ireland	34,819	6,497	800	26
Italy	447,644	36,199	2,516	162
Luxembourg	7,098	295	24	1
Netherlands	184,870	1,700	1,179	72
Portugal	50,841	1,152	834	14
Spain	247,703	28,970	2,370	90
Sweden	63,352	31,774	261	26
United Kingdom	593,422	18,672	3,712	189
EU-15	**3,466,381**	**319,451**	**20,170**	**1,227**

Cells marked light grey indicate 1995 data, shown in order to present EU15 totals

Cells marked dark grey indicate 1994 data, shown in order to present EU15 totals

[1] The corrected CO_2 emission is 58,736 Gg (see note 1 to table 1.1)

[2] French emission data include metropolitan area and overseas territories

2.3. Emission trends 1990/1996

Based on the indicative 1996 CO_2 emission estimate for the European Union as presented in Table 2.2, the overall trend in CO_2 emissions shows a slight increase of 0.2 % from 1990 to 1996, while emissions increased by 2.7 % from 1995 to 1996.

However, this trend varies considerably when looking at the Member States level. Given that three Member States still have to submit their actual 1996 emission inventories further changes to this figure might be expected in future.

The Community-wide trend of a 1996 CO_2 emission level nearly equal to the 1990 level is based on emission reductions in only three Member States: Luxembourg (-46.6 %), Germany (-9.4 %) and the UK (-3.5 %). Together, these account for a reduction of 123 Tg while in all other Member States emissions increased during the same period, by a total of 131 Tg. The largest absolute decreases in CO_2 emissions occurred in Germany (reduction of 95.6 Tg) and the United Kingdom (reduction of 21.4 Tg). These two Member States were the two largest emitters in 1990 (with a contribution of 29.3 % and 17.8 % to the total EU CO_2 emissions respectively).

The German emission reduction is mainly caused by the economic restructuring of the five new *Länder*, which indicates that it may not be sustained at similarly high levels throughout the remaining period until the year 2000. Other factors positively influencing the reduction of emissions in Germany were increasing efficiency in power and heating plants, the substitution of brown coal by natural gas and gas oil, and reduced energy consumption in final consumption sectors. The reduction of CO_2 emissions in the UK was primarily the result of switching from oil and coal to gas in the energy sector and of productivity improvements in the nuclear power sector. Luxembourg reduced its CO_2 emissions from 13.3 Tg to 7.1 Tg, during the same period.

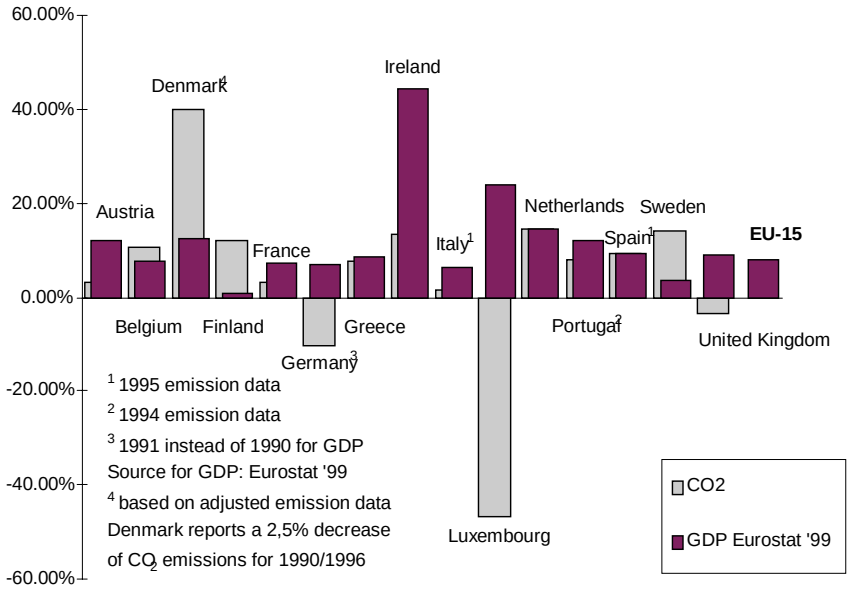
The third and fourth largest emitters in the EU15 – France and Italy – (contributing 13.8 % and 12.8 % of EU15 total CO_2 emissions in 1990) showed an increase of emissions of 3.2 % (France 1990/1996) and 1.4 % (Italy 1990/1995). Spain, the fifth largest emitting country in the EU, showed an increase of 9.4 % over the reported period (1990/1995).

It should be noted in this context, that CO_2 emissions are affected by outdoor temperature (e.g. cold or mild winters), because of the influence of temperature on the energy consumption for space heating. Some countries prepare therefore CO_2 emission estimates, that are corrected for temperature-related effects in order to provide a better analysis of structural developments in CO_2 emissions. The increase in EU15 CO_2 emissions from 1995 to 1996 was most likely partly caused by the relatively cold weather conditions for that period (compared to earlier years). This temperature effect has however not been taken into account in full detail by the EEA for the EU15 inventory, as most Member States reported non-temperature adjusted data only. The same applies for the Danish adjustments made for electricity imports/exports, which are reported by Denmark in order to allow for the analysis of specific trends and the effects of specific measures, in line with a relevant encouragement by the UNFCCC to report any adjusted data available (while non-adjusted data must still be provided; see para 39 of Annex to Dec 9/CP.2, in FCCC/CP/1996/15/Add.1). For reasons of consistency, the unadjusted trends, which are required to be reported by all Member States under the UNFCCC, are presented in the tables of this report for Member States as well as for EU15 (however with in addition adjusted data, if these were reported by Member States, presented in footnotes where appropriate).

When comparing the CO_2 emissions trend with data on the economic development during 1990 and 1996, some connections between the changes in CO_2 emissions and the trend in GDP can be observed (see figure 2.1). However, it should be noted that other effects counteract this interdependency, in particular the gradual increase in energy efficiency, dematerialization of industries and the effects of policies and measures to reduce GHG emissions (this analysis is further elaborated in chapter 3). The interdependency and the emission reduction effect of currently implemented policies and measures in the Member States is in general difficult to assess, but particularly in special situations (for example in Denmark, where the inter-annual effect of electricity trade on the national emissions can be large). A more detailed analysis would be necessary to explain trends in specific sectors within each Member State (see also chapter 3).

For the EU15 as a whole, growth of GDP in the period 1990 to 1996 was 9 % (while this was 5.7 % between 1990 and 1995). This is a relatively low growth figure, since – with the exception of the second oil crisis in the early 1980s – the 5-year GDP growth figure in the period 1960 to 1990 varied between 8 % and 28 % and was on average about 16 %. This explains partly the relative low increase of EU15 CO_2 emissions between 1990 and 1996 (in addition to other effects mentioned above).

Figure 2.1: Anthropogenic CO_2 emission trends 1990/1996 and trend of GDP in 1990/1996



For the period 1990 to 1996, fossil fuel combustion-related CO_2 emission estimates are also available from Eurostat (Table 2.3). Fuel combustion-related emissions account for about 95 % of total CO_2 emissions, the remainder mainly from cement production and other non-energy related sources. The Eurostat estimates in Table 2.3 are based on the official energy balances per country compiled by Eurostat from national energy statistics (see also annex 1). Over the period 1990 to 1996 an increase of 2.0 % in fuel combustion-related CO_2 emissions can be observed for EU15 from the Eurostat estimates, whereas Eurostat data for 1995 still indicated a decrease from 1990 emission levels (0.9 %).

Table 2.3: Anthropogenic CO_2 emissions (Tg) and trends (change in %) from fossil fuel combustion for 1990, 1995 and 1996 as estimated by Eurostat in 1998

	CO_2 fossil fuels				
MEMBER STATE	1990 (Tg)	1995 (Tg)	1990/1995	1996 (Tg)	1990/1996
Austria	55.0	56.7	3.1 %	58.8	6.9 %
Belgium	104.8	111.3	6.2 %	117.0	11.6 %
Denmark[1]	52.8	59.9	13.4 %	73.9	40.0 %
Finland	51.6	57.1	10.7 %	60.1	16.5 %
France	354.1	347.2	-1.9 %	366.0	3.4 %
Germany	953.3	865.7	-9.2 %	889.0	-6.7 %
Greece	71.1	78.2	10.0 %	82.1	15.5 %
Ireland	30.1	33.1	10.0 %	34.8	15.6 %
Italy	390.8	405.1	3.7 %	401.0	2.6 %
Luxembourg	10.6	8.7	-17.9 %	8.9	-16.0 %
Netherlands	153.0	167.0	9.2 %	177.8	16.2 %
Portugal	39.1	47.9	22.5 %	43.4	11.0 %
Spain	203.8	237.5	16.5 %	226.6	11.2 %
Sweden	50.6	53.6	5.9 %	58.4	15.4 %
United Kingdom	567.7	532.3	-6.2 %	551.2	-2.9 %
EU15	**3,088.5**	**3,061.3**	**-0.9** %	**3,149.1**	**2.0 %**

[1] the trend from the Eurostat figures for Denmark with corrections (see note 1 to table 1.1) would be: 60.8 Tg in 1990, 59.3 Tg in 1995, -2.4 % for 1990/1995, 59.4 Tg in 1996, and -2.2 % for 1990/1996

While for most Member States the trend in fuel combustion-related CO_2 emissions as presented by Eurostat for the period 1990-1996 is in reasonable agreement with the total CO_2 emission trend based on the estimates in their own national inventories, differences remain for some Member States. The Eurostat estimates can be seen as a method of validation of the national estimates (see Annex 1). It should be noted however, that Eurostat uses the IPCC Reference Approach with different emission factors and lower heat values for fuels, while most of the Member States are following the sectoral IPCC methodology. Furthermore the Eurostat estimates include emissions associated with international aviation, which are excluded from the Member States national total estimates. Differences should be analysed and further explained with the aim to improve the quality and consistency of the national estimates.

3. Evaluation of progress towards the stabilisation target

This chapter presents an overview of the limitation strategies (policies and measures) of the EU and of the individual Member States in place in 1998 and the projected 1990-2000 emission trends. Furthermore it gives a brief overview of alternative emission projections, prepared by the European Commission. For a detailed analysis of the Member States' projections and targets for 2000, and relevant measures adopted, see Annex 3A.

3.1. Limitation strategies

3.1.1. European Union overall strategy

The introduction of a mandatory EU-wide energy and CO_2 tax has been proposed by the European Commission but no agreement has yet been reached. In 1997, the European Commission presented a proposal for a comprehensive energy products tax, to extend the scope of the existing EU-wide excise system to cover natural gas, coal, and electricity (COM(90)30). Various Member States have implemented energy/CO_2 taxes to some extent: Austria, Belgium, Denmark, Finland, the Netherlands, and Sweden (see for an overview of national environmental taxes in the Member States reference EC, 1999).

In September 1997, the European Commission adopted a Communication on 'Climate Change – the EU Approach to Kyoto' (COM(97) 481). This Communication analysed the technical feasibility of reducing CO_2 emissions from key socio-economic sectors (transport, industry, energy intensive industry, power generation, domestic sector) and the costs and benefits of meeting the pre-Kyoto EU negotiating position of an emission reduction of minus 15 %. It showed that reaching a 15 % reduction in CO_2 emissions would be technically feasible and that the overall costs were economically manageable provided that other industrialised countries take comparable actions to reduce their emissions.

In June 1998, the European Commission adopted a Communication on Climate Change (COM(98) 353). The communication contains an analysis of the Kyoto Protocol and its implications for the EU, the main issues being the future coverage of six instead of three greenhouse gases, joint implementation, emission trading among (industrialised) Annex-I countries, and the clean development mechanism which involves co-operation with non-Annex I countries. The Communication also indicated potential EU policies and measures to meet the Kyoto Protocol commitments. Based on the outcome of COP-4, the Buenos Aires Action Plan, and taking into account strategies of the Member States, it is expected that the European Commission will prepare a more complete strategy in 1999.

3.1.2. European Union sectoral approaches

In May 1997, the European Commission adopted a communication on the 'Energy Dimension of Climate Change' (COM(97) 196), which focuses on the implications for the energy sector of meeting the EU's pre-Kyoto objective of a 15 % reduction for the basket of three greenhouse gases in 2010 compared to 1990. A number of potential areas of action are presented in the Communication, including energy efficiency and energy saving, initiatives in power/heat production, technology, innovation, and fiscal instruments.

A Communication on 'Energy efficiency in the European Community – towards a strategy for rational use of energy' (COM(1998) 246) was presented by the European Commission in 1998. It presents the potential for energy efficiency improvements until 2010, the institutional, technical and financial barriers to the exploitation of this potential, the economic rationale to remove these barriers and the elements for a future action plan to

contribute to achieving the Kyoto Protocol commitments. It also summarises Member State programmes for improving energy efficiency.

The EU programmes ALTENER (promotion of renewable energy sources), SAVE (promotion of energy efficiency with non-technological measures) and JOULE-THERMIE (promotion of clean and energy-efficient technologies) were of importance for the energy sector and transformation industries (including refineries). Continuing programmes provide for the creation of local energy agencies to promote renewable energies (SAVE II) and support the development of sectoral market energy strategies (ALTENER II).

Regarding the transport sector, an agreement was reached with the European car industry to reduce CO_2 emissions from new passenger cars by 25 % between 1995 and 2008 (COM(1998) 495) in 1998. The car industry commits itself to reducing average CO_2 emissions from new passenger cars to 140 g/km by 2008. The Commission's target in the long run is to improve fuel efficiency of passenger cars to 120 g/km. It recently proposed a scheme for energy labelling of new passenger cars to achieve this target.

The IPPC Directive (1996) for the industry sector includes energy efficiency as a criterion for the determination of best available technology (BAT) and defines the efficient use of energy as one of the general principles governing the basic obligations for the operator.

The revised proposal for a Directive on the landfill of waste aims at reducing landfill methane emissions. Member States would need to fit all new and existing landfills which receive biodegradable waste with a landfill gas control mechanism, where possible using the gas collected for energy production and the directive sets binding targets for the reduction of the amounts of municipal organic waste.

In the agriculture sector, the reform of the Common Agricultural Policy of 1992 could indirectly lead to reduction of methane emissions, caused by reduced numbers of cattle and reduction of nitrous oxide emissions due to reduced amounts of mineral fertilisers applied. Increased non-food biomass production on set-aside land could help to substitute fossil fuel with biofuel. Regarding the forestry sector, financial support will be provided by the EU for afforestation of agricultural land (Regulation 2080/92/EEC).

Regarding the households sector several Directives have been adopted on energy-efficiency requirements for appliances and various agreements with manufacturers and importers on minimum energy standards have been reached.

3.1.3. Member States policies and measures

Table 3.1 summarises various Member States' policies and measures for reducing greenhouse gas emissions. The national policies and measures presented here are those presented in the most recent national document available to EEA, and with some quantitative estimates of their emission reduction effect. In many cases the Second National Communication was used, see for a complete overview of sources of information the overview in the report (*References for the emission inventories, measures and policies of the EU Member States* and further Annex 3A).

Table 3.1: Some national EU Member States policies and measures for reducing greenhouse gas emissions

	Energy general	Power generation	Industry	Transport	Residential	Others
Austria	Energy/CO_2 tax implemented	Promotion of combined heat and power (CHP) plants and renewable energy			Tightening of energy-relevant regulations for buildings	
Belgium	Energy tax (levy on energy - parafiscal tax) implemented	Promotion of CHP and renewable energy		Improvement of public transport, promotion of combined rail and road transport	Improved energy efficiency	
Denmark	Energy/CO_2 tax implemented for households and for the industry sector (green tax reform)	Promotion of CHP, renewable energy (large scale wind energy, solar) and electricity production from biomass. Construction of new gas-fired (replacing coal) power plants after 2000. Providing adequate payments for energy generated from renewable sources.	Promotion of energy efficiency through energy auditing schemes, voluntary agreements and CO_2 taxes.	Promoting public transport and combined rail and road transport. Financial support for purchase of clean vehicles, further taxation of fuel.	Tightening of energy relevant regulations for buildings. Energy Performance standards, promote energy efficient products, appliances and heat insulation.	**Forestry:** measures to enhance carbon sequestration through an afforestation programme **Waste treatment:** from 1997 the disposal of combustible waste at landfills is prohibited. All waste incineration is used for energy purposes.
Finland	Energy/CO_2 tax implemented	Efficiency improvements, promotion of CHP, electricity production from biomass	Promotion of energy saving through voluntary agreements			**Forestry**: measures to enhance carbon sequestration
France		Demand-side management		More energy-efficient transport	Increasing energy efficiency in buildings	**Forestry**: increasing forest carbon sequestration

	Energy general	Power generation	Industry	Transport	Residential	Others
Germany		Voluntary commitment on improved energy efficiency, legislation on the sale of electricity generated from renewables to the grid	Voluntary measures, improving energy efficiency	Energy-efficient transportation policy		**New Länder:** emission reductions by replacement of lignite by other fuels, modernisation of industrial installations, improvement of energy efficiency (industry, buildings)
Greece		Introduction of natural gas, development of CHP, large scale exploitation of solar energy	Introduction of natural gas	Metro in Athens and Thessaloniki	Introduction of natural gas	**Forestry**: Control of forest resources, re-afforestation programme.
Ireland		Energy efficiency improvements, fuel switching to natural gas, promotion of CHP, increasing the use of renewables.	Energy efficiency improvements	Investment programme for roads and rail networks	Energy efficiency improvements	**Forestry**: afforestation programme.
Italy		Efficiency improvement, increasing use of renewables	Increased use of natural gas	Traffic control and rationalisation of urban mobility	Increased use of natural gas, increasing energy efficiency in buildings	
Luxem-bourg				Promotion of public transport, rail transport and waterways	Promotion of CHP	

	Energy general	Power generation	Industry	Transport	Residential	Others
Nether-lands	Energy/CO_2 tax implemented	Increase of CHP, increasing renewable energy and partial fuel switch to wood; providing adequate payments for energy generated from renewable sources	Voluntary agreements on energy efficiency SMEs: Environmental Action Plans for small and medium sized enterprises	Shift to more efficient cars, improvement public transport	Energy performance standards, promotion of energy-efficient products, appliances and heat insulation, Environmental Action Plans for households	**Waste treatment**: 5 million tonnes of waste for energy purposes by 2000 **Service sector:** energy performance standards, promotion of energy efficient products, appliances and heat insulation
Portugal		Introduction of natural gas, increased use of renewables, technological improvements		Alternative fuels and infrastructural improvements		
Spain			Energy conservation, fuel switching, promotion of natural gas and CHP	Subsidising public transport, investment in rail infrastructure	Energy conservation, fuel switching, promotion of natural gas and CHP	
Sweden	Energy/CO_2 tax implemented	Promote renewable energy (biofuels, wind power and solar energy), increase efficiency		Tax on petrol		**Forestry**: switch to sustainable practices
United Kingdom		Switch from coal to natural gas continuing, improvements in the productivity of the nuclear plants, increase CHP, promote renewable sources of energy	Voluntary agreements regarding energy savings, promotion of energy efficiency	Increase road fuel duties, fuel efficiency improvement of vehicles, encouraging energy efficiency	Stricter regulations for energy efficiency for new buildings	

3.2. Emission projections for 2000

3.2.1. Member States

The likelihood of achieving the EU CO_2 stabilisation target by 2000 depends on socio-economic developments as well as on the effect of policies and measures, but also other non-structural effects such as outdoor temperature (influencing energy consumption for space heating) and for some Member States electricity trade. In the national programmes, Member States have presented scenarios of projected emissions in 2000, based on different macro-economic and other models and assumptions. The status of policy measures (whether adopted and implemented, in the process of adoption, or merely considered) is not always clearly stated in the national programmes. In addition a quantification of the effect of individual policies and measures in terms of reductions of emissions in absolute figures is often not available or incomplete.

To improve the analysis in this report and to help reducing gaps and inconsistencies in the Member States' emission projections, an (alternative) EU15 emission projection prepared by the European Commission, based on a pre-Kyoto energy scenario, is presented and discussed in section 3.2.3. Despite the problems mentioned above, an attempt has been made in this report to summarise and quantify the main national policies and measures and their emission reduction potential in 2000, based on the national programmes.

Table 3.2 presents the national total CO_2 emissions data for the individual Member States and the European Union for the years 1990 and 1996 and the projected emissions for 2000, with and without the effect of emission reduction measures (based on the latest available national programmes and / or second national communications to UNFCCC). CO_2 removals (by sinks) due to afforestation and other activities (like carbon uptake in soils) are not included.

Table 3.2: Reported historic and projected anthropogenic CO_2 emissions (Gigagrams)

	Inventory		Projection 2000	
MEMBER STATE	1990	1996	without measures	with measures
Austria	62,042	64,026	63,500	57,300
Belgium[1]	116,090	128,547	129,300	125,200
Denmark[1]	52,277	73,236	66,000 [3]	54,309 [3]
Finland	59,300	66,400	-	60,000
France[2]	478,001	493,512	492,417 [4]	474,417 [4]
Germany	1,014,500	918,932	960,400	893,900
Greece	85,349	91,978	106,000 [5]	98,000 [5]
Ireland	30,719	34,819	-	34,998
Italy	441,653	447,644	459,038	446,200
Luxembourg	13,300	7,098	7,423	7,423
Netherlands[1]	161,360	184,870	189,000 [6]	189,000
Portugal	47,123	50,841	-	50,103
Spain	226,423	247,703	-	258,247
Sweden[1]	55,443	63,352	-	60,100
United Kingdom	614,825	593,422	707,600	578,000
EU-15	**3,458,405**	**3,466,381**	**-**	**3,387,197**

Cells marked light grey indicate 1995 data, shown in order to present

Cells marked dark grey indicate 1994 data, shown in order to present

[1] For four Member States corrected estimates (for temperature or electricity trade) are available. These corrected estimates are:

country	***1990***	***1995***	***1996***
Belgium	*121100*	*-*	*-*
Denmark	*60233*	*58917*	*58736*
Netherlands	*167600*	*180400*	*-*
Sweden	*57620*	*58470*	*-*

For Belgium, the projection data in Table 3.2. originates from the first Belgian National Communication to the UNFCCC (January 1997)

[2] For France, inventory data is presented for the metropolitan area and overseas territories, whereas projections for 2000 relate only to the metropolitan area

[3] The reported projected anthropogenic emissions for 2000 without and with measures are the same with or without corrections (based on temperature and precipitation projected to be normal).

[4] Overall projections for France in 2000 have been reprocessed by IFEN, based on trends for combustion related emissions only, proposed in France's Second National Communication to the UNFCCC. For this projection non energy-emissions and sinks have not been changed compared to their 1990 level.

[5] Figures for 'without measures' and 'with measures' are based on different scenario assumptions.

[6] The number presented for the Netherlands under 'without measures' presents an estimation of emissions for 2000 based on all measures taken until 1 January 1997.

The column 'without measures' represents a baseline scenario, where available, presenting the estimates for the case that no additional mitigating measures would be taken. The column 'with measures' represents the expected emissions taking into account the policies and measures for which an estimation of their reduction potential was available from the national programmes. The 'with measures' estimations represent the effect of policies and measures that were already adopted by the Member States.

It should be noted that the national definitions of the 'without measures' and 'with measures' scenarios differ considerably between Member States. Especially, there is not one harmonised date (year) set for assigning the effect of adopted measures to either the 'without measures' or 'with measures' scenario. In order to improve the reliability and consistency of the EU15 emission projection, further harmonisation efforts with regard to such a single 'cut off-date' seems to be useful.

In Table 3.3 the changes (relative to 1990 data) between 1990-1996 and 1990-2000 (projected) are shown, based on the data presented in Table 3.2.

Table 3.3: Trend of CO_2 emissions for 1990/1996 and 1990/2000 (change in %) and observed and projected trend of GDP (change in %) for 1990/1996 and 1996/2000

	Inventory	Projection 1990/2000		GDP[5]		
MEMBER STATE	1990/1996	without measures	with measures	1990/1996 (Eurostat)	1996/2000 (NTUA)	1995/2000 (Member States)
Austria	3.2 %	2.4 %	-7.6 %	11.9 %	10.5 %	10.4 %
Belgium[1]	10.7 %	11.4 %[1]	7.8 %[1]	7.8 %	11.2 %	9,9/12,6%
Denmark[1]	40.1 %	26.3 %	3.9 %	8.7 %	12.5 %	11.5 %
Finland	12.0 %	-	1.2 %	-3.4 %	14.4 %	13.1 %
France	3.2 %	3.0 %[2]	-0.7 %[2]	4.8 %	11.3 %	12,0/13,7%
Germany	-9.4 %	-5.3 %	-11.9 %	9.5 %[3]	11.7 %	12.6 %
Greece	7.8 %	24.2 %[4]	14.8 %[4]	7.2 %	12.5 %	-
Ireland	13.3 %	-	13.9 %	35.7 %	22.0 %	21.7 %
Italy	1.4 %	3.9 %	1.0 %	6.8 %	10.0 %	10.4 %
Luxembourg	-46.6 %	-44.2 %	-44.2 %	-	-	-
Netherlands[1]	14.6 %	17.1 %	17.1 %	9.5 %	12.4 %	17.6 %
Portugal	7.9 %	-	6.3 %	8.9 %	13.7 %	19.9 %
Spain	9.4 %	-	14.1 %	7.8 %	13.9 %	-
Sweden[1]	14.3 %	-	8.4 %	4.7 %	10.7 %	8.3 %
United Kingdom	-3.5 %	15.1 %	-6.0 %	6.5 %	12.5 %	15.6 %
EU-15	**0.2 %**	-	**-2.1%**	**9.0%**	**11.8%**	**-**

Cells marked light grey indicate 1995 data, shown in order to present EU15

Cells marked dark grey indicate 1994 data, shown in order to present EU15

[1] For four Member States corrected values (for temperature or electricity trade) are available. Corrected trends are:

country	1990/95	1990/96	1990/2000 without	1990/2000 with
Belgium	-	-	6.8 %	3.4 %
Denmark	-2.2 %	-2.5 %	9.6 %	-9.8 %
Netherlands	7.6 %	-	12.8 %	12.8 %
Sweden	1.5 %	-	-	4.3 %

In addition to the trends based on corrected figures under the with measures 1990/2000 scenario, Belgium, comparing the projected emissions with the base year data used as input for those emissions, reports a percentage increase of actual emissions of 11.7 % under the without measures scenario, as well as of 8.1 % under the with measures scenario.

[2] based on projections above, see note 4 to table 3.2

[3] Based on 1991 data

[4] Figures for 'without measures' and 'with measures' are based on different scenario assumptions.

[5] Source for GDP trends: 1990-1996 (5th column): Eurostat; 1996-2000 (6th column): Capros, NTUA, 1997. Business as usual scenario, Member States own information in 7th column (only '95-'00 available).

For the three Member States with additional national reduction targets for the year 2000 compared to 1990 emissions (Belgium, Denmark and the Netherlands), the figures in the table and footnotes above indicate that only one is likely to reach its target: Denmark with a target of 5 % reduction in 2000 from 1990 levels (provided that corrections for temperature and electricity import / export are taken into account). Belgium and the Netherlands currently project emissions to be higher in 2000 than in 1990. Germany has an additional target for 2005, namely a 25 % reduction. The projected emission from Germany in 2000 implies a reduction of 11.9 % and the emission projection for 2005 suggests a 14.5 % reduction between 1990 and 2005. This indicates that the additional German target of 25 % reduction over the period 1990-2005 might be difficult to meet. Similarly, strong efforts are required for reaching the national target of a 20 % reduction from 1988 levels by 2005 in Austria.

Of the five Member States with stabilisation targets based on 1990 levels for the year 2000, Italy and Sweden currently project an increase of emissions by 2000. The other three (Austria, Luxembourg and the United Kingdom) as well as France expect to reach values below the 1990 emissions.

Table 3.4 briefly comments on the emission projections for 2000 presented by Member States. A more detailed analysis is presented in Annex 3A.

Table 3.4: Short evaluation of the CO_2 emission projections for 2000, by Member State

Member State	· Comments
Austria	· CO_2 emissions for the year 1996 are 3 % above the emissions in 1990 · Meeting the stabilisation target for 2000 in reference to 1990 still seems achievable, according to 2000 projection with measures, depending on the impact of such national measures
Belgium	· In spite of measures CO_2 emission is forecasted to grow by 8 % for 1990 to 2000. · Fulfilling the national target of a 5 % reduction or the EU stabilisation target (both based on 1990) seems unlikely.
Denmark	· The national 5 % reduction target for 2000 is expected to be reached but only if corrections for temperature and electricity trade are taken into account
Finland	· emissions have risen by 12 % from 1990 to 1996, it is not clear whether the projected measures will bring emissions back to nearly 1990 levels by 2000 (significant changes to older projections)
France	· The increase of CO_2 emissions in France in the period between 1990 and 1996 could by 2000 be reversed as a result of measures · The fossil fuel related emission per capita is projected to be 6.2-6.5 tonnes CO_2 in 2000, in line with the French target of an upper limit of 7.3 tonnes/capita
Germany	· With measures, a 12 % reduction of CO_2 emissions between 1990 and 2000 is expected, which is clearly in line with the EU stabilisation target · The national target of 25 % reduction by 2005 could be difficult to reach
Greece	· Reduction of GHG emission is technically possible; however, the national programme identifies various practical restrictions in reducing GHG emission · With measures, the increase in 2000 is expected to be approximately 15 % compared to 1990 levels
Ireland	· With measures, CO_2 emissions will increase by 14 % compared to 1990 levels by 2000 · The increase is in line with the national objective to limit the increase to 20 % over the period 1990-2000
Italy	· CO_2 emissions are is projected to rise by 1 % from 1990 to 2000, which is almost in line with the national objective of stabilisation
Luxembourg	· With measures, emissions of CO_2 for 2000 will be reduced by 44 % compared to 1990, which exceeds the stabilisation objective
The Netherlands	· The projected CO_2 emissions in 2000 are expected to be 17 % higher than the 1990 emissions. The national target is 3 % emission reduction from the 1990 levels which seems unlikely to be reached
Portugal	· The projected CO_2 emissions in Portugal in 2000 show an increase of 6 % from the 1990 emission levels, in spite of measures · Substantial further increase is expected after 2000
Spain	· The projected CO_2 emissions in the year 2000 are 14 % above 1990 emission levels, with measures implemented · This is almost in line with the national target of limiting the emission increase to a range of 11-13 % in 2000
Sweden	· The CO_2 emissions after implementation of measures are projected to increase by 8 % between 1990 and 2000, which is not in line with the target of stabilisation of emissions in 2000 at the 1990 emissions level
United Kingdom	· The CO_2 emissions are projected to decrease by 6 % from 1990 levels which exceeds the national objective to stabilise greenhouse gas emissions by the year 2000 at 1990 emission levels

3.2.2. The projection for the European Union based on Member States projections for 2000

By adding up the individual Member State emission projections, with measures, for 2000, it is possible to estimate the EU15 (Community) emissions in 2000. However, this will only provide indicative results as the different models and assumptions applied by the Member States might well cause inconsistencies between the several emission projection results.

The Member States' emission projections under the 'with measures' scenario for 2000, based on economic growth assumptions and implemented measures as described in their national programmes, indicate that the EU CO_2 emissions in 2000 could be 2 % (see Table 3.3) below the 1990 emission levels.

The range of uncertainty for this prediction is difficult to estimate, as the underlying information on inventory and projection methodology, models, and assumptions is incomplete. Also, the effect of measures indicated by the Member States remains uncertain.

The emission estimates presented in Table 3.3 indicate that the largest emitter, Germany, expects a much smaller reduction for 1996-2000 compared to the actual reduction achieved in the period 1990-1996. This means that Germany will probably account for a smaller positive contribution to the 2000 stabilisation target of the Community in the period 1996-2000 than it did up to 1996. Of the two other major emitters of CO_2 among the Member States, France expects a reduction for the period 1996-2000 compared to the rising emissions in the first half of the 1990ies, whereas the United Kingdom forecasts a stabilisation from 1995 to 2000.

3.2.3. The European Union alternative projection for 2000

Because of the problems with differences in methodology and assumptions used by individual Member States for the preparation of their own emission projections for 2000, it is useful to estimate the EU15 (Community) emission projection in an alternative way. The EU15 CO_2 emission projections from the pre-Kyoto energy scenario, presented in 'The energy dimension of climate change' (COM(97) 196), provide such an alternative. The results of the pre-Kyoto energy scenario are briefly described here.

The 'business as usual' pre-Kyoto scenario of CO_2 emission trends and their socio-economic driving forces is based upon policies and measures in place by the end of 1997, implying an absence of EU policy action for CO_2 abatement after 1997. The main assumptions in the pre-Kyoto scenario for the period 1990-2000 are for EU15 (Capros, NTUA, 1998):

	% change /year
Population (million)	0.8
GDP (billion ECU 1985)	2.1
Gross Inland Consumption	1.1
CO_2 Emission Index (1990=100)	0.2
CO_2/Gross Inland Consumption (t CO_2/toe)	-0.8

It should be noted that the 'business as usual' scenario only includes the fossil fuel related CO_2 emissions (accounting for approximately 95 % of the total CO_2 emissions), while the Member States' inventories and projections also include other source sectors, such as industrial process emissions. Table 3.5 presents the total and sectoral breakdown of the projected energy related CO_2 emissions.

Table 3.5: Energy related CO_2 emissions (Tg CO_2/year) by sector from the pre-Kyoto 'business as usual' energy scenario for a number of years.

	% change over 1990				
SECTOR	1990	2000	2005	2010	2020
Industry	626	- 14 %	- 14 %	- 15 %	- 15 %
Transport	743	+ 22 %	+ 31 %	+ 39 %	+ 49 %
Domestic/tertiary	654	- 1 %	+ 2 %	+ 4 %	+ 6 %
Power/heat production	1,036	- 2 %	+ 2 %	+ 2 %	+ 17 %
Energy sector	141	+ 9 %	+ 11 %	+ 12 %	+ 13 %
Total emissions	**3,200**	**+ 2 %**	**+ 6 %**	**+ 8 %**	**+ 16 %**

The energy related CO_2 emissions in the EU are projected in the pre-Kyoto 'business as usual' scenario to increase from 1990 levels through to 2020: by 2 % in 2000, 8 % in 2010, and 16 % in 2020.

The transport sector has the fastest growth with emissions projected to increase over the 1990 level by 22 % in 2000 and 39 % in 2010.

Industrial CO_2 emissions are expected to decrease by 14 % between 1990 and 2000. CO_2 emissions in the domestic/tertiary sector are expected to remain more or less stable over the next years, but they might increase after 2000. In this scenario, CO_2 reduction and limitation in the industrial and domestic/tertiary sectors are brought about through increased market penetration of electricity and heat co-generation.

Despite strongly growing electricity and heat demand, CO_2 emissions in the power and heat producing sector are projected to remain almost constant on the 1990 emission level through to 2010. However, after 2010, changes in the power generation structure (e.g. closing down nuclear power plants at the end of their lifetime) may cause CO_2 emissions to rise strongly again.

Summarised the total fossil-fuel related CO_2 emissions are projected to be 2 % above 1990 levels in 2000 according to this pre-Kyoto business-as-usual scenario.

4. Conclusions

In preparing this report EEA has made use of greenhouse inventories submitted by Member States to the Commission by April 1999. This did not provide a complete EU15 inventory for CO_2 emissions for 1996 nor for 1997, as would have been expected according to the requirements under the Article 3 (2) of the Monitoring Mechanism Decision (93/389/EEC). By April 1999, twelve out of the fifteen Member States had provided 1996 CO_2 emission estimates (accounting for 78 % of the estimated 1996 EU15 CO_2 emission total), although 1997 data should also have been provided (1997 data were provided by six Member States). The most recent emission data submitted to the Commission by each of the fifteen Member States were used to prepare indicative 1996 CO_2 emission estimates and 1990-1996 trends for the EU15.

This report provides furthermore an evaluation of progress towards stabilisation of CO_2 emissions in the Member States of the European Union (EU15) at 1990 levels by the year 2000. The report can be seen as a contribution to the work on collection of information required for the forthcoming third evaluation report required under Decision 93/389/EEC, while the second evaluation report was prepared by the Commission in 1996.

This report is based on information submitted by the Member States to the Commission under the Monitoring Mechanism and on the Member States' Second National Communications and subsequent Annual Submissions to the UNFCCC, as available to the Commission by April 1999. Additional sources of information used for the preparation of this report were the Community's Second Communication to the UNFCCC (July 1998), CO_2 emission estimates and GDP data from Eurostat, and EU CO_2 emissions projections from the pre-Kyoto energy scenario (COM(97)196).

For reasons of consistency, unadjusted emission estimates (historic and projected) are presented in this report, however where appropriate also in some cases adjusted data are presented, if these were reported by Member States.

Based on the indicative 1996 CO_2 emission estimates, the overall trend in total CO_2 emissions for the European Union showed an increase of 0.2 % during the period from 1990 to 1996, while emissions increased by 2.7 % from 1995 to 1996. If this EU15 CO_2 emission increase from 1995 to 1996 should continue throughout the remaining period until 2000, a stabilisation of CO_2 emissions compared to 1990 would become unlikely. However, the large increase from 1995 to 1996 was partly caused by the relatively cold weather conditions and the resulting increased energy consumption for space heating for that period (compared to earlier years).

These trend figures are based on estimates provided by the Member States, using the detailed IPCC sectoral approach. In comparison, the fossil fuel related CO_2 emissions, typically 95 % of total CO_2 emissions, estimated by Eurostat with the IPCC reference approach, showed an increase of 2.0 % for 1990-1996 and a decrease of 0.9 % for 1990-1995. It is therefore important to obtain actual national emission estimates for all member states for the year 1996 in order to confirm the actual trends from 1990 to 1996.

The GDP trends for EU15 over the periods 1990-1995 and 1990-1996 showed a 6 % and 9 % increase respectively, while between 1960 and 1990, growth for each 5 year period varied in EU Member States between 8 % and 28 %. This indicates that the trend of CO_2 emissions observed for the period between 1990 and 1996 (+0.2 %) and the earlier reduction of 2.4 % below 1990 levels in 1995 were partly related to the relatively low GDP growth in this period but also partly due to an increase in energy efficiency, the dematerialisation of industries and the effects of policies and measures to reduce GHG emissions.

However, only three of the fifteen Member States show a decreasing CO_2 emission trend over the period from 1990 to 1996, while significant increases are observed for some of the other Member States. The (nearly) stabilisation of emissions for the EU as a whole between 1990

and 1996 depends strongly on the reductions in Germany and the United Kingdom. Germany, having the largest national CO_2 emissions in the EU (26 % of the estimated EU15 emissions in 1996) reduced its absolute emissions of CO_2 by 96 Tg between 1990 and 1996. This was mainly caused by the economic restructuring of the five new *Länder* following German unification, but also a result of other factors (see chapter 2.3). In the UK, the second largest absolute CO_2 reduction took place (21 Tg), mainly caused by fuel switching from coal to natural gas. Luxembourg reduced its CO_2 emissions with 6 Tg, during the same period. All other Member States reported increases in their CO_2 emissions from 1990 to 1996, with a total increase of 131 Tg.

Information on emissions and removals from the Member States has improved compared to the second evaluation report of the Commission and the reported inventory estimates are more consistent with the IPCC Guidelines for estimation and reporting required under both the UNFCCC and the EC Monitoring Mechanism. However, inconsistencies and methodological questions still remain to be addressed by the Member States, in co-operation with UNFCCC/IPCC and other organisations, including EEA and its European Topic Centre on Air Emissions, in order to further improve the comparability, completeness, transparency and consistency of emission inventories. The main issues still to be resolved are guaranteeing consistent use of the revised 1996 IPCC Guidelines by the Member States (including the current and future definitions of emissions and removals from land-use change and forestry), and the inclusion of actual emissions from non-energy fossil fuel use ('feedstocks'), international bunkers, and from biomass used as fuel.
The Member States' own emission projections for the year 2000, including the expected effect of measures in place, indicate a projected decrease in CO_2 emissions for five Member States (or six, if Denmark's electricity import/export adjusted data are taken into account). The CO_2 emission estimate for 2000 for the EU15, calculated by adding up the 'with measures' national emission projections for 2000, indicates a projected decrease of 2 % below the 1990 emissions level.

However it should be noted that the national emission estimates and especially the national emission projections include several uncertainties related to predictions of socio-economic developments and the expected results of mitigating policies and measures. The differences in the various models and assumptions employed by the Member States are not always transparent and fully documented in the national programmes.

It is therefore informative to compare the EU15 emission estimates for 2000 based on data from the Member States, with the alternative 'top-down' estimate, which was prepared by the European Commission based on a consistent energy scenario for EU15. The CO_2 emission trends from this pre-Kyoto 'business as usual' energy scenario are based on the assumption of an absence of EU policy action for CO_2 abatement after 1997. The main result of this pre-Kyoto 'business as usual' scenario is a projected rise of energy-related CO_2 emissions in the European Union by 2 % in 2000 from 1990 levels. According to this estimate, transport is the strongest growing sector, with CO_2 emissions in 2000 increasing by 22 % compared to 1990.

In order to properly monitor whether the progress in the Community as a whole is sufficient to ensure stabilisation of CO_2 emissions at 1990 levels in the year 2000, the results of both estimates described above should be compared. The combination of the two projection evaluations suggest that the EU15 CO_2 emissions could be in the range of about -2 % to +2 % by 2000 compared to 1990 levels.

It should be noted that a decrease or increase within this band-width is in the range of uncertainty of the underlying estimates. This range of uncertainty could further be reduced when more recent emission estimates become available. This once more underlines the need to ensure timely reporting by the Member States under the Monitoring Mechanism and the UNFCCC.

In particular, a complete picture of the 1996 emission estimates for all Member States – rather than estimates partly based on 1995 or 1994 data – is essential to accurately monitor the progress of the European Union towards the stabilisation target for CO_2 emissions in 2000.

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FR	Second National Communication of France under the Climate Convention, November 1997. Emission Inventories 1990 – 1996, Submission of 1990 to 1996 data to DGXI under the Monitoring Mechanism, Mission Interministérielle de Serre (MIES), 7 Oct 1998.
DE	Second National Communication of Germany, 16 April 1997. Germany's comments to the CO_2 Overview Report, Submission of data to the EEA for 1990 to 1996 for Germany by the Umweltbundesamt Berlin, 25 March 1999. Updated national GHG Inventories 1990-96 and inventory 1997 (CO_2 also 1998); Submission by Umweltbundesamt Berlin to the EEA, 19 April 1999.
GR	Greece's Second National Communication to the UNFCCC, June 1997, Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998. Climate Change Emissions Inventory, National Inventory for Greenhouse and Other Gases for the years 1990-1996, Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998.
IE	Ireland – Second National Communication under the United Nations Framework Convention on Climate Change, Department for the Environment. Ireland: Greenhouse Gas Inventories and Projections, Department of the Environment and Local Government, 22 July 1998.
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UK Submission of annual inventories and updates of national programmes, policies and measures, Department of the Environment, Transport and the Regions, 15 August 1997.

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Units and abbreviations

t	1 megagram (Mg) = 10^6 g = 1 tonne (metric)
Mg	1 megagram = 10^6 g = 1 tonne (t)
Gg	1 gigagram = 10^9 g = 1 kilotonne (kt)
Tg	1 teragram = 10^{12} g = 1 megatonne (Mt)
toe	tonnes oil equivalent

GDP	Gross Domestic Production
GHG	Greenhouse gas
NA	Not Available
NE	Not Estimated
NO	Not Occurring
IE	Included Elsewhere

Annex 1 Greenhouse gas inventory methodology

This annex presents the most important aspects of national inventory methodologies in relation to the requirements of the Monitoring Mechanism and the UNFCCC and its Guidelines (defined by the Intergovernmental Panel on Climate Change, IPCC). Currently existing inconsistencies and methodological issues that Member States have to address in future are summarised.

UNFCCC is also addressing methodological issues related to greenhouse gas inventories, for example through the work in 1999 and beyond on the revision of the UNFCCC Guidelines for the preparation of national communications by Parties included in Annex 1 to the convention, Part 1 : Inventories of greenhouse gas emissions by sources and removals by sinks (see FCCC/SB/1999/1).

All Member States indicated that they followed IPCC guidelines in preparing their greenhouse gas emission inventories. Nevertheless, some methodological inconsistencies between Member States remain as well as some gaps in the inventories and improvements are required in order to comply fully with the IPCC guidelines for the Community as a Party to UNFCCC.

The following methodological issues are discussed in this annex:
recalculation of 1990 emissions;
changes in the IPCC Guidelines in 1996/1997;
change in land-use change and forestry emissions due to the Kyoto Protocol;
potential CO_2 emissions from stored carbon ('feedstocks');
CO_2 emissions from international bunkers;
emissions from biomass (as a fuel).

Also, Eurostat emission estimates as well as uncertainties of emissions estimates are discussed.

Furthermore some Member States have presented adjusted national emission estimates, using their own methodologies, in addition to their national emissions estimates, calculated following IPCC Guidelines. Such adjustments are mainly made for electricity imports and exports and for outside temperatures (deviations from normal average years). In such cases in this report the unadjusted emission estimates have been used and presented with relevant notes on the adjusted emissions where available.

According to the IPCC Guidelines, Parties are requested to report their inventory estimates at least at the level of aggregation of the Standard Data (Sectoral) Tables. However, these tables were not available to EEA and ETC/AE for all Member States for all years in the period 1990 to 1996. The more aggregated level of the IPCC table 7A was available for all Member States and has therefore been used for the preparation of this report and for the discussion in this chapter.

Recalculation of 1990 emissions

Estimates have been updated by several Member States to reflect improvements in understanding emission sources. This was for example due to revisions in the methodologies for emission estimation provided in the complementary IPCC Guidelines for National Greenhouse Gas Inventories and the EMEP/CORINAIR Atmospheric Emission Inventory Guidebook. In general there is a need to establish consistent time series of emissions estimates based on the latest knowledge and data.

In Table A1.1 differences between the 1990 estimates given in the second evaluation report (March 1996) and the most recent 1990 estimates are presented. The changes between these updates in emission estimates and the previous estimates of the EU totals remain within

about ±6 % for CO_2 and CH_4, while amounting to 36 % for N_2O. For CH_4 and N_2O changes for some Member States in the range of about -50 % to 260 % were observed, whereas the older estimates for CO_2 were generally more reliable.

The main reasons for updating the CO_2 emission estimates for 1990 were: availability of updated fuel statistics, revision of the applied methodology and availability of new point source data. For non-CO_2 greenhouse gases, the differences between the recent and previous estimates of 1990 emissions are mainly due to the inclusion of emission sources previously not included in the inventory. The emission sources of non-CO_2 greenhouse gases are less well known than of CO_2 and methods for estimating emissions are still being developed, in particular within the IPCC. It can be expected that for non-CO_2 GHGs further revision of the 1990 inventory will be required due to improvements in the emission estimation methodologies.

Table A1.1: Changes in emission estimates for 1990, compared to estimates presented in the second Evaluation Report, 14 March 1996 (Change in %)

	CO_2	CH_4	N_2O
MEMBER STATE	Emissions		
Austria	4.8 %	-23.8 %	63.7 %
Belgium	1.4 %	76.6 %	39.9 %
Denmark	0.3 %	3.7 %	209.1 %
Finland	10.0 %	42.1 %	-15.5 %
France	30.4 %	4.2 %	75.4 %
Germany	0.1 %	-10.4 %	0.7 %
Greece	-0.9 %	-53.3 %	24.6 %
Ireland	0.0 %	1.9 %	-30.1 %
Italy	1.2 %	-40.1 %	41.8 %
Luxembourg	0.0 %	0.0 %	NE
Netherlands	6.3 %	21.1 %	8.3 %
Portugal	10.9 %	259.4 %	30.5 %
Spain	-0.4 %	1.4 %	0.2 %
Sweden	-9.6 %	-13.7 %	73.3 %
United Kingdom	6.6 %	-2.1 %	99.1 %
EU-15	**5.3 %**	**-6.5 %**	**35.9 %**

The 30 % increase for CO_2 presented in this table for France highlights that amendments to the methodology of estimating greenhouse gas emissions (adaptation of national reporting in order to comply with IPCC guidelines) can lead to substantial changes of the reported totals. In the case of France, the Second Evaluation Report's total emission figure of 366.5 Tg was based on emissions minus removals, whereas in this report removals are presented separately.

Revised guidelines

In March 1995, the Conference of the Parties (CoP) of the Framework Convention on Climate Change (UNFCCC) adopted the Guidelines for the preparation of National Communications by Annex I Parties of the Convention (1995 Guidelines). At its Twelfth Session (Mexico City, September 1996) the IPCC adopted the Revised 1996 Guidelines for National Greenhouse Gas Inventories (Revised 1996 Guidelines). However some details of these Revised Guidelines were agreed in a later stage and the final version of the Revised 1996 Guidelines was only published and made available to all Parties of the UNFCCC in mid 1997.

The 1995 Guidelines and the Revised 1996 Guidelines provide the methodology for estimating national greenhouse gases (GHG) in accordance with Articles 4 and 12 of the UNFCCC. The Conference of Parties of the UNFCCC decided that the Revised 1996 Guidelines should be applied by Annex I Parties on a voluntary basis for the inventories for 1990 to 1995 due in April 1997 and on a mandatory basis for inventories (1990 to 1996) due

in April 1998 and beyond. When applying the Revised 1996 Guidelines, these Parties should also recalculate the base year greenhouse gas inventory in a transparent way and are requested to submit updated time series data for the years in between. In providing greenhouse gas inventories due in the years 1997 and 1998, Annex I Parties should indicate clearly whether they used 1995 Guidelines or Revised 1996 Guidelines.

Therefore, the use of the Revised 1996 Guidelines was only voluntary for the Member States in preparing their Second National Communications (due in April 1997), and also for the data submitted under the Monitoring Mechanism in 1997 since this follows the reporting requirements of UNFCCC/IPCC.

The Revised 1996 Guidelines include additional methods, various new default emission factors and other required data, developed since the previous 1995 Guidelines were prepared. These revisions, when applied, could result in higher national emissions from EU Member States and subsequently higher EU15 total emissions.

However, not all Member States specified that they used the Revised 1996 Guidelines for their national communications. For the Community as a whole, the issue of consistency in the use of one set of Guidelines should be resolved in the future as more and more Member States comply with the Revised 1996 Guidelines in forthcoming inventories. For consistency the tables in Annex 3B of this report are presented in the format defined in the Revised 1996 Guidelines.

Land-use change and forestry (sinks)

Almost all Member States reported CO_2 emissions and removals from Land-Use Change and Forestry (LUCF) following IPCC guidelines. These estimates have either been given as the total net effect of emissions and removals for the total LUCF sector (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, the Netherlands, Portugal, Spain and Sweden) or as net emissions and removals for the sub-sectors separately (Italy and UK).

This report presents the sum of all emissions and removals in the LUCF sector for the EU as a whole, based on the reported emissions and removals by the Member States.

However, the guidelines for reporting emissions from LUCF will be revised in the future in order to take into account the results of the most recent UNFCCC decisions (Kyoto Protocol). The Kyoto Protocol limits the human-induced land-use change and forestry activities, that can be used to meet the commitments, to afforestation, reforestation and deforestation since 1990. These are to be measured as verifiable changes in stocks (Article 3.3).

According to these requirements future inventories will need to make a distinction between the LUCF activities according to the Kyoto Protocol and other LUCF activities. The reported amount of CO_2 removals for the EU as a whole, for the LUCF source categories mentioned in the Kyoto Protocol, is expected to be less than the currently reported total LUCF removals (as presented in Table 2.2). How large this change will be, depends on the exact definition of the terms afforestation, reforestation and deforestation, which are currently being discussed within IPCC and UNFCCC. Therefore, the Kyoto Protocol LUCF CO_2 removals estimates will probably be (much) lower than the present total LUCF CO_2 removal estimates. The IPCC is expected to produce a special report on these issues by 2000 and further decisions within the UNFCCC framework will rely on the outcomes of this report.

A good example for these expected changes is highlighted by Denmark. According to the Danish emission inventory for 1996, submitted under the Monitoring Mechanism, Denmark estimates CO_2 removals at 981 Gg using the generally applied pre-Kyoto CO_2 removal definition. If however for the same year only *Kyoto-forests* are taken into account (activities after 1990, see above), the Danish CO_2 removal figure is reduced drastically to 24 Gg. Once the Kyoto protocol enters into force, and once the relevant methodology is unambiguously defined, similar large changes should be expected for the other Member States, and of course the subsequent EU15 total.

Potential CO_2 emissions from stored carbon (in feedstock)

Potential CO_2 emissions occur due to the fact that a part of the fossil fuel is not burnt but used as a raw material (or feedstock) to manufacture products for non-energy-use (e.g. bitumen for road construction, lubricants, plastics, fertilisers). This stored carbon from fossil fuel potentially could be released over time.

The Revised IPCC Guidelines present and discuss alternative approaches to estimate stored carbon. However, the national communications of most Member States do not describe the approach used to calculate potential and actual emissions from non-energy use of fossil fuels and thus an overview based on countries submissions is not possible.

CO_2 emissions from international bunkers

According to the IPCC guidelines, CO_2 emissions from international marine and aviation bunkers should not be included in the total emissions, but have to be reported separately. A distinction between domestic and international flights (and shipping) is therefore needed for all Member States. In addition, the definition used to separate domestic versus international aviation may differ between Member States.

For the Community as a whole, the national estimates of emissions from international bunkers have been added together in this report, thereby neglecting intra-EU travel, which should be subtracted from the EU total for 'international total/bunkers' and added to the EU 'domestic (internal) total'. For Member States not providing marine and aviation bunker emissions separately, Eurostat estimates for emissions from international marine bunkers have been used.
For future inventories it is recommended that Member States, in co-operation with international organisations and Eurostat where necessary, will aim at improving the availability of statistics on domestic, intra-EU and international aircraft and shipping fuel consumption, which is needed to be able to estimate international bunker emissions.

Emissions from biomass (used as fuel)

According to the IPCC guidelines, CO_2 emissions from biomass used as fuel have to be excluded from the national total, because these emissions do not contribute to the long-term climate change problem. However, emissions of non-CO_2 GHG and ozone precursor emissions from biomass, should be included in the emission inventories, under the source category of the energy sector.

Emissions from biomass have not been treated consistently in the national inventories by the Member States. In some cases non-CO_2 GHG emissions were provided in the national reports but excluded from the national total. In these cases for the purpose of this report for consistency reasons, these emissions have been added to the national totals, in accordance with to IPCC guidelines. Furthermore, some Member States did not report CO_2 emissions from biomass separately. Due to lack of data it was not possible to check whether the EU totals are in full compliance with the IPCC guidelines. It is therefore recommended that Member States in future reports follow the IPCC Guidelines for emissions from biomass used as a fuel.

Eurostat CO_2 emission estimates

The method used by Eurostat is the IPCC Reference Approach, while most Member States use the more detailed Sectoral Approach. Underlying each country's own CO_2 emission estimates may lay other, more up-to-date and detailed information. Furthermore, CO_2 emission factors used by Eurostat might differ slightly from the factors the Member States have used. However, the EU15 total fuel combustion-related CO_2 emissions estimated by Eurostat re quite similar to the EU15 fuel combustion CO_2 emissions reported in Annex 3B.

Uncertainties

Generally, the issue of uncertainty is addressed under the heading of data quality by IPCC. This is done in a similar way within the UNECE Convention on Long Range Transboundary Air Pollution (CLRTAP). In the IPCC Guidelines data quality is defined by three concepts: accuracy, precision and uncertainty. These terms are defined as follows: accuracy as the exactness of an estimate; precision as the reproducibility of an estimate; and uncertainty as the range of error of an estimate. Past efforts to develop data quality requirements of in particular IPCC have mostly concentrated on improvement of the quality of the estimates (exactness, reproducibility). For example this was done by clear definition of source categories and estimation methodology, resulting in the Revised 1996 IPCC Guidelines.

The IPCC 1996 Guidelines give an overview of sources of uncertainty in the section on 'managing uncertainty' as well as procedures for quantification of uncertainty of national inventories. However in 1998 IPCC started to evaluate methods to qualify and quantify the uncertainty range of emission estimates further. IPCC organised expert workshops on this issue in 1997 and 1998. It is expected that IPCC will advise UNFCCC in 1999 and beyond on the issue of improvement of the quality of national inventories and in particular on how to further reduce and quantify uncertainty. This is likely to result in more detailed recommendations to parties to UNFCCC.

Estimates of CO_2 emissions from fuel combustion, based on reasonably accurate energy balances, will generally have the least uncertainty. The uncertainty in these emissions is estimated by various Member States to be in the order of 2 % to 5 %. However, the results of recalculating CO_2 emissions for 1990 by the Member States (Table A1.1) show that differences in the range of 5-10 % have been reported by quite some countries (on the special case of France, see above).

The uncertainty in estimates of non-CO_2 greenhouse gas emissions is usually considerably higher, due to the lack of knowledge of some of the sources and appropriate emission factors for these gases. This state of uncertainty is reflected in the continual development of the IPCC guidelines, especially for these gases. As there may be some yet unknown sources of these gases, current estimates of these emissions are likely to be somewhat underestimated.

The issue of treating uncertainties in greenhouse gas emission inventories is the subject of study by IPCC through a range of workshops in 1998 and 1999.

Annex 2A Summary of national total emissions of HFC, PFC, and SF_6 in the EU Member States

Table A2A.1: Anthropogenic emissions of HFC, PFC, SF_6, actual (A) emissions and/or potential (P) emissions 1990/95/96 (Gigagrams)[1]

	HFC Emissions (Gg)						PFC Emissions (Gg)						SF_6 Emissions (Gg)					
	1990		1995		1996		1990		1995		1996		1990		1995		1996	
MEMBER STATE	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
Austria	-	-	-	0.421	-	-	-	-	-	0.002	-	-	-	-	-	0.035	-	-
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Denmark	0.000	-	0.750	0.197	-	0.290	-	-	0.002	0.0002	-	0.0004	0.015	-	0.014	0.009	-	0.006
Finland	0.100	-	0.110	-	0.170	-	NA	-	NA	-	NA	-	0.004	-	0.004	-	0.005	-
France	-	0.256	-	0.805	-	1.550	-	0.432	-	0.180	-	0.199	-	0.102	-	0.110	-	0.113
Germany	-	0.200	-	2.030	-	2.275	-	0.397	-	0.245	-	0.256	-	0.163	-	0.261	-	0.244
Greece	-	0.080	-	0.278	-	0.320	0.000	0.075	-	0.057	-	0.057	-	0.000	-	0.000	-	0.000
Ireland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	-	0.489	-	0.855	-	1.187	-	0.363	-	0.353	-	0.343	0.058	-	0.061	-	0.061	-
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sweden	0.000	0.000	-	0.150	0.000	0.000	0.000	NE	-	0.060	0.000	0.000	0.000	NE	-	0.050	0.000	0.000
United Kingdom	0.034	1.049	1.903	1.958	2.509	2.150	0.037	0.308	0.122	0.081	0.128	0.079	0.100	0.024	0.105	0.030	0.110	0.035
EU-15	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

[1] based on data in Annex 3B

Annex 2B Summary of national total emissions of NO_X, CO, and NMVOC in the EU Member States

Table A2B.1: Anthropogenic emissions of NO_x, CO and NMVOC, 1990/95/96 (Gigagrams)[1]

	NO_X Emissions (Gg)			CO Emissions (Gg)			NMVOC Emissions (Gg)		
MEMBER STATE	1990	1995	1996	1990	1995	1996	1990	1995	1996
Austria	194	170	161	1,286	1,013	1,020	350	269	260
Belgium	339	333	328	1,127	1,424	1,415	331	301	301
Denmark	280	253	291	785	702	616	179	162	139
Finland	295	259	-	487	434	-	213	182	-
France	1,952	1,864	1,783	10,398	8,634	8,350	2,971	2,666	2,539
Germany	2,709	1,946	1,887	11,219	6,885	6,717	3,225	1,981	1,877
Greece	343	358	374	1,338	1,318	1,334	373	397	409
Ireland	115	113	-	429	302	-	180	175	-
Italy	1,943	1,849	-	7,892	7,786	-	2,222	2,375	-
Luxembourg	23	20	22	171	104	102	19	17	17
Netherlands	563	481	471	1,139	890	860	500	363	347
Portugal	346	379	-	1,254	1,462	-	282	319	-
Spain	1,164	1,222	-	4,734	4,357	-	1,123	1,152	-
Sweden	336	309	301	1,211	1,089	1,082	516	457	458
United Kingdom	2,747	2,137	2,052	6,685	4,935	4,641	2,550	2,117	2,028
EU-15	**13,350**	**11,692**	**-**	**50,155**	**41,335**	**-**	**15,034**	**12,932**	**-** [1]

rounded ; based on data in Annex 3B

Table A2B.2: Percentage change in NO_x, CO and NMVOC emissions, 1990/95 and 1990/96[1]

	NO_X		CO		NMVOC	
MEMBER STATE	90/95	90/96	90/95	90/96	90/95	90/96
Austria	-12.6 %	-16.8 %	-21.2 %	-20.7 %	-23.1 %	-25.7 %
Belgium	-1.7 %	-3.2 %	26.4 %	25.6 %	-9.2 %	-9.1 %
Denmark	-9.6 %	4.0 %	-10.6 %	-21.5 %	-9.5 %	-22.1 %
Finland	-12.2 %	-	-10.9 %	-	-14.6 %	-
France	-4.5 %	-8.7 %	-17.0 %	-19.7 %	-10.3 %	-14.5 %
Germany	-28.2 %	-30.3 %	-38.6 %	-40.1 %	-38.6 %	-41.8 %
Greece	4.3 %	8.9 %	-1.5 %	-0.3 %	6.4 %	9.6 %
Ireland	-1.3 %	-	-29.5 %	-	-2.9 %	-
Italy	-4.8 %	-	-1.3 %	-	6.9 %	-
Luxembourg	-13.1 %	-4.6 %	-39.1 %	-40.2 %	-8.2 %	-8.4 %
Netherlands	-14.6 %	-16.3 %	-21.9 %	-24.5 %	-27.4 %	-30.5 %
Portugal	9.5 %	-	16.6 %	-	12.9 %	-
Spain	4.9 %	-	-8.0 %	-	2.5 %	-
Sweden	-8.0 %	-10.4 %	-10.1 %	-10.7 %	-11.4 %	-11.2 %
United Kingdom	-22.2 %	-25.3 %	-26.2 %	-30.6 %	-17.0 %	-20.5 %
EU-15	**-12.4 %**	**-**	**-17.6 %**	**-**	**-14.0 %**	**-**

[1] calculated using data from Annex 3B

Annex 3A National projections and targets for 2000 and measures adopted in the EU Member States

AUSTRIA

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	62.0	13.3	0.46	0.007	0.19	1.29	0.35
1996	64.0	13.8	0.45	0.007	0.16	1.02	0.26

Target/objective and comments: Concluding from the Second National Communication a stabilisation scenario (by 2000) and a reduction target for CO_2 emission committed to 20 % by 2005, based on emission in 1988 (Toronto Target) are aimed at. There have been no changes since the First National Communication.

Summary of measures: Austria has updated its programme of measures to reduce climate change several times since the first UNFCCC national communication. The Austrian programme is divided into four groups of measures: 1) voluntary measures and subsidies under implementation, 2) (mandatory) measures under implementation, 3) planned measures, and 4) measures that are in a conceptual stage and will require more time to be realised and to become effective. The emission reduction measures are grouped according to the following emitting sources: energy supply and transformation, traffic, industry, small consumers, agriculture, forestry and land-use and cross sectoral measures (see table below for specific measures). Priority is paid to tightening of energy relevant regulations for buildings (introduction of characteristic energy indices, more rigorous criteria for building subsidies); promotion of combined heat and power plants (regulations for electric energy supply); promotion of renewable energy (biomass, sun, heat pumps, wind, geothermal energy, subsidies); and subsidy instruments in general.

Quantified measures: There are conservative quantitative estimates of reduction potentials per measure available which do not include effects of supportive measures (such as economic instruments). For the groups of measures 1 to 3 the reduction potentials in 2005 and if possible in 2010 have been estimated: For group 1 (voluntary measures and subsidies) and group 2 (mandatory measures) the total reduction potential in 2005 amounts to about 9.8 Tg CO_2. Because of an expected synergy of measures, adding the reduction potentials should be done with care. It should furthermore be noted that this evaluation of the CO_2 reduction does not take into account the fixation of carbon by Austria's forest. Thus, these measures can imply a reduction in 2005 from 58.7 to 48.9 Tg. Although no figures per measure are available for 2000, the total reduction reported in the scenario calculations for this year is, although somewhat lower, grossly in the order of the sum of reductions per measure reported for 2005. Considering the group 3 measures, which are planned and have a reduction potential of about 4.9 Tg, it seems possible for Austria to reduce its CO_2 emissions to 44.0 Tg, well below the Toronto target (providing uncertainties in quantifying reductions). The group of measures 1 to 3 also contain measures that have not been quantified, but that can also contribute to the reduction of GHG's. Specified:

	Policy or measure	*Reduction potential until 2005/2010 (Mio t CO_2/a)*
CO_2: Energy supply and transformation		
Voluntary measures and subsidies under implementation		
1.1.1	Promotion of district and block heating	1.25 / 2.50
1.1.2	Utilisation of renewable energy sources	see no. 1.7
1.1.3	Supply of electricity into the public grid	0.5 / 1.1
Measures under implementation		
1.1.4	Mineral oil tax for heating fuels	not estimated
1.1.5	*Energy CO_2 taxation*	*0.90 / -*
Planned measures		
1.1.6	Tightening of the energy relevant regulations for buildings, regional and land use planning	new buildings: 0.23 / 0.50; existing buildings: 1.5 / 3.2
1.1.7	Treaty between Federation and Federal Provinces on achieving the CO_2 emission reduction target	-
1.1.8	Promotion of combined heat and power (industry, space heating)	-
1.1.9	Continuation of electricity tariff reform	-
CO_2: Traffic		
Measures under implementation		
1.2.1	Tax on standard fuel consumption and reform of the tax on motor vehicles	0.35 / -
1.2.2	Mineral oil taxation	0.10 / -
1.2.3	Night driving ban for HGV's	0.02 / -
1.2.4	Electronic speed limitation for trucks and buses	0.12
1.2.5	Forced monitoring of the adherence to existing speed limits	0.18 / -
1.2.6	Restrictive quota regulations for HGV's and buses with all eastern neighbouring states	not estimated
1.2.7	Continued implementation of the guide-lines in the 1991 Master Transportation Concept	0.70 / -
1.2.8	Federal Traffic Route Plan	not estimated
Planned implementation		
1.2.9	Reduction in fuel consumption of aircraft	not estimated
1.2.10	Reduction in fuel consumption of motor vehicles	0.60 / -
1.2.11	Use of biogenic fuels in ecologically sensitive areas	0.10 / -
1.2.12	Road pricing	0.50 / -
1.2.13	Stepwise emission reduction in transport	not estimated
1.2.14	Environmentally friendly traffic behaviour	not estimated
CO_2: Industry – Combustion and Processes		
Voluntary measures – subsidies under implementation		
1.3.1	Combined heat and power installations	-
1.3.2	Optimalisation of mechanical systems	0.80 / -
1.3.3	Fuel switch	0.30 / -
1.3.4	Improving information about the energy flow in enterprises	0.30 / -
CO_2: Small Consumers		
Measures under implementation		
1.4.1	Consumption related heating costs accounting	-
Planned implementation		
1.4.2	Consumption reduction for el. equipments and motors as well as lighting and electronic systems	0.60 / 0.80
1.4.3	Improving thermal quality of old and new structures	included in 1.1.5
1.4.4	Improvement of thermal quality of heating systems	1.40 / -
CO_2: Agriculture		
Voluntary measures – subsidies under implementation		
1.5.1	Extension of biological farming and integrated husbandry	0.10 / -
1.5.2	Cultivation of oil-seed crops aimed at substituting fossil fuels and fossil raw material	0.30 / -
1.5.3	Utilising the energy of surplus straw	included in 1.7.1
1.5.4	Substitution of fossil fuels with biogas	0.05 / 0.07
CO_2: Forestry and land use		
Measures under implementation - planned implementation		
1.6.1	Maintenance of a vital forest as CO_2 sink	0
1.6.2	Extension of the forest area	0.255 / -
1.6.3	Increase of biomass	13.4 / -
1.6.4	Doubling of the use of long-lived wood products	0.15 / -
CO_2: Cross-sectoral measures		
Voluntary measures - subsidies under implementation		
1.7.1	Use of biomass as a fuel and raw material	1.45 / 2.90
1.7.2	Utilisation of solar energy especially for water	1.00 / -

	heating; use of solar collectors; passive solar energy utilisation	
1.7.3	Photovoltaic utilisation of solar energy	0.04 / 0.08
1.7.4	Utilisation of environmental energy by means of heat pumps	0.75 / 1.10
1.7.5	Utilisation of wind-energy	0.16 / 0.26
1.7.6	Utilisation of geothermal energy	0.06 / 0.08
1.7.7	Analysis of the Austrian subsidies	0
CH_4: Waste and Waste water treatment		
Planned implementation		
2.1.1	Energy utilisation of landfill gas	0.10 / - ; 2,000 / - t CH_4/a
2.1.2	Energy utilisation of sewage gas	5,800 t CH_4/a
2.1.3	Energy utilisation of cooker waste from the pulp and paper industry	not estimated
2.1.4	Energy utilisation of waste	not estimated

Categorisation of measures: 1) voluntary measures and subsidies under implementation, 2) (mandatory) measures under implementation, 3) planned measures, and 4) measures in a conceptual stage that will require more time to be realised and to become effective (see table above).

Projected CO_2 emissions in 2000 relative to target/objective: On the basis of all measures, it is being anticipated by Austria that the reduction measures already under realisation could stabilise Austria's CO_2 emissions at the 1990 level by 2000. The potentials of the additional measures have been judged by Austria to be sufficient to reduce the level of emissions well below the stabilisation target, with a fair chance to reach the Toronto target nationally. The expectation of reaching the Toronto target relies on an immediate implementation of the additional measures.

Austria's GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Substance	**1990**	**1996**	**2000 without measures**	**2000 with measures**
CO_2	62.0	64.0	63.5	57.3
CH_4	459.8	446.6	not available	600.0
N_2O	6.5	7.3	not available	not available

The CO_2 emissions for the year 1996 are 2 million metric tonnes above the value for the year 1990 (some 3 %). While both the projected CO_2 emissions for 2000 (57.3 Tg) and for 2005 (58.7 Tg) are lower than Austria's CO_2 emissions in 1990, the adopted measures do not yet show significant impact on the reduction of CO_2 emissions. Achieving the 57.3 Tg 'with measures' projection will depend on strong reductions during the next few years. While stabilisation on 1990 levels by 2000 could be reached with lesser efforts, it would still require a shift from growing to falling CO_2 emissions. CH_4 emissions slightly decreased, whereas N_2O emissions increased from 6.5 to 7.3 Gg during 1990-1996. From 1995 to 2000 Austria GDP growth is forecasted to be 2.0 % per year.

BELGIUM

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	116.1	2.06	0.63	0.031	0.34	1.13	0.33
1996	128.5	2.06	0.59	0.035	0.33	1.42	0.30

Target/objective and comments: A 5 % emissions reduction in the year 2000 compared with the 1990 CO_2 emissions. The target is based on temperature-corrected emission data. Information given in the Second National Communication has reconfirmed the above mentioned target-objective.

Summary of measures: The Belgian Government has implemented several tax incentives which although not primarily aimed at reducing greenhouse gases will have a considerable effect on CO_2 emission. Moreover in 1994 the Government approved the 'Belgian National Program on Reduction of CO_2 Emissions' which comprised a range of predominantly non-fiscal measures. This program has so far been partly implemented. The third category of measures comprises among others the introduction of a CO_2/energy levy (1992 Commission proposal for a CO_2/energy tax) which so far has not been adopted. The Belgian Government regards this measure essential in order to meet the national reduction target. The CO_2/energy levy is expected to reach its full impact on the longer term (after 2000). Apart from anticipated effects of the above-listed measures, which are regarded economically feasible and are the basis of the medium term projections for the years 2000 and 2005, from mere a technical point of view even more effective results then the currently foreseen can be achieved within the context of the currently foreseen measures according to the Belgian Second National Communication. In addition measures within the framework of the 'Belgian National Program on Reduction of CO_2 Emission' that have not yet been implemented and possible further non-fiscal measures in the transport sector are mentioned. A large reserve of emission reduction potential is foreseen from all this.

Quantified measures: In the Belgian Second National Communication the anticipated effects of greenhouse gas reduction policies/measures have not been specified per measure, instead reduction totals are given categorised according to type (fiscal, non-fiscal or additional) and sector. There is a synergy between measures; the introduction of the CO_2/energy levy is estimated to increase the effect of the 'Belgian National Program on Reduction of CO_2 Emission'.

	Policy or measure	*Reduction potential around 2000 (Mio t CO_2/a)*
CO_2: measures/policies implemented:		
	tax incentives, all sectors	2.1
	non-fiscal measures, all sectors	1.9
CO_2: measures/policies intended:		
	introduction of CO_2/energy levy (including stimulating effect on above mentioned non-fiscal measures), all sectors	9
CO_2: possible additional measures/policies; maximum technical potential assumption		
	tax incentives, all sectors	1.46
	non-fiscal measures, all sectors	8.70
	CO_2/energy levy	16.27

Categorisation of measures: The fiscal measures presented in the third row of the table above have all been implemented by 1994. Non-fiscal measures within the context of the 'Belgian National Program on Reduction of CO_2 Emission' (fourth row) have been approved but have so far been only partly implemented. The introduction of the CO_2/energy levy (sixth row) is intended to be phased in as soon as there is agreement within the EU. The Belgian Second National Communication stresses the necessity of this measure in order to have Belgium meet its target-objective. The measures/policies listed in the eight, ninth and tenth row comprise a more stringent policy within the current approach to greenhouse gas reduction plus some additional measures. These figures are an indication of the technically achievable emission reduction and are considered as intended measures on the longer term. Different

economic models are used to forecast these emission reduction values, hence the reported lower effect of the tax incentives compared to the first scenario.

Projected CO_2 emissions in 2000 relative to target: Belgium's GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Substance	1990	1996	2000 without measures	2000 with implemented measures	2000 with implemented measures and CO_2/energy levy
CO_2	116.1	128.5	129.3	125.2	116.3
CH_4	634	591	not estimated	530	not estimated
N_2O	31	35	not estimated	30.4	not estimated

In the Belgian projections according to the scenario with implemented measures the largest emission increase is reported for the transport sector (18.5 vs. 25.8 Tg CO_2) while changes in other sectors are less pronounced. Following this scenario, the total emissions will increase between 1990-2000 from 116.1 Tg to 125.2 Tg – an increase of 7.8 %. Belgium is not likely to fulfil both its national target of 5 % reduction (i.e. 110 Tg CO_2 emission in 2000) and the EU target of stabilisation at the level of 1990. After temperature correction of the emission data for 1990 (121.1 Tg), the foreseen increase still amounts to 3.4 %. Estimates for the growth of GDP during 1995 to 2000 range from 1.9 to 2.4 % per year.

DENMARK

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	52.3[1]	0.92	0.42	0.034	0.28	0.79	0.18
1996	73.2[1]	0.98	0.43	0.034	0.29	0.62	0.14

[1]Not corrected for electricity exchange and outside temperature

Target/objective and comments: Internationally, Denmark has committed itself to stabilise emissions at the 1990 level by 2000 within the framework of the UNFCCC, and as a contribution to overall stabilisation by the year 2000 for the countries of the EU to achieve a 5 % reduction in 2000 compared with 1990.

The Danish Government's target is to reduce CO_2 emissions from the energy consuming sectors by 20 % by the year 2005 as compared to 1988 (Transport Action Plan and Energy 2000). The target is defined in terms of emission values, corrected for variation in electricity exchange and outside temperature, including international air traffic, but excluding marine bunkers and flaring. It entails a reduction of 12.2 Tg CO_2 emission out of a total of 61.2 Tg CO_2.
The Danish target objectives have not been changed since the First National Communication.

Summary of measures: New Energy Action Plan (approved in April 1996), to supplement the old one from 1990. Measures introduced: Electricity Saving Fund – support the conversion from electrical heating to district heating or natural gas for private consumers; Establishing of Council for Environment and Energy – advisory body for Parliament and Government, provoke debate; Work in electricity- and CHP-sector; 6 measures on renewables. For CO_2, the focus is on the energy, transport and agriculture sector, while for methane there is emphasis on measures in the waste and agriculture sector. In total, there are 26 energy policy measures reported, plus various measures and options for the other sectors. Efficiency improvements in end use through the implementation of efficiency standards for electrical appliances and other equipment are expected to make a large contribution to CO_2 reductions. Also important is promotion of CHP through subsidies. New generating capacity will come from construction of gas-fired plants after 2000. Denmark has a CO_2 tax in place for households since 1993 and in 1996 it was increased for the industrial sector to the level of households. Then intention is to introduce more green taxes in all the sectors of the economy. In the transport sector emphasis is on promoting public transport, e.g. investment support for purchase of clean vehicles. Other measures include promotion of energy efficient driving through information and training and promotion of rail transport. From 1989 an afforestation programme with the aim of doubling forest area within the next 80-100 years has been in force and in 1998 an action plan on the water environment included measures to secure the necessary afforestation rate over the next 4 years.

Quantified measures: Of the reported greenhouse gas reduction measures for Denmark there are none for which the anticipated effects in terms of emission reduction is specified per measure.

Categorisation of measures: All of the reported reduction measures are under implementation.

Projected CO_2 emissions in 2000 relative to target: Denmark's (adjusted) GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Substance	1990	1996	2000 without measures	2000 with measures
CO_2	60.2[1]	58.9[1]	±66	54.3[1]
CH_4	421	425	-	408
N_2O	34	34	-	28

[1] Corrected for electricity exchange and outside temperature

The projected CO_2 emission for 2000 is 54.3 Tg (corrected for electricity exchange and outside temperature, both projected to be normal) whereas economic growth is expected to be 2.2 % annually for 1995 to 2000. This corresponds to a 9.8 % decrease of the adjusted 1990 emission of 60.2 Tg (corrected for electricity exchange and outside temperature). This indicates that the 5 % reduction target for 2000 is expected to be fulfilled, given that the adjustments on electricity and temperature are taken into account. In the Danish Second National Communication all scenario calculations are corrected for electricity exchange and outside temperature.

FINLAND

GHG emissions (million metric tonnes = Tg) in 1990, 1995, and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	59.3	30.6	0.36	0.019	0.30	0.49	0.21
1995	60.9	14.3	0.27	0.018	0.26	0.43	0.18
1996	66.4	ne	0.27	0.019	ne	ne	ne

Target/objective and comments: Stopping increases in CO_2 emissions from energy production and use by the end of the 1990s (Energy Report, 1993). In the Second National Communication this target is maintained.

Summary of measures: Intensification of programmes that are already on their way, such as efficiency improvements in the energy production and utilisation system, CHP production, electricity production from biomass and use of energy and carbon taxes. Besides limiting emissions of CO_2 and other greenhouse gases, the Finnish action programme also includes measures to enhance carbon reservoirs and sinks. The Energy Efficiency Programme 1996-2010 will bring about economical and normative measures that promote energy saving, voluntary agreements with industry and other energy users.

Quantified measures: A summary of implemented policies and measures to reduce CO_2 emissions is given in the table below. The reductions listed are included in Finland's Energy Market Scenario (scenario without taking into account further GHG reduction measures).

Policy - measure	*Type of instrument*	*Estimated mitigation impact ($TgCO_2$) in 2000*
Fuel switching	Market liberalisation. Energy taxation	1
Renewable energy	R&D of new technology. Market liberalisation. Energy taxation.	3
Energy efficiency programme	Saving targets. Information and incentives. Voluntary agreements. Regulation, advice, grants, labelling. R&D of new technology	2
Total		6

The CO_2 based energy tax currently levied in Finland is expected to reduce CO_2 emissions about 4-5 % by the year 2000 compared to 1990 level, that is, by 2 Tg, if it proves possible to pursue this policy consistently. The implementation of the energy conservation programme would mean a cut of some 6-8 Tg of CO_2 by the year 2000, though with the provision of a gradually rising tax. More extensive use of wood of biofuels will help to achieve the CO_2 reduction targets. By 2000, it would cut about 3 Tg (6-7 %) off total emissions at installations where wood will replace coal.

Categorisation of measures: Energy Report (1993 approved) and under implementation; Forestry Environmental Programme (1994 ratified); Energy efficiency programme 1996-2010 (1995 decided upon by Government). All quantified measures are implemented. As is described above further reductions are possible although implementation is not certain at present.

Projected CO_2 emissions in 2000 relative to target: Finland's GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Substance	1990	1996	2000 with current measures
CO_2	59.3	66.4	60.0
CH_4	358	270	226
N_2O	19	19	19-20

Under the most likely policy option, emissions from energy production and consumption would be 60 Tg in 2000. This option takes into account cuts brought about by energy taxation, energy conservation, increased use of bio energy and the adoption of new technologies. For the year 2000 no figures are available for the 'without measures' scenario. Economic growth is estimated to be around 2.5 % per year. In 2020, without measures, CO_2

emissions might well rise to as much as 79 Tg. As a result of a range of measures in the most likely policy option, emissions would be between 60-70 Tg in 2010, even possibly 65 Tg.

FRANCE

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	478	118	3.02	0.309	1.95	10.40	2.97
1996	494	128	2.71	0.297	1.78	8.35	2.54

Target/objective and comments: Stabilisation of the fossil fuel related emissions at less than 2tC (7.33 tonnes CO_2) per capita per year by 2000. Considering the projected 59.4 million population for 2000 this is equivalent to a maximum 15 % increase relative to 1990 levels. In the French Second National Communication no additional target-objectives are mentioned.

Summary of measures: The policies and measures aimed at reduction of CO_2 emissions described in the French second national Communication concern both emissions linked to the use of fossil fuels as well as the management of carbon-sinks linked to biomass and soil organic matter. Energy-related measures focus on increasing energy efficiency of buildings, energy savings and fuel substitutions in industry on a voluntary basis, improvement of more energy efficient transportation means and infrastructural improvements. Measures range from subsidies for attempts to energy saving and financial support for R&D initiatives to tax incentives and the implementation of new and tight requirements for energy efficiency. Agreements with large energy consuming companies and industrial branches are still being negotiated. Policies regarding existing buildings should tap the considerable reserve of energy savings potential. Reductions are also expected to result from increasing forest carbon sequestration and the application of renewable energy such as the use of wood and agricultural waste as heating fuel. In agriculture no significant reduction of emission is yet expected in the foreseeable future. Due to the high penetration of nuclear power in the French electricity generating field, possibilities for CO_2 reduction are considered limited in the energy sector, although the intended promotion of co-generation and the employment of 'Demand Side Management' (DMS) need to be mentioned in this respect. Possibly, in the future new combined-cycle gas powered capacity could be introduced at the cost of nuclear power, hence increasing greenhouse gas emission.

Quantified measures: For the majority of the listed measures an estimate of the CO_2 reduction potential is given, although these figures in some cases refer to the total reserve of CO_2 reduction potential. In the French emission projections it is apparently expected that currently foreseen actions can only partly draw from this potential. In the French Second National Communication the anticipated effects are predominantly expressed as million metric tonnes of carbon per year but sometimes also as tonnes oil equivalent per year. Usually a cumulative effect starting from the year 2000 towards 2010 and 2020 is reported. In the table below specific policy instruments are categorised per sector and per pollutant and the specified impact potential regarding greenhouse gas emissions is shown per measure. Also indicated in italics is the actual reduction that is foreseen and used in the scenario calculations per sector.

	Policy or measure	Reduction potential around 2000 (Mio t CO_2 /a[1])
CO_2 : Heating of buildings		
1.1.1	Tightening of regulations on energy efficiency for new buildings (both residential and commercial)	76 ktoe/a
1.1.2	Obligatory standardised specification of energy costs for new buildings	not estimated
1.1.3	Encouragement for energy saving improvements for existing buildings	
	Improvements of energy efficiency of state buildings	0.73
	Fuel taxation (measure not yet certain)	
	All of the measures under 1.1.3:	7900 ktoe/a (full potential)
1.1.4.	Promotion of the use of timber in construction	1.28
Reduction assumed in projections for fuel combustion in residential and commercial		*4*

sector (low case scenario)		
CO_2 : Industry		
Voluntary agreements		
1.2.1	Energy savings and fuel substitutions	18.3 (full potential)
Supporting measures		
1.2.2	Support for R&D	not estimated
1.2.2	Tax incentives	not estimated
Reduction assumed in projections for fuel combustion in industrial sector (low case scenario)		*4*
CO_2 : Transportation		
Freight transport		
1.3.1.1	Technical provisions concerning heavy trucks	
1.3.1.2	Institutional actions	
1.3.1.3	Development of intermodal freight transportation	
	All of the measures under 1.3.1:	1.28
Passenger transportation, technical improvements to vehicles		
1.3.2.1.1	Reduction in specific consumption of new vehicles	not estimated for 2000, 17.2 in 2010
1.3.2.1.2	Safety checks for circulation vehicles	not estimated
1.3.2.1.3	Bonus for destruction of vehicles over 10 years old	not estimated
1.3.2.1.4	Developing vehicles designed for urban areas	not estimated
Passenger transportation, other measures		
1.3.2.1.5	Promoting electric vehicles and other alternative vehicles	not estimated
1.3.2.2	Promotion of organised travel	-
1.3.2.3	Developing options of inter-regional travel	0.48
Reduction assumed in projections for fuel combustion in transportation sector (low case scenario)		*4.4*
CO_2 : Energy sector		
1.4.1	Investments in new nuclear power plants	not estimated
1.4.3	Development of co-generation	5.87
1.4.4	Reducing peak demand curves & application of demand side management	1.28
Reduction assumed in projections for fuel combustion in energy production and processing sector (low case scenario)		*7*
CO_2 : Forests management		
1.5.3	Increasing forest carbon sequestration	62.3
1.5.4	Protection against forest fires	not estimated
CO_2 : New and renewable energies		
1.7.1	Developing wind energy use	-
1.7.2	Developing use of wood energy	-
1.7.3	Development of agricultural biomass products for energy use	0.99
1.7.4	Increasing energy production from waste	0.73
Reduction assumed for measures for waste incineration		*-4*
Total reduction for overseas areas		*(0.27)*
	Policy or measure	Reduction potential around 2000 (Mio t CH_2/a)
CH_4 : Landfill methane emissions		
2.2.1	Ordinary waste no longer be landfilled	-
2.2.2	Increasing landfill methane recovery	0.4
CH_4 : Natural gas distribution		
2.3	Replacement of old distribution networks	
2.3	Improvement of management procedures for operating incidents	
	Both measures under 2.3	0.064

CH_4: Coal mining		
2.4	Closure of French coal mines	not estimated
	Policy or measure	Reduction potential around 2000 (Mio t N_2O/a)
N_2O: Adipic acid production		
3.1.1	Processing of gas effluents	0.05
N_2O: Nitric acid production		
3.1.2	Stricter emission regulations	0.0046
N_2O: Glyoxylic acid and glyoxal production		
3.1.3	Stricter emission regulations	0.008
N_2O: agricultural sector		
3.2	Mandatory set-aside provisions	
3.2	De-intensification in arable crop production	
3.2	EU directives on nitrates	
3.2	Advice on reduction of nitrate pollution, 'Fertimieux' program	
	All measures under 3.2	0.0075

[1] Unless otherwise specified

Categorisation of measures: The majority of the measures are adopted and under implementation although on several fields a further emission reduction, compared what is currently foreseen in the emission projections, could be possible. Judging from the reduction potentials reported for the quantified measures, the best possibilities are offered by an additional improvement of the energy efficiency of existing buildings, further energy savings and fuel substitutions in industry and a reduction of the specific fuel consumption of vehicles.

Projected CO_2 emissions in 2000 relative to target-objective: The French GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990[1]	1996[1]	2000 without measures[2]	2000 with measures[2]
CO_2	478	494	492	474
CH_4	3,018	2,712	3,070	2,810
N_2O	308	297	143	80

[1] including DOMs and TOMs (overseas departements and territories)

[2] Continental France only, low case scenario

According to the scenario for the year 2000 with measures, the current trend of CO_2 emissions increase will be shifted towards falling emissions whereas basic scenario assumptions include an estimated annual growth of GPD ranging from 2.3 to 2.6 %. The currently foreseen measures should enable maintaining emissions in the year 2000 at their 1990 levels. The impact of energy-related measures is reported to be 15.8 and 19.1 Tg CO_2 per year in 2000 for the low and high case scenario, respectively. The fossil fuel related emission per capita amounted to 6.5 tonnes CO_2 in 1990 and is projected to be 6.2-6.5 tonnes CO_2 in 2000, depending on the low or high case assumptions. This is as such in line with the French national target of an upper limit of 7.33 tonnes CO_2 per capita.

GERMANY

Greenhouse gas emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removal	CH_4	N_2O	NO_x	CO	NMVOC
1990	1,015	4	5.57	0.22	2.71	11.2	3.22
1996	919	35	3.57	0.22	1.89	6.72	1.88

Target/objective and comments: The federal government aims at a 25 % reduction of CO_2 in 2005 compared to the 1990 level. For the other greenhouse gases reduction and limitation targets are set, but not quantified in the Second National Communication. The national target has remained unchanged since the First National Communication.

Summary of measures: The measures are a mix of economic, legislative and R&D incentives, voluntary agreements and educational programmes. They cover about all sectors relevant for emissions of greenhouse gases. Major efforts are put in voluntary reduction measures in the industry, energy efficiency, a transportation policy and conservation of existing forests. Special attention was, is and will be paid to the former GDR (the new Länder). Emission reductions in that part of the country have been and will be achieved by replacement of lignite by other fuels, modernisation of industrial installations and improvement of energy efficiency. In the period 1990-1995 the emissions of greenhouse gases have substantially dropped in the former GDR and not only due to the decrease in economic activity.

Quantified measures: Whenever possible the CO_2 mitigation impacts of the German reduction measures have been estimated for the years 2000 and 2005. The anticipated effects are summarised in the table below for all quantified measures that are currently foreseen. Although the effects are reported to be corrected to account for synergy and overlap between measures, and should be summable, the total reduction impact thus calculated does not account for the difference between scenario estimates with and without measures in the emission projections for 2000. For 2000, the difference between the scenario forecast and the quantified measures (10.2 Tg CO_2) could be explained by a reported CO_2 fixation through renewable energy of 10.2 Tg CO_2. However for 2005 for which there are also discrepancies this does not seem to be the case.

Sector	*Policy or measure*	*Reduction potential in 2000 (Gg CO_2)*
Cross-sectoral	Support for renewable energy	143
	Support to companies, workshops, forums, education, etc.	
	R&D for energy efficiency	
	Industry's declaration on climate protection	18200
	Dissemination of information on environmental protection (on all levels)	
	Special effort in the new Länder (former GDR) to meet environmental aims (modernisation in all sorts of sectors)	
Agriculture	Initiatives on renewable raw materials	
	Improvement in agricultural structure and coastal protection	
	Land set-asides	
Power generation	Improvement of energy efficiency	
	Agreement on sale to the electricity network by renewable energy users (e.g. wind power)	4863
	Renewable energy (power generation and residential)	620
Other Energy transformation	Use of pit gas from hard coal mining	580
Land-use	Forest conservation and reforestation	(30600)
Residents, etc.	Amendment of existing ordinances	8300
	Energy efficiency in both existing and new houses	8900
	Solar energy	34
	Amendment of the ordinance on the small firing installations	700
	Support for providing information regarding third-party financing	400
	Joint programme 'Economic recovery in the former GDR' (Aufschwung Ost)	1400
Waste disposal	Technical instructions on waste management	668

Transportation	Taxation of fuels	3500
	Improvement of infrastructure	1000
	Improvement of continuity of traffic flow	600
	'Low emission' automobiles	3000
	Improvement and promotion of public transport	3000
	Shift in and combination of means of transport of goods	400

Estimated CH_4 reduction potential of measures

Sector	*Policy or measure*	*Reduction potential in 2000 (Gg CH_4)*
Waste handling	Technical instructions on waste and waste management	668
Power generation	Use of gas from hard coal pits	580

Estimated N_2O reduction potential of measures

Sector	*Policy or measure*	*Reduction potential in 2000 (Gg N_2O)*
Agriculture	Fertiliser ordinance	
Industry	Technical measures for adipic acid production	

Categorisation of measures:
The measures presented in the section 'Quantified measures' are either implemented or in progress. Some future measures reported in the Second National Communication were not described in above section but are proposed and planned in order to enable further GHG reduction.

Projected greenhouse gas emissions in 2000/2005 relative to target-objective: Germany's GHG emissions for 1990 and 1996 and the expected projections in 2000 in Gg, CO_2 in Tg:

	1990	1996	2000 without measures[1]	2000 with measures[1]	2005 without measures[1]	2005 with measures[1]
CO_2	1,015	919	960	894	984	867
CH_4	5,571	3,573	4,737	3,892	4,490	3,004
N_2O	225	224	250	162	248	159

[1] without measures: some energy efficiency-related measures (not primarily aimed at CO2 reduction) implemented; with measures: additional GHG emission reduction measures implemented

Between 1990 and 2000 a 11.9 % reduction of CO_2 emissions is expected, which is more than in line with the EU stabilisation target. During this period GDP is expected to grow by 2.4 % annually. For the year 2005 a 14.6 % reduction compared to the 1990 emissions is projected for Germany, which is less than the national reduction target of 25 %. Although a great deal has already been accomplished, considerable additional efforts will be required to achieve the national objective. The 4th Report of the 'CO_2 Reduction' Interministerial Working Group has the task of providing the Federal Cabinet with recommendations for additional measures.

GREECE

Greenhouse gas emissions (thousand metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	85.3	0	0.44	0.030	0.34	1.34	0.37
1996	92.0	0	0.46	0.029	0.37	1.33	0.41

Target/objective and comments: The Greek government considers as a realistic objective for its national programme the restriction of the total increase in CO_2 emissions during the 1990-2000 period to 15 % (or 12.4 Tg) ±3 %. This is 9.6 less than the earlier reported increase (before the First National Communication) in emissions calculated with 'business-as-usual' course of development actions (i.e. an increase of emissions between 1990-2000 with 22 Tg CO_2). Compared to the First National Communication, in the Second N.C. the realistic emission forecast for 2000 has risen about 1 % to approximately 16 %.

Scientific research revealed that it would be theoretically possible, in terms of technological criteria, to achieve a much greater abatement of CO_2 and other GHG, even to approximate the stabilisation objective in the year 2000. However, in practical terms, this objective is dismissed as utterly unfeasible due to the pressing time factor and other serious restrictions such as the limited availability of financial resources, the weaknesses of the Greek Administration, the inflexibility of the production system and inertia shown by consumers.

Summary of measures: The Greek national action plan for the reduction of CO_2 and other GHG involves on the supply side, for electricity generation, the introduction of natural gas, modernisation of the existing system, development of co-generation units in the existing and planned power stations and a large scale exploitation of renewable energies. On the demand side the introduction of natural gas in the industrial, tertiary and residential sector, energy conservation measures in buildings and manufacturing units as well as measures effecting energy consumption in the transport sector are aimed at. Further measures inlude management of biological resources, support for the utilisation of agricultural by-products, protection of soils from erosion, control of forest resources, rational use of farmland, acceleration of the re-afforestation programme.

Quantified measures: For all reported GHG reduction measures the CO_2 mitigation potential is specified. The effects of the individual measures can be summarised, however since maximal reduction potentials are given the realistic anticipated result is somewhat lower compared to the sum of all potential effects (13,383 vs. 9,600 ktonnes). There have been no emission projections made for 2000 which demonstrate exclusively the mitigation effect of measures, therefore the anticipated result (9600 ktonnes) can not be directly compared to projections with and without measures.

Measures in the energy sector	Emission abatement Potential up to 2000 (ktonnes CO_2)
Electricity generation	**4,570**
Natural gas penetration	4,200
Co-generation – district heating	70
Improved efficiency of lignite	300
Renewable energy sources	**3,267**
Wind energy 300 MW	1,000
Small hydroelectric works 34 MW	221
Solar system	976
Geothermal energy	60
Biomass	910
Research and development	100
Industry	**2,088**
Natural gas penetration	720
Co-generation 37.5 MWw	80
Improvement in auxiliary operations	430
Interventions in energy intensive sectors	808
Environmental energy listings	50

Residence - commerce - services	**2,195**
Natural gas penetration	1,092
Co-generation 11.2 Mw_e	51
Lightning	470
Street light	239
Central boiler maintenance	343
Transport	**1,263**
Fuel-related interventions	56
Vehicle-related interventions	300
Interventions in the transport system	470
Interventions in public transport	437
General total	**13,383**
Anticipated result	**9,600**

Measures for the management of biological resources and systems	**Emission abatement potential up to 2000 (kt CO_2)**
Acceleration of Re-afforestation programmes	20
Reinforcement of the Forest Resource Control Programme	100
Protection of soils from erosion	200
Study on the rational use of forest resources	10
Rational use of farmland	100
Support for the utilisation of agricultural by-products	1,470
Support for the promotion of energy cultivations	-
'The role of forests and agriculture in the CO_2 balance'	-
Total	**1,900**

Categorisation of measures: The status of the measures differs considerably: many measures are already under implementation, while several other projects are only just submitted for approval.

Projected CO_2 emissions in 2000 relative to target: The Greek GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

	1990	**1996**	**2000, BAU**	**2000, CW**	**2000, FO**	**2000, CT**	**2000, ECSF**
CO_2	85.3	92.0	106	89.1	81.0	101.3	95.6
CH_4	437	457	-	-	-	-	-
N_2O	30	29	-	-	-	-	-

The results of the emission projections are not presented as scenarios with and without measures, instead 5 forecasts are given each based on different assumptions. BAU stands for Business As Usual, CW for Conventional Wisdom, FO for Forum, CT for Current Trends and ECSF for Effects of the Community Support Framework.

Provided that the implementation process of the National Action Plan will follow closely the time schedule set for the period 1997 - 2000, for all sectors concerned, the final increase is expected to be approximately 15 % compared to 1990 levels (13.4 % following the Business-as-usual projection and 19.8 % following the Current Trends scenario). This figure has been evaluated from the different scenario outcomes and would result in approximately 98 Tg CO_2 in 2000.

IRELAND

GHG emissions (million metric tonnes = Tg) in 1990, 1995, and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	30.7	5.2	0.81	0.029	0.11	0.43	0.18
1995	34.1	6.2	0.81	0.026	0.13	0.30	0.17
1996	34.8	6.5	0.80	0.026	NA	NA	NA

Target/objective and comments: Ireland has no official target, but has the objective of limiting the increase in emissions to 20 % in 2000 above 1990 levels, or an increase of 11 % if account is taken of increased carbon sinks capacity. This objective has been maintained since the First National Communication.

Summary of measures: Ireland is mainly focusing on the energy and transport sector. Of minor influence are the waste and agricultural sector. Energy: Policies and measures have been designed to improve general levels of efficiency of energy production and consumption. Consumption side: efficiency and conservation in the industrial, residential, commercial and institutional sectors. Energy supply and production: improving the efficiency of electricity production, reducing the level of carbon intensity, managing growth in demand. Energy conservation: Energy Advisory Board, Irish Energy Centre and national Electricity Supply Board are playing a major role. There are a lot of schemes ranging from energy use in Buildings to implementation of EU SAVE programme, demand and supply side activities, fuel switching and renewables. Transport: There is an operational programme for transport which provides for a planned investment programme for roads and rail networks. The Dublin Transport Initiative contains measures aimed at a shift towards public transport. An extensive national forestation programme is continuing. CH_4 in the waste sector: waste mineralization and landfill management. Agricultural sector: codes of good practise.

Quantified measures: Of all reported measures and policies there are various for which a CO_2 mitigation effect is estimated. For one of these measures the anticipated annual reduction effect by the year 2000 is given (Transmission & Distribution System Renewal Programme in the energy sector - 0.06 Tg CO_2/year). For most other measures however, the manner (e.g. unit, reference year) in which the effects are reported cannot be compared and varies too much to enable a complete and consistent picture of the total effect of Irelands CO_2 emission abatement policy.

Categorisation of measures: Most measures are under implementation, including those aimed at enhancing sinks.

Projected CO_2 emissions in 2000 relative to target-objective: The Irish GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990	1996	2000 with measures
CO_2	30.7	34.8	35.0
CH_4	811	800	837
N_2O	29.4	26.0	26.0

According to the scenario for the year 2000 with measures, the CO_2 emissions will have increased with 14 % since 1990. This increase is in line with the national objective to limit the increase to 20 % over the period 1990-2000. Taken the increase of sinks into account, as formulated in the national objective (46 % increase of sinks from 1990 to 2000, from 5.2 to 7.6 Tg CO_2), the net CO_2 emissions have increased by 7.5 % between 1990 and 2010 while GDP growth is projected to be 4 % per annum.

ITALY

GHG emissions (million metric tonnes = Tg) in 1990 and 1995:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	442	36	2.33	0.165	1.94	7.89	2.22
1995	448	36	2.52	0.162	1.85	7.79	2.37

Target/objective and comments: Stabilisation of the equivalent greenhouse gas emissions in 2000 at the 1990 level. A 7 % reduction (compared to the 1990 level) of the greenhouse gas emissions in the year 2010.

Summary of measures: The measures aim at reducing the growth of CO_2 emissions from the energy sector. This is done by efficiency improvement of power generation and increase in renewable source, replace electrical equipment by more efficient equipment, reduction of losses in the electricity grid and the methane network, increase the use of methane in industry and private sectors, traffic control and rationalisation of urban mobility, promotion of low greenhouse gas emission fuels, energy efficiency improvements in buildings and check of heating systems.

Quantified measures: Three possible intervention levels (scenario's) for greenhouse gas emission reduction have been made:
- the first level is necessary to modernise the Italian economy and to safeguard the environment
- with the second level the EU objective for Italy (7 % reduction in 2010 compared to 1990) can be achieved
- at the third level the greenhouse gas emissions are reduced more than the EU objective for Italy asks for

The estimated CO_2 mitigation effect of the reduction measures at all three levels has been estimated for 2010. For the first intervention level an achievable reduction of 77 Mtonnes CO_2 equivalent/year is anticipated while 30 and 32 Mtonnes CO_2 equivalent/year is estimated for the second and the third level, respectively. For the year 2000 a total CO_2 reduction potential of circa 13 Mt is estimated for measures on the short term. The measures for the first intervention level are for the year 2010:

	policy or measures	reduction potential in 2010 (Mtonnes CO_2 eq./a)
1. Reduction of emissions from the energy sector		
1.1	Gasification of emulsions and residual products, very high-efficiency combined cycles	3
1.2	Further cogeneration	1.3
1.3	Six percent reduction of leaks in the electricity grid	0.7
1.4	Further gasification of emulsions and residual products, CH4 combined cycles	5.1
1.5	Further combined cycles, dismissal of plants in existence	3.5
1.6	Electric power production from wind turbines	1.9
1.7	Further biomass systems and solid wastes	2.1
1.8	Reduction of leaks and emissions from methane systems	0.7[1]
1.9	Measures for city public transport	2.1
1.10	Replacement of 12 million circulating cars with 12 million low-emission cars	12
1.11	Realisation of new underground, tram, local railway systems, modernisation/increase of speed of 1100 km	4
1.12	Transfer of freight from road to railway and coastal navigation	5.5
1.13	promotion of biofuels and biodiesel	1.5
1.14	Increase in the use of natural gas in industry	3
1.15	Further use of methane in housing and the tertiary sector	2
1.16	Voluntary agreements and energy diagnosis in industries with medium-low energy consumption, new technologies	4.5
1.17	Standards and voluntary agreements for high-efficiency equipment in industry	1.5
1.18	More efficient equipment for reducing electricity consumption in housing and in the tertiary sector, new technologies	2.5
2. Reduction of emissions from the non- energy sector		
2.1	Energy-saving measures (recycling of solid wastes), reclamation of landfills, incineration of industrial sludge	16[1]
2.2	Reduction N2O emissions in industrial processes (nitric acid and fatty acid)	4.5[2]

The additional measures (additional to the measures from the first intervention level) for the second intervention level are for 2010:

	policy or measures	reduction potential in 2010 (Mtonnes CO_2 eq./a)
1. Reduction of emissions from the energy sector		
1.1	Energy production from renewables incl, biomass and solid wastes	1.6
1.2	Increase in the use of natural gas in industry and private sectors	2.5
1.3	Promotion of methane cars/vans	1.7
1.4	Reduction of heating consumption in housing/tertiary sector (new) and new technologies	3.0
1.5	More efficient equipment for reducing electricity consumption in housing and in the tertiary sector (2nd phase)	4.5
1.6	Standards and voluntary agreements for high-efficiency electric equipment in industry (2nd phase)	5.5
1.7	recycling of aluminium waste	1.0
1.8	Recycling of paper	-
1.9	Recycling of glass	0.3
1.10	New hydroelectric and geothermal power plants	3.5
1.11	Reduction of heating consumption in the reconstruction of buildings	3
1.12	Active and passive solar heating in housing/tertiary sector	1.5
2. Reduction of emissions from the non- energy sector		
2.1	Emissions from cattle-breeding at farms	0.8[1]
2.2	Reduction of waste and increase in incinerating processes	2.8[1]

The additional measures for the third intervention level are for 2010:

	policy or measures	reduction potential in 2010 (Mtonnes CO_2 eq./a)
1. Reduction of emissions from the energy sector		
1.1	Standards and voluntary agreements for high-efficiency electric equipment in industry (3rd phase)	3.5
1.2	More efficient equipment for reducing electricity consumption in housing and in the tertiary sector (3rd phase)	3.0
1.3	Replacement of 7 million circulating cars with 7 million very low-consumption cars	4.0
1.4	Promotion of biofuels	4.5
1.5	Electric power production from biomass (cultivation)	5.5
1.6	Reduction of heating consumption in buildings	8.0
1.7	Photovoltaic solar energy	0.3
2. Reduction of emissions from the non- energy sector		
2.1	Increase in methane exploitation in landfills	1[1]

[1]) CH_4 in CO_2 equivalents/a
[2]) N_2O in CO_2 equivalents/a

Categorisation of measures: The measures of the first intervention level are necessary for the modernisation of the Italian economy and most are in progress. Some of the measures of the other intervention levels are also (to some extent) in progress.

Projected CO_2 emissions in 2000 relative to target-objective: The Italian GHG emissions of for 1990 and 1995, and the expected projections in Tg (CH_4 and N_2O in $TgCO_2$ eq.)

Emissions of	**1990**	**1995**	**2000 baseline**	**2000 with measures**
CO_2	442	448	459	446
CH_4	2,329	2,516	2,467	2,457
N_2O	165	162	161	161

According to the scenario for the year 2000 with measures, the CO_2 emissions will increase by 1 % compared with the 1990 emissions. This is almost in line with the national objective of stabilisation. Italy forecasts an economic growth of 2 % between 1995 and 2000.

LUXEMBOURG

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	13.3	0	0.024	0.001	0.023	0.171	0.019
1996	7.1	0.3	0.024	0.001	0.022	0.102	0.017

Target/objective and comments: Stabilisation by the year 2000 at 1990 levels.

Summary of measures: The plan focuses on the power generation and the transport sector. Some measures include feasibility studies on the use of gas vapour turbines, pilot project with gas turbine and hydro power, introduction of co-generation in buildings and investigation of other usage of co-generation, investigation of potential for renewable energy sources, promotion of public transport, development of intermodal freight transport, promotion of rail transport and internal waterways, investigation of vehicle tax based on energy consumption. Also, the introduction of a CO_2 tax is considered.

Quantified measures: The anticipated effect of the GHG reduction measures have not been specified per measure.

Categorisation of measures: The majority of the measures are planned.

Projected CO_2 emissions in 2000 relative to target-objective: The GHG emissions of Luxembourg for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990	1996	2000 with measures
CO_2	13.3	7.1	7.42
CH_4	24	24	-
N_2O	1	1	-

The forecasted emissions of CO_2 for 2000 indicate a 44.2 % reduction compared to the 1990 emissions. The bulk of this reduction comes from restructuring of the iron and steel industry and clearly exceeds the stabilisation objective. This is confirmed with the observed emission decrease of 46.6 % over the period 1990-1996.

NETHERLANDS

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	161	1.5	1.29	0.064	0.56	1.14	0.50
1996	185	1.7	1.18	0.072	0.47	0.86	0.35

Target/objective and comments: Reduction (temperature corrected) of the CO_2 emissions' level of 2000 by 3 % compared with the 1990 emissions. For the period after 2000, a stabilisation at the 2000 emissions level. Also, a reduction target of 10 % for methane in 2000, relative to the 1990 methane level. N_2O emissions are intended to be stabilised at the 1990 emissions by 2000.

Summary of measures:
CO_2: *Co-generation*: 40 % of total capacity by 2000. Construction of new gas-fired electricity generating capacity. Renewable energy: 10 % in 2020. Broadening the range of fiscal instruments, providing extra R&D budget, providing adequate payments for provision of energy generated from renewable sources by private operators. *Regulatory energy tax:* raise energy prices for small-scale consumption by 15-20 %. *Electric power generation*: increase the average generation efficiency from 40-43 % in the period 1990-2000. Installing more efficient plants, expanding the central heat distribution which is cogenerated in power plants, a fuel switch to 10 % wood in two coal-fired power plants in 1995. *Industry*: energy conservation. Long-Term Agreements (LTAs), a Light Manufacturing Industry Strategy for small firms, e.g. energy standards in environmental licences, consolidation of the technological base, R&D, application of tax instruments. *Transport sector*: 10 % CO_2 reduction by 2010 compared to 1986. Reducing the number of vehicle-km, improvement of public transport, improve efficiency in freight transport, setting up of Long Term Agreements, proposals for stimulating energy-efficient passenger cars, increase of fuel prices, stricter control of speed limits, stimulation of efficient driving and buying behaviour, striving for international control of aircraft emissions, emphasis importance of a global levy on kerosene, request attention for the reduction of GHG emissions from international shipping. *Residential and service sector*: promote energy conservation in new homes and buildings. Improving insulation standards, demonstration projects, intensifying the Energy Performance Standard, fiscal incentives for energy-efficient construction, LTAs with rental agencies, energy-efficient heating systems and appliances, levies, public education, labelling. *Waste treatment*: using 5.1 million tonnes of waste for energy purposes by 2000 and increased recycling of plastics, aluminium, paper and cardboard. Package of measures aimed at reducing CO_2 emissions by reducing waste production and other means of waste treatment.

CH_4: Recovery the methane from landfills, manure policy, European agricultural policy, reduce leakage from gas distribution networks and reduce emissions from offshore gas venting.

N_2O: Study on reducing industrial N_2O emissions.

Quantified measures: The CO_2 reduction potential is not consistently specified per measure in the Second Netherlands' National Communication to an extent enabling comparison with emission projections.

Categorisation of measures: The Netherlands' climate policy is to a large extent a combination of different policy areas. Since 1990, various policy measures have been suggested (see second evaluation). Additional policy was announced in 1996, which is now included in existing policies. There might be an update of climate policies in the near future.

Projected CO_2 emissions in 2000 relative to target-objective: The Netherlands' GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990	1996	2000 with measures
CO_2	161	185	189
CH_4	1,292	1,179	912
N_2O	63.9	72.4	73

Since 1990, various policy measures have been implemented aiming at the target for 2000. Nevertheless, the forecast 2000 CO_2 emissions are 17 % higher than the 1990 emission levels. This is in contrast with the national objective to reach a 3 % reduction in the year 2000 of the 1990 emission levels. (The forecast is in line with the observed emission increase over the period 1990-1995 of 9.6 % – compare a 7.6 % increase when corrected for temperature effects). Also, this is not in line with the overall EU objective of stabilisation of CO_2 emissions in 2000. During 1995 to 2000 GDP is expected to grow by 2.3 % annually.

At present, the Netherlands Government expects that CH_4 emissions will be reduced by about 30 % in 2000, largely exceeding the 10 % reduction objective. The N_2O emissions in 2000 are expected to be 14 % higher than in 1990, which indicates that the Netherlands will not be able to meet their stabilisation target for N_2O.

PORTUGAL

Greenhouse gas emissions (million metric tonnes = Tg) in 1990 and 1994[1]:

	CO_2 emissions	CO_2 removal	CH_4	N_2O	NO_x	CO	NMVOC
1990	47.1	1.2	0.82	0.014	0.35	1.25	0.28
1994	50.8	1.2	0.83	0.015	0.38	1.46	0.32

[1] latest reported year

Target/objective and comments: Portugal has an objective to limit the increase in CO_2 emissions at 40 % in the year 2010, using 1990 levels as the base year. This objective is maintained since the First National Communication.

Summary of measures: Measures and policies aimed to reduce greenhouse gas emissions are organised per sector and are in general a part of a 'multi-gas approach'. In the energy sector the following measures have been put to effect: introduction of natural gas, intensified use of renewable endogenous resources, incentives systems and legislation on 'rational use of energy' and technological developments, beneficial for reduction of greenhouse gases, in current installations and equipment. A range of measures is also applied to support and modernise the industry sector with an expected spin-off concerning the reduction of greenhouse gas emissions. In the transport sector greenhouse gas emissions are expected to result from technical improvements to vehicles, the use of alternative fuels and infrastructural improvements. In the agricultural sector CO_2 reduction is expected to indirectly result from application of the European Union's Common Agricultural Policy (CAP). The CAP related measures have contributed towards a less intensive use of agricultural activity and a planting of land formerly used for agriculture with trees. Efforts continue to be made concerning maintenance and expansion of forest areas.

The quantified effects of the individual measures can be summarised although no scenario estimate for 2000 'without measures' has been performed which would enable a validation of the total mitigation impact.

Quantified measures: Summary of policies and measures for the energy sector in Portugal.

Policy - measure	*Type of instrument*	*Estimated mitigation impact ($TgCO_2$) in 2000*
Energy diversification (introduction of natural gas)	Financial incentives. Legislation. Co-operation	3.4
Promotion of renewable energy	Financial incentives. Fiscal incentives. Legislation	0.6
Promotion of energy efficiency	Financial incentives. Fiscal incentives. Legislation	0.5
Total		4.5

Categorisation of measures: Many measures mentioned in reference to greenhouse gas reduction are part of programs with a wider scope. Policies and measures as described above are at implementation stage or are expected to be phased in the near future.

Projected greenhouse gas emissions in 2000 relative to target-objective: Portugal's GHG emissions for 1990 and 1994, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990	1994	2000 with measures
CO_2	47.1	50.8	50.1
CH_4	816	834	-
N_2O	14.4	14.5	-

The CO_2 emissions in 2000 show an increase of 6.3 % compared with the 1990 emission data. GDP will grow by 3.7 % per year. For 2010, a carbon dioxide emission of 62.5 Tg is expected, which is 32.7 % higher than the 1990 emission level. This 2010 value is within the national target of limiting the increase between 1990 and 2010 to maximum 40 %.

SPAIN

GHG emissions (million metric tonnes = Tg) in 1990, 1994 and 1995:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	226	29	2.18	0.094	1.16	4.73	1.12
1994	237	29	2.33	0.088	1.21	4.62	1.18
1995	248	NA	2.37	0.091	1.22	4.36	1.15

Target/objective and comments: Spain has forecasted a limited increase in emissions of 11-13 % over 1990 levels by 2000.

Summary of measures: Measures focus on energy conservation and fuel switching. The energy conservation is mainly geared towards industry, transport, and the residential/commercial sector. Fuel switching includes the promotion of natural gas in industry, and in the residential sector, as well as promotion of renewables and CHP. Other measures include subsidisation of public transport, investment of rail infrastructure and tax exemptions for gas oil in rail transport. A range of measures addresses the enhancement of sinks.

Quantified measures: The effects of the individual GHG reduction measures has not been specified.

Categorisation of measures: Most measures have been implemented or are under implementation.

Projected CO_2 emissions in 2000 relative to target-objective: The GHG emissions of Spain for 1990 and 1995, and the expected projections in 2000 in Gg, CO_2 in Tg are summarised in the following table:

Emissions of	1990	1995	2000 with measures
CO_2	226	248	258
CH_4	2,181	2,370	-
N_2O	94.2	90.5	-

The expected CO_2 emissions in the year 2000 are 14.1 % larger than the 1990 emissions. This increase almost fits within the national target range, aiming at an increase of 11-13 % over that period.

SWEDEN

Greenhouse gas emissions (thousand metric tonnes = Tg) in 1990-1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	55.4	34.4	0.28	0.026	0.34	1.21	0.52
1996	63.4	31.8	0.26	0.026	0.30	1.08	0.46

Target/objective and comments: CO_2 from fossil fuel sources: stabilisation in 2000 compared to 1990 levels. Methane emission from waste disposal: reduce by 30 % between 1990 and 2000. Sweden's national target has not changed since the First National Communication.

Summary of measures: Measures adopted in the energy sector: taxes and economic have been the main measures. CO_2 tax on fossil fuels shifting revenues from income and capital to the energy use – VAT is levied on all energy forms. Taxes have been raised in 1996.Programmes to promote and stimulate the introduction of renewable energy sources and increased efficiency in energy use, e.g. energy conservation and promotion of biofuels, wind power and solar energy. Transport sector: Adoption of higher taxation of petrol, and two R&D programmes, concerning the use of alternative fuels and hybrid and electrical vehicles. Forestry sector: Switching to sustainable silviculture practices, extending the life of forest products. Agricultural sector: No measures have been taken yet to reduce GHG's, but there are measures that have been adopted for other purposes that have effect on GHG's as well, e.g. measures against nitrogen leaching. There is cultivation of energy crops.

Quantified measures: The policy instruments that were in effect on 1 January 1990 have been compared with those that were in effect on 1 September 1996. Instruments introduced after 1 January 1990 have been monitored, and the calculations suggest that the latter instruments lead to an energy system that results in both a lower level and a slower rate of increase of CO_2 emissions. The difference in the change in CO_2 emissions between the 1990 and 1996 policy instruments, broken down by sector and policy instruments, in million tonnes per annum, is shown in the table below:

Year	**2000**
Sector	
Energy and Transformation Industries	-7.2
Industry	1.2
Residential, commercial, institutional	-7.8
Transportation	-3.7
Total	-17.5
Policy instruments	
Investment support	-0.7
Programme for more efficient energy use	-0.2
Carbon dioxide and energy tax, transportation	-3.4
Industry- and energy sector	-13.2
Total	-17.5

Categorisation of measures: The majority of measures are adopted and under implementation.

Projected CO_2 emissions in 2000 relative to target-objective: Sweden's GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990	1996	2000 without measures*	2000 with measures
CO_2	55.4	63.4	77.6	60.1
CH_4	284	261	not available	284
N_2O	26	26	not available	10.5

* The 'without measures'-scenario includes measures implemented before 1990

The CO_2 emissions are expected to increase by 8.4 % between 1990 and 2000. This is not in line with the target of stabilisation of emissions in 2000 at the 1990 emissions level. On the basis of normal-year corrected values (for temperature and hydropower variations) CO_2 emissions are projected to increase by 4.3 % by 2000 (cf. the annual GDP growth of 1.6 %), based on corrected 1990 levels and 1996 policy instruments.

Overall CH_4 emissions are expected to stabilise on 1990 levels by the year 2000. The CH_4 emissions from waste disposal are expected to further decrease from 0.085 Tg in 1990, and 0.061 Tg in 1996, to 0.042 Tg in 2000, in line with the 30 % reduction target for waste disposal.

UNITED KINGDOM

GHG emissions (million metric tonnes = Tg) in 1990 and 1996:

	CO_2 emissions	CO_2 removals	CH_4	N_2O	NO_x	CO	NMVOC
1990	615	11	4.44	0.215	2.75	6.69	2.55
1996	593	19	3.71	0.189	2.05	4.64	2.03

Target/objective and comments: The UK is committed to return greenhouse gas emissions to 1990 levels by 2000. This target has been maintained in UK's Second National Communication.

Summary of measures: In the electricity generation sector a switch from coal to gas is ongoing and further improvements in the productivity of the nuclear sector are under implementation. The Government follows a strategy to increase road fuel duties and strives to an increased combined heat and power (CHP) capacity. It is also stimulating the development of new and renewable sources of energy and continues to encourage the take up of energy efficiency measures through the Energy Efficiency Best Practice Programme. The UK strives to come to voluntary agreements with industrial branches regarding energy savings. For the transport sector fuel efficiency improvement of vehicles and further taxation of fuel (including aerial) need to be mentioned. Initiatives regarding the public and residential sector include the promotion of heat insulation and the application of stricter regulations for energy efficiency for new buildings. Furthermore, an increased carbon sequestration through biomass formation is aimed at.

Quantified measures: The following measures are quantified in terms of mitigation impact:

Policy - measure	***Estimate of mitigation impact in 2000 in Mt CO_2***
Fuel switching	62.3
Nuclear productivity	10.6
Renewable energy	7.3
Road and fuel duty	11
Domestic fuel prices	1.5
Combined heat and power	12.8
Public sector	2.9
Energy saving trust	1.8
Energy efficiency best practice programme	12.8
Others	5.9
Total	**129.1**

Categorisation of measures: All the reported measures for CO_2 emission reduction are agreed and under implementation.

Projected CO_2 emissions in 2000 relative to target: The UK's GHG emissions for 1990 and 1996, and the expected projections in 2000 in Gg, CO_2 in Tg:

Emissions of	1990	1996	2000 without measures	2000 with measures
CO_2	615	593	708	578
CH_4	4,438	3,712	4,400	3,410
N_2O	215	189	190	133

For all sectors except road transport a decrease of CO_2 emission compared to 1990 is reported. In spite of the foreseen measures emission from road transport is expected to increase. According to the scenario for the year 2000 with measures, the CO_2 emissions have declined by 6 % since 1990. GDP is estimated to grow on average at a rate 2.95 % between 1995 and 2000. Methane emissions will be reduced by 23 % due to declining emissions from coal mining and landfill waste during 1990-2000. N_2O emissions will be 38 % below 1990 levels in 2000, due to a reduction from the manufacture of adipic acid, and agricultural emissions. These data indicate that the UK is exceeding largely its national objective to stabilise greenhouse gas emissions by the year 2000 at 1990 emission levels. This is confirmed by the observed reductions over the period 1990-1996.

Annex 3B IPCC standard data tables 7A of the EU Member States

EU15 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

EU15 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**3,458,405**	**286,846**	**23,074**	**1,261**	**13,350**	**50,155**	**15,034**
1 Energy	3,163,304	-	5,333	172	13,083	45,973	9,024
A Fuel Combustion	3,141,345	-	836	172	13,058	45,831	7,636
1 Energy Industries	1,150,888	-	54	64	2,935	1,020	98
2 Manufacturing Industries and Construction	636,820	-	64	36	1,606	3,487	145
3 Transport	694,747	-	251	37	7,069	32,842	6,320
4 Other Sectors	635,610	-	461	35	1,311	8,313	1,044
5 Other	23,287	-	4	1	137	169	29
B Fugitive Emissions from Fuels	21,960	-	4,497	1	25	142	1,388
1 Solid Fuels	4,416	-	2,935	-	2	59	14
2 Oil and Natural Gas	17,584	-	1,562	1	23	83	1,375
2 Industrial Processes	150,957	-	21	359	187	2,687	818
A Mineral Products	96,302	-	0	-	43	21	23
B Chemical Industry	10,568	-	6	319	78	41	370
C Metal Production	24,423	-	8	0	21	2,407	20
D Other Production	5,928	-	-	-	1	8	172
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	3,822	-	-	-	14	4	63
3 Solvent and Other Product Use	5,479	-	-	9	0	2	4,182
4 Agriculture	-	-	9,280	667	27	839	293
A Enteric Fermentation	-	-	6,770	-	-	-	-
B Manure Management	-	-	2,039	43	-	-	1
C Rice Cultivation	-	-	116	1	-	-	-
D Agricultural Soils	-	-	312	624	6	-	208
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	43	0	21	839	83
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	129,895	286,846	301	39	3	121	605
A Changes in Forest and Other Woody Biomass Stocks	84,430	248,362	-	-	-	-	-
B Forest and Grassland Conversion	35,310	-	14	0	3	121	8
C Abandonment of Managed Lands	-	1,524	-	-	-	-	-
D CO2 Emissions and Removals from Soil	6,488	4,415	-	-	-	-	9
E Other	3,667	32,546	288	39	-	-	589
6 Waste	7,344	-	8,139	12	50	533	113
A Solid Waste Disposal on Land	1	-	6,840	-	5	59	53
B Wastewater Handling	1,352	-	646	6	-	-	5
C Waste Incineration	5,891	-	25	2	42	461	33
D Other	100	-	630	3	1	13	20
7 Other	1,327	-	2	4	-	-	-
Memo Items:							
International Bunkers	169,640	-	12	4	1,512	306	182
Aviation	60,209	-	5	1	251	188	65
Marine	109,430	-	6	4	1,260	120	117
CO_2 Emissions from Biomass	118,014	-	-	-	-	-	-

Note: EU15 emissions are the sum of Member States' emissions.

The sum of the sub-categories does not always correspond to the category totals due to incomplete data delivered by Member States (this holds true in particular for category 2 'Industrial Processes').

EU15 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

EU15 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**3,334,835**	**320,407**	**20,886**	**1,179**	**11,939**	**42,376**	**13,373**
1 Energy	3,056,774	-	4,328	185	11,714	38,799	7,713
A Fuel Combustion	3,037,554	-	732	184	11,692	38,689	6,442
1 Energy Industries	1,062,542	-	59	60	2,295	926	103
2 Manufacturing Industries and Construction	590,954	-	57	31	1,431	3,456	143
3 Transport	740,822	-	218	56	6,614	27,354	5,219
4 Other Sectors	629,151	-	383	32	1,245	6,837	948
5 Other	14,083	-	15	4	104	119	28
B Fugitive Emissions from Fuels	19,223	-	3,596	1	24	109	1,272
1 Solid Fuels	213	-	1,938	-	1	55	8
2 Oil and Natural Gas	19,009	-	1,658	1	23	56	1,264
2 Industrial Processes	138,573	-	24	316	145	2,359	734
A Mineral Products	87,020	-	0	-	42	21	19
B Chemical Industry	8,882	-	6	274	33	23	345
C Metal Production	19,576	-	7	0	18	2,052	17
D Other Production	6,540	-	-	-	1	8	173
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	3,048	-	-	-	6	43	26
3 Solvent and Other Product Use	5,123	-	0	9	0	2	3,931
4 Agriculture	-	-	8,876	613	18	508	225
A Enteric Fermentation	-	-	6,415	8	-	-	-
B Manure Management	-	-	1,969	39	-	-	1
C Rice Cultivation	-	-	164	1	-	-	-
D Agricultural Soils	-	-	302	565	6	-	185
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	27	0	11	508	39
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	126,027	320,407	311	41	2	76	643
A Changes in Forest and Other Woody Biomass Stocks	82,957	274,892	-	-	-	-	-
B Forest and Grassland Conversion	33,088	-	9	0	2	76	3
C Abandonment of Managed Lands	-	7,360	-	-	-	-	-
D CO2 Emissions and Removals from Soil	6,315	5,611	-	1	-	-	9
E Other	3,667	32,546	302	40	-	-	631
6 Waste	7,530	-	7,345	12	59	631	129
A Solid Waste Disposal on Land	1	-	6,533	-	6	64	61
B Wastewater Handling	1,412	-	683	10	-	-	6
C Waste Incineration	6,117	-	31	3	49	553	38
D Other	-	-	98	0	4	15	24
7 Other	809	-	2	4	-	-	-
Memo Items:							
International Bunkers	185,027	-	1,858	7	1,571	382	191
Aviation	73,464	-	1,856	3	313	254	80
Marine	111,198	-	4	4	1,259	128	111
CO_2 Emissions from Biomass	102,792	-	-	-	-	-	-

Note: EU15 emissions are the sum of Member States' emissions.

The sum of the sub-categories does not alway correspond to the category totals due to incomplete data delivered by Member States (this holds true in particular for category 2 ‘Industrial Processes’).

EU15 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
EU15 1995	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**3,376,579**	**312,576**	**20,663**	**1,189**	**11,692**	**41,335**	**12,932**
1 Energy	3,093,619	-	4,346	193	11,469	37,796	7,369
A Fuel Combustion	3,074,410	-	742	192	11,444	37,689	6,202
1 Energy Industries	1,078,063	-	64	65	2,237	920	105
2 Manufacturing Industries and Construction	589,548	-	59	33	1,468	3,491	143
3 Transport	751,550	-	219	59	6,384	26,321	5,001
4 Other Sectors	640,660	-	397	34	1,262	6,852	940
5 Other	14,599	-	3	1	95	105	14
B Fugitive Emissions from Fuels	19,211	-	3,603	1	24	107	1,167
1 Solid Fuels	3,690	-	1,991	-	2	61	9
2 Oil and Natural Gas	15,560	-	1,612	1	23	46	1,158
2 Industrial Processes	139,752	-	22	314	147	2,374	721
A Mineral Products	92,239	-	0	-	43	21	18
B Chemical Industry	9,325	-	6	273	31	25	339
C Metal Production	20,762	-	6	0	19	2,092	17
D Other Production	1,087	-	-	-	1	1	175
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	2,828	-	-	-	8	45	28
3 Solvent and Other Product Use	5,164	-	-	9	0	2	3,859
4 Agriculture	-	-	8,774	614	17	457	221
A Enteric Fermentation	-	-	6,228	-	-	-	-
B Manure Management	-	-	2,102	38	-	-	1
C Rice Cultivation	-	-	119	0	-	-	-
D Agricultural Soils	-	-	302	576	6	-	184
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	24	0	10	457	36
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	129,212	312,576	305	42	3	87	627
A Changes in Forest and Other Woody Biomass Stocks	85,879	268,698	-	-	-	-	-
B Forest and Grassland Conversion	33,045	-	10	0	3	87	4
C Abandonment of Managed Lands	-	8,081	-	-	-	-	-
D CO2 Emissions and Removals from Soil	6,621	5,309	1	0	-	-	9
E Other	3,667	30,489	294	42	-	-	614
6 Waste	7,797	-	7,215	12	57	618	132
A Solid Waste Disposal on Land	4	-	6,411	-	6	64	61
B Wastewater Handling	1,556	-	678	10	-	-	6
C Waste Incineration	6,235	-	31	3	49	540	38
D Other	2	-	95	0	2	15	29
7 Other	1,032	-	2	4	-	-	1
Memo Items:							
International Bunkers	190,117	-	1,983	9	1,626	393	197
Aviation	77,184	-	1,856	3	337	263	85
Marine	112,932	-	4	3	1,288	129	113
CO_2 Emissions from Biomass	107,504	-	-	-	-	-	-

Note: EU15 emissions are the sum of Member States' emissions. 1994 data used for Portugal.

The sum of the sub-categories does not always correspond to the category totals due to incomplete data delivered by Member States (this holds true in particular for category 2 'Industrial Processes').

EU15 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
EU15 1996	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**3,466,381**	**319,451**	**20,170**	**1,227**	**11,120**	**39,742**	**12,222**
1 Energy	3,186,521	-	4,234	200	10,904	36,247	6,978
A Fuel Combustion	3,166,545	-	769	199	10,880	36,141	5,830
1 Energy Industries	1,104,689	-	69	67	2,173	857	108
2 Manufacturing Industries and Construction	586,374	-	58	32	1,403	3,429	144
3 Transport	759,677	-	215	66	5,929	24,725	4,616
4 Other Sectors	700,609	-	423	33	1,298	7,044	949
5 Other	15,294	-	3	2	75	85	15
B Fugitive Emissions from Fuels	19,978	-	3,465	1	24	106	1,148
1 Solid Fuels	3,555	-	1,818	-	1	60	9
2 Oil and Natural Gas	16,443	-	1,648	1	23	45	1,138
2 Industrial Processes	137,622	-	21	325	140	2,332	689
A Mineral Products	94,000	-	0	-	43	22	17
B Chemical Industry	9,482	-	6	287	33	25	329
C Metal Production	20,590	-	6	0	23	2,114	18
D Other Production	1,139	-	-	-	1	1	212
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	4,672	-	-	-	19	42	26
3 Solvent and Other Product Use	5,007	-	-	9	0	2	3,699
4 Agriculture	-	-	8,752	634	17	457	168
A Enteric Fermentation	-	-	6,207	-	-	-	-
B Manure Management	-	-	2,100	41	-	-	1
C Rice Cultivation	-	-	119	0	-	-	-
D Agricultural Soils	-	-	302	593	6	-	123
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	24	0	10	457	36
G Other	-	-	-	-	-	-	9
5 Land-Use Change & Forestry	128,509	319,451	305	43	3	87	557
A Changes in Forest and Other Woody Biomass Stocks	85,251	275,677	-	1	-	-	-
B Forest and Grassland Conversion	32,730	-	10	0	3	87	4
C Abandonment of Managed Lands	-	7,886	-	-	-	-	-
D CO2 Emissions and Removals from Soil	6,861	5,399	-	0	-	-	-
E Other	3,667	30,489	296	42	-	-	553
6 Waste	7,629	-	6,856	12	55	617	130
A Solid Waste Disposal on Land	1	-	6,052	-	6	64	60
B Wastewater Handling	1,440	-	678	10	-	-	6
C Waste Incineration	6,188	-	30	3	47	539	37
D Other	-	-	96	0	2	15	27
7 Other	1,032	-	2	4	-	-	1
Memo Items:							
International Bunkers	149,695	-	1,984	9	1,617	410	200
Aviation	116,929	-	1,856	3	341	265	86
Marine	86,765	-	5	4	1,260	119	110
CO_2 Emissions from Biomass	170,663	-	-	-	-	-	-

Note: EU15 emissions are the sum of Member States' emissions. 1994 data used for Portugal. 1995 data used for Italy and Spain

The sum of the sub-categories does not always correspond to the category totals due to incomplete data delivered by Member States (this holds true in particular for category 2 ‘Industrial Processes’).

Austria 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Austria 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**62,042**	**13,300**	**459.8**	**6.5**	**194.0**	**1,285.8**	**350.4**
1 Energy	48,759	-	24.4	1.9	169.7	1,009.3	157.6
A Fuel Combustion	46,620	-	20.2	1.9	165.4	1,004.6	148.8
1 Energy Industries	12,363	-	0.2	0.1	14.8	0.9	0.4
2 Manufacturing Industries and Construction	7,432	-	0.5	0.1	19.7	6.7	1.2
3 Transport	13,569	-	3.3	1.0	98.6	484.3	96.2
4 Other Sectors	13,256	-	16.2	0.6	32.4	512.6	51.0
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	2,139	-	4.3	0.0	4.3	4.7	8.8
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	2,139	-	4.3	0.0	4.3	4.7	8.8
2 Industrial Processes	12,703	-	0.1	0.6	17.9	270.6	16.1
A Mineral Products	3,370	-	0.0	0.0	7.6	20.6	5.5
B Chemical Industry	423	-	0.1	0.6	4.1	12.5	8.3
C Metal Production	8,852	-	0.0	0.0	5.2	236.7	0.6
D Other Production	58	-	0.0	0.0	1.0	0.7	1.8
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	541	-	0.0	0.8	0.0	0.0	173.7
4 Agriculture	0	-	208.1	3.3	6.2	1.5	2.4
A Enteric Fermentation	0	-	146.0	0.0	0.0	0.0	0.0
B Manure Management	0	-	26.5	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	35.5	3.3	6.2	0.0	2.2
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.1	0.0	0.0	1.5	0.2
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	-	13,300	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	-	13,300	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	-	0.0	0.0	0.0	0.0	0.0
E Other	0	-	0.0	0.0	0.0	0.0	0.0
6 Waste	38	-	227.2	0.0	0.2	4.4	0.6
A Solid Waste Disposal on Land	0	-	193.2	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	13.7	0.0	0.0	0.0	0.0
C Waste Incineration	38	-	0.2	0.0	0.2	4.4	0.6
D Other	0	-	20.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	930	-	0.0	0.0	4.9	1.6	0.6
Aviation	930	-	0.0	0.0	4.9	1.6	0.6
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	13,384	-	-	-	-	-	-

Ref.: *'Austria's Annual National Greenhouse Gas Inventory 1980-1997, Submission to the Secretariat of the UNFCCC',* prepared by the Austrian Federal Environment Agency for the Federal Ministry for the Environment, Youth and Family Affairs, Vienna, April 1999.

Austria 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Austria 1994	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**61,068**	**14,726**	**451.1**	**7.3**	**183.2**	**1,129.8**	**273.5**
1 Energy	49,347	-	20.9	2.7	159.4	814.1	117.6
A Fuel Combustion	46,937	-	16.1	2.7	156.0	813.6	110.5
1 Energy Industries	9,395	-	0.1	0.1	7.2	0.7	0.2
2 Manufacturing Industries and Construction	6,661	-	0.3	0.2	14.3	4.3	0.5
3 Transport	16,127	-	2.7	1.8	101.6	371.9	68.5
4 Other Sectors	14,753	-	13.1	0.6	33.0	436.6	41.3
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	2,410	-	4.8	0.0	3.4	0.5	7.2
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	2,410	-	4.8	0.0	3.4	0.5	7.2
2 Industrial Processes	11,196	-	0.1	0.6	17.4	309.7	21.0
A Mineral Products	3,415	-	0.0	0.0	7.5	21.3	6.4
B Chemical Industry	405	-	0.1	0.6	4.4	11.1	12.3
C Metal Production	7,325	-	0.0	0.0	4.4	276.6	0.5
D Other Production	51	-	0.0	0.0	1.1	0.7	1.7
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	411	-	0.0	0.8	0.0	0.0	131.8
4 Agriculture	0	-	208.7	3.3	6.1	1.5	2.4
A Enteric Fermentation	0	-	145.9	0.0	0.0	0.0	0.0
B Manure Management	0	-	27.4	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	35.3	3.3	6.1	0.0	2.2
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.1	0.0	0.0	1.5	0.2
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	-	14,726	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	-	14,726	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	-	0.0	0.0	0.0	0.0	0.0
E Other	0	-	0.0	0.0	0.0	0.0	0.0
6 Waste	114	-	221.3	0.0	0.2	4.5	0.7
A Solid Waste Disposal on Land	0	-	186.8	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	14.3	0.0	0.0	0.0	0.0
C Waste Incineration	114	-	0.2	0.0	0.2	4.5	0.7
D Other	0	-	20.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	1,187	-	0.0	0.0	6.3	2.0	0.8
Aviation	1,187	-	0.0	0.0	6.3	2.0	0.8
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	13,408	-	-	-	-	-	-

Ref.: *'Austria's Annual National Greenhouse Gas Inventory 1980-1997, Submission to the Secretariat of the UNFCCC',* prepared by the Austrian Federal Environment Agency for the Federal Ministry for the Environment, Youth and Family Affairs, Vienna, April 1999.

Austria 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Austria 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**62,427**	**13,576**	**450.4**	**7.3**	**169.6**	**1,012.8**	**269.3**
1 Energy	51,117	-	22.4	2.7	147.0	768.4	112.5
A Fuel Combustion	48,765	-	17.2	2.7	143.6	767.8	106.1
1 Energy Industries	10,935	-	0.1	0.1	6.8	0.9	0.2
2 Manufacturing Industries and Construction	8,210	-	0.3	0.2	16.5	5.4	0.6
3 Transport	15,431	-	2.5	1.8	89.3	342.4	60.6
4 Other Sectors	14,190	-	14.3	0.6	31.1	419.2	44.8
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	2,352	-	5.2	0.0	3.4	0.6	6.4
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	2,352	-	5.2	0.0	3.4	0.6	6.4
2 Industrial Processes	10,780	-	0.1	0.5	16.3	238.5	21.0
A Mineral Products	2,730	-	0.0	0.0	6.2	18.5	6.3
B Chemical Industry	430	-	0.1	0.5	4.4	11.1	12.3
C Metal Production	7,571	-	0.0	0.0	4.6	208.1	0.5
D Other Production	50	-	0.0	0.0	1.1	0.8	1.8
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	414	-	0.0	0.8	0.0	0.0	132.8
4 Agriculture	0	-	208.1	3.3	6.1	1.5	2.3
A Enteric Fermentation	0	-	145.8	0.0	0.0	0.0	0.0
B Manure Management	0	-	27.3	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	34.9	3.3	6.1	0.0	2.2
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.1	0.0	0.0	1.5	0.2
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	-	13,576	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	-	13,576	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	-	0.0	0.0	0.0	0.0	0.0
E Other	0	-	0.0	0.0	0.0	0.0	0.0
6 Waste	117	-	219.8	0.0	0.2	4.4	0.7
A Solid Waste Disposal on Land	0	-	185.2	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	14.3	0.0	0.0	0.0	0.0
C Waste Incineration	117	-	0.2	0.0	0.2	4.4	0.7
D Other	0	-	20.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	1,316	-	0.0	0.0	7.0	2.3	0.9
Aviation	1,316	-	0.0	0.0	7.0	2.3	0.9
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	14,685	-	-	-	-	-	-

Ref.: *'Austria's Annual National Greenhouse Gas Inventory 1980-1997, Submission to the Secretariat of the UNFCCC',* prepared by the Austrian Federal Environment Agency for the Federal Ministry for the Environment, Youth and Family Affairs, Vienna, April 1999.

Austria 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Austria 1996	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**64,026**	**13,753**	**446.6**	**7.3**	**161.3**	**1,019.8**	**260.2**
1 Energy	52,553	-	22.3	2.7	139.2	750.4	102.4
A Fuel Combustion	49,868	-	16.7	2.7	135.7	749.9	96.9
1 Energy Industries	12,179	-	0.1	0.1	9.8	1.2	0.2
2 Manufacturing Industries and Construction	7,755	-	0.3	0.2	15.0	5.5	0.5
3 Transport	15,357	-	2.2	1.8	86.2	306.8	53.4
4 Other Sectors	14,577	-	14.1	0.6	24.6	436.4	42.8
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	2,685	-	5.6	0.0	3.5	0.4	5.5
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	2,685	-	5.6	0.0	3.5	0.4	5.5
2 Industrial Processes	10,938	-	0.1	0.5	15.9	263.6	21.0
A Mineral Products	2,727	-	0.0	0.0	6.0	19.1	6.3
B Chemical Industry	430	-	0.1	0.5	4.4	11.1	12.3
C Metal Production	7,732	-	0.0	0.0	4.4	232.6	0.5
D Other Production	50	-	0.0	0.0	1.1	0.8	1.8
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	417	-	0.0	0.8	0.0	0.0	133.7
4 Agriculture	0	-	206.0	3.3	6.1	1.5	2.3
A Enteric Fermentation	0	-	144.2	0.0	0.0	0.0	0.0
B Manure Management	0	-	26.8	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	34.9	3.3	6.1	0.0	2.2
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.1	0.0	0.0	1.5	0.2
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	-	13,753	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	-	13,753	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	-	0.0	0.0	0.0	0.0	0.0
E Other	0	-	0.0	0.0	0.0	0.0	0.0
6 Waste	119	-	218.2	0.0	0.2	4.4	0.7
A Solid Waste Disposal on Land	0	-	183.6	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	14.3	0.0	0.0	0.0	0.0
C Waste Incineration	119	-	0.2	0.0	0.2	4.4	0.7
D Other	0	-	20.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	1,453	-	0.0	0.0	7.7	2.5	1.0
Aviation	1,453	-	0.0	0.0	7.7	2.5	1.0
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	15,542	-	-	-	-	-	-

Ref.: *'Austria's Annual National Greenhouse Gas Inventory 1980-1997, Submission to the Secretariat of the UNFCCC',* prepared by the Austrian Federal Environment Agency for the Federal Ministry for the Environment, Youth and Family Affairs, Vienna, April 1999.

HFC/PFC/SF_6 emissions in Austria 1990, 1994-96

Austria 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**-**	**-**	**-**	**-**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Austria 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**-**	**-**	**-**	**-**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Austria 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.421**	**-**	**0.002**	**-**	**0.035**
2 Industrial Processes	-	0.421	-	0.002	-	0.035
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	0.011
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.421	-	0.002	-	0.024
G Other	-	-	-	-	-	-

Austria 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	-	P	A
Total National Emissions and Removals	**-**	**-**	**-**	**-**	**-**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Ref.: *'Austria's Annual National Greenhouse Gas Inventory 1980-1997, Submission to the Secretariat of the UNFCCC',* prepared by the Austrian Federal Environment Agency for the Federal Ministry for the Environment, Youth and Family Affairs, Vienna, April 1999.

Belgium 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Belgium 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**116,090**	**2,057**	**634.0**	**30.8**	**339.0**	**1,127.0**	**331.0**
1 Energy	105,919	-	68.5	8.3	330.0	1,094.0	204.0
A Fuel Combustion	105,919	-	15.5	7.7	330.0	1,094.0	178.0
1 Energy Industries	28,140	-	0.3	2.1	72.0	16.0	1.0
2 Manufacturing Industries and Construction	31,027	-	1.4	1.9	49.0	11.0	3.0
3 Transport	19,964	-	9.3	0.9	194.0	974.0	166.0
4 Other Sectors	26,262	-	4.4	2.8	15.0	93.0	7.0
5 Other	526	-	-	-	0.0	0.0	0.0
B Fugitive Emissions from Fuels	-	-	53.1	0.6	-	-	26.0
1 Solid Fuels	-	-	14.5	-	-	-	-
2 Oil and Natural Gas	-	-	38.6	0.6	-	-	26.0
2 Industrial Processes	9,188	-	3.5	11.5	6.0	17.0	37.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	696	-	-	11.5	4.0	9.0	31.0
C Metal Production	1,718	-	3.5	-	-	-	4.0
D Other Production	4,810	-	-	-	-	7.0	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	1,963	-	-	-	2.0	-	1.0
3 Solvent and Other Product Use	-	-	-	-	-	-	90.0
4 Agriculture	-	-	388.0	10.9	-	-	1.0
A Enteric Fermentation	-	-	373.5	-	-	-	-
B Manure Management	-	-	-	-	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	14.5	10.9	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	2,057	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	2,057	-	-	-	-	-
6 Waste	983	-	174.0	0.1	3.0	16.0	0.0
A Solid Waste Disposal on Land	-	-	172.9	-	-	-	-
B Wastewater Handling	-	-	-	-	-	-	-
C Waste Incineration	983	-	1.1	0.1	3.0	16.0	0.0
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	15,726	-	-	-	-	-	-
Aviation	2,370	-	-	-	-	-	-
Marine	13,356	-	-	-	-	-	-
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *Inventory of greenhouse gas emissions in Belgium 1990-1995/1996*, Report to the Conference of the Parties to the Convention on Climate Change (UNFCCC), Ministry of Social Affairs, Public Health and the Environment, Brussels, June 1998.

Belgium 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Belgium 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**121,297**	**2,057**	**635.3**	**32.3**	**345.0**	**1,252.0**	**321.0**
1 Energy	109,748	-	58.7	9.0	337.0	1,183.0	201.0
A Fuel Combustion	109,748	-	14.0	8.4	337.0	1,183.0	173.0
1 Energy Industries	28,953	-	0.3	2.5	72.0	27.0	1.0
2 Manufacturing Industries and Construction	29,236	-	0.7	1.8	59.0	173.0	4.0
3 Transport	21,877	-	8.6	1.2	190.0	884.0	160.0
4 Other Sectors	29,373	-	4.4	2.9	15.0	99.0	8.0
5 Other	309	-	-	-	-	-	-
B Fugitive Emissions from Fuels	-	-	44.7	0.6	-	-	29.0
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	-	-	44.7	0.6	-	-	29.0
2 Industrial Processes	10,456	-	3.2	12.3	5.0	50.0	35.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	626	-	-	12.3	1.0	-	30.0
C Metal Production	1,617	-	3.2	-	-	-	3.0
D Other Production	5,473	-	-	-	-	7.0	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	2,741	-	-	-	4.0	43.0	1.0
3 Solvent and Other Product Use	-	-	-	-	-	-	84.0
4 Agriculture	-	-	389.2	10.8	-	-	1.0
A Enteric Fermentation	-	-	374.7	0.0	-	-	-
B Manure Management	-	-	-	-	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	14.4	10.8	-	-	1.0
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	2,057	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	2,057	-	-	-	-	-
6 Waste	1,093	-	184.2	0.1	3.0	19.0	0.0
A Solid Waste Disposal on Land	-	-	183.5	-	-	-	-
B Wastewater Handling	-	-	-	-	-	-	-
C Waste Incineration	1,093	-	0.7	0.1	3.0	19.0	0.0
D Other	-	-	-	0.0	-	-	0.0
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	16,021	-	-	-	-	-	-
Aviation	2,300	-	-	-	-	-	-
Marine	13,721	-	-	-	-	-	-
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *Inventory of greenhouse gas emissions in Belgium 1990-1995/1996, Report to the Conference of the Parties to the Convention on Climate Change (UNFCCC),* Ministry of Social Affairs, Public Health and the Environment, Brussels, June 1998.

Belgium 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Belgium 1995	**EMISSION ESTIMATES (Gg)**						
	CO_2	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Greenhouse Gas Source and Sink Categories							
Total National Emissions and Removals	**121,832**	**2,057**	**593.9**	**34.9**	**333.3**	**1,424.4**	**300.5**
1 Energy	109,936	-	48.6	8.6	321.9	1,289.8	185.9
A Fuel Combustion	109,936	-	15.0	8.0	320.9	1,287.8	156.1
1 Energy Industries	29,142	-	0.2	2.2	62.1	24.4	0.9
2 Manufacturing Industries and Construction	27,908	-	0.9	1.9	66.3	343.8	2.2
3 Transport	21,834	-	9.6	1.1	176.7	835.4	145.4
4 Other Sectors	30,831	-	4.3	2.8	15.8	84.2	7.5
5 Other	221	-	-	-	-	-	-
B Fugitive Emissions from Fuels	-	-	33.6	0.6	1.0	2.0	29.8
1 Solid Fuels	-	-	0.8	-	1.0	2.0	1.0
2 Oil and Natural Gas	-	-	32.8	0.6	-	-	28.8
2 Industrial Processes	10,706	-	2.1	13.8	7.9	126.9	33.1
A Mineral Products	5,923	-	-	-	-	2.6	-
B Chemical Industry	669	-	-	13.8	1.6	0.5	28.6
C Metal Production	1,604	-	2.1	-	0.4	79.2	1.6
D Other Production	-	-	-	-	-	-	0.5
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	2,510	-	-	-	5.9	44.7	2.4
3 Solvent and Other Product Use	-	-	-	0.2	-	-	80.5
4 Agriculture	-	-	357.3	9.8	-	-	0.8
A Enteric Fermentation	-	-	212.3	-	-	-	-
B Manure Management	-	-	130.6	0.5	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	14.4	9.4	-	-	0.8
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	2,057	-	2.5	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	2,057	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	0.0	-	-	-
E Other	-	-	-	2.5	-	-	-
6 Waste	1,190	-	185.8	0.1	3.4	7.7	0.1
A Solid Waste Disposal on Land	-	-	184.1	-	-	-	-
B Wastewater Handling	-	-	-	-	-	-	-
C Waste Incineration	1,190	-	0.3	0.1	3.4	7.7	0.1
D Other	-	-	1.4	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	15,556	-	-	-	1.2	2.5	0.7
Aviation	2,601	-	-	-	1.2	2.5	0.7
Marine	12,955	-	-	-	-	-	-
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *Inventory of greenhouse gas emissions in Belgium 1990-1995/1996, Report to the Conference of the Parties to the Convention on Climate Change (UNFCCC),* Ministry of Social Affairs, Public Health and the Environment, Brussels, June 1998.

Belgium 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Belgium 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**128,547**	**2,057**	**590.6**	**35.2**	**328.0**	**1,415.2**	**301.0**
1 Energy	116,069	-	48.4	8.6	318.3	1,283.2	186.6
A Fuel Combustion	116,069	-	14.8	7.9	317.3	1,281.2	154.3
1 Energy Industries	29,195	-	0.2	2.1	61.1	28.4	0.9
2 Manufacturing Industries and Construction	28,681	-	0.9	1.9	63.2	343.6	2.2
3 Transport	22,389	-	9.3	1.1	175.9	816.1	143.0
4 Other Sectors	35,548	-	4.3	2.7	17.1	93.1	8.2
5 Other	256	-	-	-	-	-	-
B Fugitive Emissions from Fuels	-	-	33.6	0.7	1.0	2.0	32.2
1 Solid Fuels	-	-	0.8	-	1.0	2.0	1.0
2 Oil and Natural Gas	-	-	32.8	0.7	-	-	31.2
2 Industrial Processes	11,287	-	2.1	14.0	6.3	124.6	33.1
A Mineral Products	5,923	-	-	-	-	2.6	-
B Chemical Industry	669	-	-	14.0	1.6	0.5	28.6
C Metal Production	1,612	-	2.1	-	0.4	79.2	1.5
D Other Production	-	-	-	-	-	-	2.9
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	3,083	-	-	-	4.2	42.4	-
3 Solvent and Other Product Use	-	-	-	0.2	-	-	80.4
4 Agriculture	-	-	354.4	9.8	-	-	0.8
A Enteric Fermentation	-	-	209.6	-	-	-	-
B Manure Management	-	-	130.4	0.5	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	14.4	9.4	-	-	0.8
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	2,057	-	2.5	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	2,057	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	0.0	-	-	-
E Other	-	-	-	2.5	-	-	-
6 Waste	1,190	-	185.8	0.1	3.4	7.4	0.1
A Solid Waste Disposal on Land	-	-	184.1	-	-	-	-
B Wastewater Handling	-	-	-	-	-	-	-
C Waste Incineration	1,190	-	0.3	0.1	3.4	7.4	0.1
D Other	-	-	1.4	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	18,308	-	0.0	0.0	1.2	2.5	0.7
Aviation	2,932	-	0.0	0.0	1.2	2.5	0.7
Marine	15,376	-	-	-	-	-	-
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *Inventory of greenhouse gas emissions in Belgium 1990-1995/1996, Report to the Conference of the Parties to the Convention on Climate Change (UNFCCC),* Ministry of Social Affairs, Public Health and the Environment, Brussels, June 1998.

Denmark 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Denmark 1990	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**52,277**	**924**	**421.0**	**34.0**	**280.0**	**785.0**	**179.0**
1 Energy	51,138	-	22.0	2.0	279.0	785.0	124.0
A Fuel Combustion	50,898	-	10.0	2.0	278.0	751.0	116.0
1 Energy Industries	25,865	-	1.0	1.0	96.0	38.0	1.0
2 Manufacturing Industries and Construction	5,776	-	1.0	0.0	19.0	9.0	2.0
3 Transport	10,474	-	2.0	0.0	125.0	552.0	101.0
4 Other Sectors	8,664	-	6.0	0.0	37.0	153.0	12.0
5 Other	119	-	0.0	0.0	1.0	0.0	0.0
B Fugitive Emissions from Fuels	240	-	12.0	0.0	1.0	34.0	8.0
1 Solid Fuels	-	-	3.0	-	-	33.0	-
2 Oil and Natural Gas	240	-	9.0	0.0	1.0	1.0	8.0
2 Industrial Processes	1,006	-	-	-	1.0	-	-
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	133	-	-	-	-	-	43.0
4 Agriculture	-	-	329.0	33.0	-	-	2.0
A Enteric Fermentation	-	-	167.0	-	-	-	-
B Manure Management	-	-	161.0	-	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	33.0	-	-	2.0
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	924	-	-	-	-	9.0
A Changes in Forest and Other Woody Biomass Stocks	-	924	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	9.0
E Other	-	-	-	-	-	-	-
6 Waste	-	-	71.0	-	-	-	-
A Solid Waste Disposal on Land	-	-	71.0	-	-	-	-
B Wastewater Handling	-	-	-	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
Correction for electricity exchange	6,253	-	-	-	-	-	-
Correction for the impact of climate variation	1,703	-	-	-	-	-	-
International Bunkers	4,986	-	0.0	0.0	85.0	9.0	3.0
Aviation	1,967	-	-	-	IE	IE	IE
Marine	3,019	-	-	-	85.0	9.0	3.0
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *'Denmark's Second National Communication on Climate Change',* Ministry of Environment and Energy, Danish Environmental Protection Agency, 1997.

Note: Denmark delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Denmark 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Denmark 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**63,344**	**956**	**428.0**	**33.0**	**272.0**	**704.0**	**166.0**
1 Energy	61,899	-	27.0	3.0	271.0	704.0	113.0
A Fuel Combustion	61,117	-	10.0	3.0	269.0	662.0	97.0
1 Energy Industries	35,213	-	1.0	1.0	106.0	48.0	1.0
2 Manufacturing Industries and Construction	6,481	-	1.0	0.0	24.0	12.0	3.0
3 Transport	11,345	-	2.0	1.0	103.0	422.0	77.0
4 Other Sectors	8,020	-	6.0	0.0	35.0	180.0	15.0
5 Other	58	-	0.0	0.0	1.0	1.0	0.0
B Fugitive Emissions from Fuels	782	-	17.0	0.0	3.0	41.0	16.0
1 Solid Fuels	0	-	6.0	-	0.0	40.0	0.0
2 Oil and Natural Gas	782	-	11.0	0.0	3.0	2.0	16.0
2 Industrial Processes	1,318	-	1.0	-	1.0	0.0	1.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	127	-	-	-	-	-	41.0
4 Agriculture	-	-	326.0	30.0	-	-	2.0
A Enteric Fermentation	-	-	155.0	-	-	-	-
B Manure Management	-	-	171.0	-	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	30.0	-	-	2.0
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	956		1.0	-	-	9.0
A Changes in Forest and Other Woody Biomass Stocks	-	956	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	1.0	-	-	9.0
E Other	-	-	-	-	-	-	-
6 Waste	-	-	74.0	-	-	-	1.0
A Solid Waste Disposal on Land	-	-	72.0	-	-	-	-
B Wastewater Handling	-	-	2.0	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	1.0
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
Correction for electricity exchange	-3,932	-	-	-	-	-	-
Correction for the impact of climate variation	193	-	-	-	-	-	-
International Bunkers	6,736	-	0.2	0.4	123.3	11.8	4.2
Aviation	1,910	-	0.1	0.0	7.2	0.5	0.6
Marine	4,825	-	0.1	0.3	116.1	11.3	3.6
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *'Denmark's Second National Communication on Climate Change',* Ministry of Environment and Energy, Danish Environmental Protection Agency, 1997.

Note: Denmark delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Denmark 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Denmark 1995	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**59,532**	**964**	**430.0**	**33.0**	**253.0**	**702.0**	**162.0**
1 Energy	58,096	-	29.0	3.0	252.0	702.0	109.0
A Fuel Combustion	57,748	-	11.0	3.0	250.0	656.0	93.0
1 Energy Industries	31,482	-	1.0	1.0	91.0	49.0	2.0
2 Manufacturing Industries and Construction	6,039	-	1.0	0.0	23.0	10.0	3.0
3 Transport	11,370	-	2.0	1.0	100.0	389.0	71.0
4 Other Sectors	8,718	-	7.0	0.0	35.0	206.0	17.0
5 Other	139	-	0.0	0.0	2.0	2.0	0.0
B Fugitive Emissions from Fuels	348	-	17.0	0.0	2.0	45.0	17.0
1 Solid Fuels	-	-	6.0	-	0.0	44.0	0.0
2 Oil and Natural Gas	348	-	11.0	0.0	2.0	1.0	17.0
2 Industrial Processes	1,311	-	1.0	-	1.0	0.0	1.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	125	-	-	-	-	-	40.0
4 Agriculture	-	-	327.0	30.0	-	-	2.0
A Enteric Fermentation	-	-	155.0	-	-	-	-
B Manure Management	-	-	172.0	-	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	30.0	-	-	2.0
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	964	1.0	-	-	-	9.0
A Changes in Forest and Other Woody Biomass Stocks	-	964	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	1.0	-	-	-	9.0
E Other	-	-	-	-	-	-	-
6 Waste	-	-	74.0	-	-	-	-
A Solid Waste Disposal on Land	-	-	72.0	-	-	-	-
B Wastewater Handling	-	-	2.0	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
Correction for electricity exchange	-615	-	-	-	-	-	-
Correction for the impact of climate variation	0	-	-	-	-	-	-
International Bunkers	7,080	-	0.0	0.0	130.0	13.0	4.0
Aviation	2,062	-	0.0	0.0	7.0	1.0	1.0
Marine	5,018	-	0.0	0.0	122.0	12.0	4.0
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *'Denmark's Second National Communication on Climate Change',* Ministry of Environment and Energy, Danish Environmental Protection Agency, 1997.

Note: Denmark delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Denmark 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Denmark 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**73,236**	**981**	**425.2**	**33.9**	**291.2**	**615.9**	**139.4**
1 Energy	71,784	-	30.8	3.1	290.7	615.9	108.5
A Fuel Combustion	71,406	-	13.3	3.1	288.7	570.7	90.2
1 Energy Industries	44,020	-	1.6	1.4	128.7	10.7	1.8
2 Manufacturing Industries and Construction	6,312	-	0.7	0.2	24.8	12.8	3.2
3 Transport	11,748	-	3.2	1.1	97.6	381.8	66.8
4 Other Sectors	9,273	-	7.9	0.3	36.6	164.9	18.3
5 Other	53	-	0.0	0.0	1.0	0.5	0.1
B Fugitive Emissions from Fuels	378	-	17.5	0.0	2.0	45.1	18.2
1 Solid Fuels	0	-	6.3	0.0	-	43.9	0.0
2 Oil and Natural Gas	378	-	11.2	0.0	2.0	1.3	18.2
2 Industrial Processes	1,388	-	0.1	0.0	0.5	0.0	0.1
A Mineral Products	1,388	-	0.1	-	-	0.0	0.0
B Chemical Industry	0	-	0.0	0.0	0.5	0.0	0.0
C Metal Production	0	-	-	-	0.0	0.0	0.0
D Other Production	-	-	-	-	0.0	0.0	0.1
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	64	-	-	0.0	-	-	20.6
4 Agriculture	0	-	321.2	30.2	0.0	0.0	10.3
A Enteric Fermentation	-	-	153.8	-	-	-	-
B Manure Management	-	-	167.3	0.0	-	-	-
C Rice Cultivation	-	-	0.0	-	-	-	-
D Agricultural Soils	-	-	-	30.2	-	-	1.3
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	-
F Field Burning of Agricultural Residues	-	-	0.0	0.0	0.0	0.0	-
G Other	-	-	0.0	0.0	-	-	8.9
5 Land-Use Change & Forestry	-	981	0.0	0.6	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	-	981	-	0.6	-	-	-
B Forest and Grassland Conversion	-	-	0.0	0.0	0.0	0.0	-
C Abandonment of Managed Lands	-	-	-	0.0	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	0.0	-	-	-
E Other	-	-	0.0	0.0	0.0	0.0	-
6 Waste	0	-	73.2	0.0	0.0	0.0	0.0
A Solid Waste Disposal on Land	-	-	71.6	-	-	-	-
B Wastewater Handling	-	-	1.6	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	0.0	0.0	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	6,970	-	0.2	0.4	140.9	12.4	4.4
Aviation	2,152	-	0.1	0.1	9.0	1.1	0.8
Marine	4,818	-	0.1	0.3	131.9	11.2	3.5
CO_2 Emissions from Biomass	0	-	-	-	-	-	-

Ref.: National Inventory Data on Emissions of Greenhouse Gases for Denmark 1996, Danish Submission of the UNFCCC inventory under the Monitoring Mechanism, Ministry of Environment and Energy – Danish Environmental Protection Agency, 22 June 1998

HFC/PFC/SF_6 emissions in Denmark 1990, 1994-96

Denmark 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.000**	**-**	**-**	**-**	**0.015**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	0.000	-	NE	-	0.015	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Denmark 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.600**	**-**	**-**	**-**	**0.021**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	0.600	-	NE	-	0.021	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Denmark 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.750**	**0.197**	**0.002**	**0.0002**	**0.014**	**0.009**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	0.750	-	0.002	-	0.017	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Denmark 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.290**	**-**	**0.0004**	**-**	**0.006**
2 Industrial Processes	-	0.290	-	0.0004	-	0.006
A Mineral Products	-	-	-	-	-	0.004
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	0.0004
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.290	-	-	-	0.001
G Other	-	-	-	-	-	0.0002

Ref.: *'Denmark's Second National Communication on Climate Change',* Ministry of Environment and Energy, Danish Environmental Protection Agency, 1997 and National Inventory Data on Emissions of Greenhouse Gases for Denmark 1996, Danish Submission of the UNFCCC inventory under the Monitoring Mechanism, Ministry of Environment and Energy – Danish Environmental Protection Agency,, 22 June 1998

Finland 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Finland 1990	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**59,300**	**30,600**	**358.1**	**18.6**	**295.0**	**487.0**	**213.0**
1 Energy	57,400	-	20.5	5.5	291.0	484.0	135.0
A Fuel Combustion	53,900	-	19.3	5.5	291.0	484.0	126.0
1 Energy Industries	18,400	-	1.2	1.2	64.0	9.0	0.0
2 Manufacturing Industries and Construction	14,100	-	1.9	1.2	41.0	32.0	0.0
3 Transport	11,900	-	3.3	1.7	160.0	368.0	91.0
4 Other Sectors	7,300	-	11.3	0.7	8.0	61.0	35.0
5 Other	2,200	-	1.6	0.7	18.0	14.0	0.0
B Fugitive Emissions from Fuels	3,500	-	1.2	-	-	-	9.0
1 Solid Fuels	3,500	-	1.0	-	-	-	-
2 Oil and Natural Gas	40	-	0.2	-	-	-	9.0
2 Industrial Processes	1,200	-	3.8	3.0	4.0	3.0	19.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	-	-	-	-	-	-	57.0
4 Agriculture	NE	-	93.8	10.1	-	-	-
A Enteric Fermentation	-	-	83.0	-	-	-	-
B Manure Management	-	-	10.8	NE	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	NE	-	-	10.1	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	30,600	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	30,600	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	-	-	240.0	-	-	-	2.0
A Solid Waste Disposal on Land	-	-	230.0	-	-	-	-
B Wastewater Handling	-	-	10.0	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	-	-	-	-	-
7 Other	600	-	-	-	-	-	-
Memo Items:							
International Bunkers	2,800	-	1.3	1.2	22.0	-	-
Aviation	1,000	-	IE	IE	IE	-	-
Marine	1,800	-	1.3	1.2	22.0	-	-
CO_2 Emissions from Biomass	18,400	-	-	-	-	-	-

Ref.: '*Finland's Second Report under the Framework Convention on Climate Change*', April 1997 and (draft) Finland's National Greenhouse Gas inventory to the UNFCCC Years 1990, 1995-1997, Submission under the Monitoring Mechanism, Ministry of the Environment, 3 March 1999.

Note: Finland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Finland 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Finland 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**59,253**	**16,800**	**245.0**	**18.0**	**282.0**	**443.0**	**165.0**
1 Energy	58,413	-	16.0	6.0	279.0	433.0	110.0
A Fuel Combustion	58,337	-	16.0	6.0	279.0	433.0	97.0
1 Energy Industries	24,526	-	IE	IE	54.0	7.0	0.0
2 Manufacturing Industries and Construction	14,098	-	IE	IE	42.0	41.0	1.0
3 Transport	11,414	-	3.0	2.0	146.0	317.0	53.0
4 Other Sectors	6,706	-	IE	IE	20.0	48.0	32.0
5 Other	1,593	-	13.0	4.0	16.0	21.0	11.0
B Fugitive Emissions from Fuels	80	-	-	-	-	-	13.0
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	80	-	-	-	-	-	13.0
2 Industrial Processes	840	-	4.0	3.0	2.0	10.0	10.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	-	-	-	-	-	-	46.0
4 Agriculture	-	-	93.0	9.0	-	-	-
A Enteric Fermentation	-	-	83.0	8.0	-	-	-
B Manure Management	-	-	10.0	1.0	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	-	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	16,800	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	16,800	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	-	-	132.0	-	-	-	-
A Solid Waste Disposal on Land	-	-	122.0	-	-	-	-
B Wastewater Handling	-	-	10.0	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	2,120	-	1.0	1.0	25.0	8.0	4.0
Aviation	820	-	IE	IE	IE	IE	IE
Marine	1,300	-	1.0	1.0	25.0	8.0	4.0
CO_2 Emissions from Biomass	20,981	-	-	-	-	-	-

Ref.: '*Finland's National Report under the United Nations Framework Convention on Climate Change*', Ministry of the Environment, January 1995, and 'Finland's Second Report under the Framework Convention on Climate Change', April 1997.

Note: Finland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Finland 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Finland 1995	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**60,900**	**14,300**	**268.9**	**18.2**	**259.0**	**434.0**	**182.0**
1 Energy	59,400	-	22.8	6.3	257.0	424.0	121.0
A Fuel Combustion	55,900	-	21.7	6.3	257.0	424.0	113.0
1 Energy Industries	22,300	-	1.6	1.6	40.0	8.0	0.0
2 Manufacturing Industries and Construction	13,800	-	2.6	1.7	35.0	43.0	0.0
3 Transport	11,100	-	3.0	1.8	139.0	306.0	81.0
4 Other Sectors	7,100	-	13.2	0.7	26.0	46.0	32.0
5 Other	1,600	-	1.3	0.6	17.0	21.0	0.0
B Fugitive Emissions from Fuels	3,500	-	1.2	-	-	-	8.0
1 Solid Fuels	3,500	-	1.0	-	-	-	-
2 Oil and Natural Gas	40	-	0.2	-	-	-	8.0
2 Industrial Processes	800	-	3.8	2.6	2.0	10.0	13.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	-	-	-	-	-	-	46.0
4 Agriculture	NE	-	82.2	9.3	-	-	-
A Enteric Fermentation	-	-	72.2	-	-	-	-
B Manure Management	-	-	10.1	NE	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	NE	-	-	9.3	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	14,300	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	14,300	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	-	-	160.0	-	-	-	2.0
A Solid Waste Disposal on Land	-	-	150.0	-	-	-	IE
B Wastewater Handling	-	-	10.0	-	-	-	IE
C Waste Incineration	-	-	-	-	-	-	IE
D Other	-	-	-	-	-	-	2.0
7 Other	700	-	-	-	-	-	-
Memo Items:							
International Bunkers	1,850	-	1.0	0.8	19.0	6.0	3.0
Aviation	850	-	IE	IE	IE	IE	IE
Marine	1,000	-	1.0	0.8	19.0	6.0	3.0
CO_2 Emissions from Biomass	23,000	-	-	-	-	-	-

Ref.: '*Finland's Second Report under the Framework Convention on Climate Change*', April 1997 and (draft) Finland's National Greenhouse Gas inventory to the UNFCCC Years 1990, 1995-1997, Submission under the Monitoring Mechanism, Ministry of the Environment, 3 March 1999.

Note: Finland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Finland 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Finland 1996	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**66,400**	**-**	**269.9**	**18.5**	**-**	**-**	**-**
1 Energy	64,800	-	24.1	6.9	-	-	-
A Fuel Combustion	61,300	-	22.5	6.9	-	-	-
1 Energy Industries	27,400	-	1.9	2.6	-	-	-
2 Manufacturing Industries and Construction	13,500	-	2.6	1.6	-	-	-
3 Transport	11,000	-	2.9	1.8	-	-	-
4 Other Sectors	7,600	-	13.5	0.3	-	-	-
5 Other	1,900	-	1.5	0.6	-	-	-
B Fugitive Emissions from Fuels	3,500	-	1.6	-	-	-	-
1 Solid Fuels	3,500	-	1.0	-	-	-	-
2 Oil and Natural Gas	20	-	0.6	-	-	-	-
2 Industrial Processes	840	-	3.8	2.6	-	-	-
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	-	-	-	-	-	-	-
4 Agriculture	NE	-	82.1	9.0	-	-	-
A Enteric Fermentation	-	-	72.1	-	-	-	-
B Manure Management	-	-	10.1	NE	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	NE	-	-	9.0	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	NE	-	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	-	-	160.0	-	-	-	-
A Solid Waste Disposal on Land	-	-	150.0	-	-	-	-
B Wastewater Handling	-	-	10.0	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	-	-	-	-	-
7 Other	700	-	-	-	-	-	-
Memo Items:							
International Bunkers	2,100	-	1.2	0.9	-	-	-
Aviation	IE	-	IE	IE	-	-	-
Marine	2,100	-	1.2	0.9	-	-	-
CO_2 Emissions from Biomass	22,900	-	-	-	-	-	-

Ref.: (draft) Finland's National Greenhouse Gas inventory to the UNFCCC Years 1990, 1995-1997, Submission under the Monitoring mechanism, Ministry of the Environment, 3 March 1999.

Note: Finland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

HFC/PFC/SF_6 emissions in Finland 1990, 1994-96

Finland 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.100**	**-**	**NA**	**-**	**0.004**	**-**
2 Industrial Processes	0.100	-	NA	-	0.004	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Finland 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.061**	**-**	**0.00004**	**-**	**0.004**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Finland 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.110**	**-**	**NA**	**-**	**0.004**	**-**
2 Industrial Processes	0.110	-	NA	-	0.004	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Finland 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.170**	**-**	**NA**	**-**	**0.005**	**-**
2 Industrial Processes	0.170	-	NA	-	0.005	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Ref.: '*Finland's National Report under the United Nations Framework Convention on Climate Change*', Ministry of the Environment, January 1995, '*Finland's Second Report under the Framework Convention on Climate Change*', April 1997 and (draft) Finland's National Greenhouse Gas inventory to the UNFCCC Years 1990, 1995-1997, Submission under the Monitoring Mechanism, Ministry of the Environment, 3 March 1999.

France 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

France 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**478,001**	**117,609**	**3,017.7**	**308.7**	**1,952.5**	**10,397.7**	**2,971.5**
1 Energy	364,491	-	475.0	14.9	1,908.9	9,466.0	1,729.0
A Fuel Combustion	360,186	-	164.0	14.8	1,903.3	9,461.0	1,585.7
1 Energy Industries	65,495	-	2.2	2.2	156.6	16.4	3.6
2 Manufacturing Industries and Construction	77,747	-	7.6	4.4	244.6	669.1	21.6
3 Transport	123,111	-	23.8	4.0	1,130.9	6,819.2	1,268.1
4 Other Sectors	93,833	-	130.4	4.2	371.2	1,956.2	292.4
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	4,306	-	311.0	0.1	5.7	5.0	143.3
1 Solid Fuels	0	-	206.3	0.0	0.0	4.3	1.1
2 Oil and Natural Gas	4,306	-	104.7	0.1	5.7	0.8	142.3
2 Industrial Processes	20,948	-	2.6	90.0	23.6	648.6	93.2
A Mineral Products	13,352	-	0.0	0.0	0.0	0.0	1.8
B Chemical Industry	2,477	-	2.5	90.0	20.1	0.0	45.0
C Metal Production	4,388	-	0.1	0.0	3.3	648.6	2.6
D Other Production	551	-	0.0	0.0	0.1	0.0	43.7
E Production of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
F Consumption of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	2,072	-	0.0	1.9	0.0	0.0	664.7
4 Agriculture	0	-	1,630.1	181.1	0.0	0.0	20.9
A Enteric Fermentation	0	-	1,430.3	0.0	0.0	0.0	0.0
B Manure Management	0	-	168.3	10.5	0.0	0.0	0.0
C Rice Cultivation	0	-	8.6	0.2	0.0	0.0	0.0
D Agricultural Soils	0	-	22.9	170.4	0.0	0.0	20.9
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	87,293	117,609	94.7	17.8	1.5	52.9	436.5
A Changes in Forest and Other Woody Biomass Stocks	75,694	113,146	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	6,593	0	6.0	0.0	1.5	52.9	0.0
C Abandonment of Managed Lands	0	48	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	5,006	4,415	0.0	0.0	0.0	0.0	0.0
E Other	0	0	88.6	17.7	0.0	0.0	436.5
6 Waste	3,198	-	815.3	3.1	18.5	230.3	27.2
A Solid Waste Disposal on Land	0	-	778.0	0.0	0.0	0.0	7.6
B Wastewater Handling	1,352	-	12.3	2.0	0.0	0.0	3.1
C Waste Incineration	1,845	-	13.8	1.1	18.5	230.3	8.9
D Other	0	-	11.2	0.0	0.0	0.0	7.6
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	15,488	-	0.0	0.3	212.4	19.4	79.3
Aviation	7,351	-	0.0	0.0	57.6	17.3	8.5
Marine	8,136	-	0.0	0.3	154.8	2.1	70.8
CO_2 Emissions from Biomass	34,294	-	-	-	-	-	-

Ref.: Emission Inventories 1990-1996, Submission of 1990 to 1996 data to DGXI under the Monitoring Mechanism, Mission Interministérielle de l'Effet de Serre (MIES), 7 Oct 1998.

Note : emission data include DOMs and TOMs (overseas departments and territories).

France 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

France 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**470,736**	**124,766**	**2,811.8**	**287.1**	**1,830.9**	**8,959.7**	**2,734.8**
1 Energy	362,833	-	472.0	16.8	1,794.6	8,068.7	1,549.0
A Fuel Combustion	358,326	-	162.1	16.7	1,790.0	8,064.4	1,424.2
1 Energy Industries	52,403	-	2.3	1.8	133.0	17.2	4.7
2 Manufacturing Industries and Construction	78,914	-	8.5	4.5	241.0	634.0	22.2
3 Transport	132,403	-	22.3	6.1	1,087.4	5,513.6	1,118.3
4 Other Sectors	94,606	-	129.0	4.3	328.7	1,899.7	279.1
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	4,506	-	309.9	0.1	4.6	4.2	124.8
1 Solid Fuels	0	-	212.9	0.0	0.0	3.5	0.9
2 Oil and Natural Gas	4,506	-	97.0	0.1	4.6	0.8	124.0
2 Industrial Processes	17,975	-	2.4	77.4	11.7	606.2	84.2
A Mineral Products	11,446	-	0.0	0.0	0.0	0.0	2.0
B Chemical Industry	2,324	-	2.4	77.4	8.5	0.0	37.6
C Metal Production	3,729	-	0.1	0.0	3.2	606.2	2.6
D Other Production	477	-	0.0	0.0	0.0	0.0	42.0
E Production of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
F Consumption of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	1,893	-	0.0	2.0	0.0	0.0	607.3
4 Agriculture	0	-	1,555.0	169.6	0.0	0.0	19.9
A Enteric Fermentation	0	-	1,351.0	0.0	0.0	0.0	0.0
B Manure Management	0	-	169.7	10.1	0.0	0.0	0.0
C Rice Cultivation	0	-	11.3	0.2	0.0	0.0	0.0
D Agricultural Soils	0	-	23.1	159.3	0.0	0.0	19.9
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	84,251	124,766	95.2	17.9	1.5	52.9	446.1
A Changes in Forest and Other Woody Biomass Stocks	72,613	119,423	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	6,593	0	6.0	0.0	1.5	52.9	0.0
C Abandonment of Managed Lands	0	48	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	5,045	5,295	0.0	0.0	0.0	0.0	0.0
E Other	0	-	89.1	17.8	0.0	0.0	446.1
6 Waste	3,784	-	687.2	3.5	23.1	232.0	28.3
A Solid Waste Disposal on Land	0	-	644.9	0.0	0.0	0.0	6.4
B Wastewater Handling	1,412	-	12.9	2.1	0.0	0.0	3.3
C Waste Incineration	2,372	-	15.7	1.4	23.1	232.0	9.2
D Other	0	-	13.7	0.0	0.0	0.0	9.4
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	16,639	-	0.0	0.2	209.1	24.0	71.7
Aviation	9,272	-	0.0	0.0	75.9	22.2	10.8
Marine	7,001	-	0.0	0.2	133.2	1.8	61.0
CO_2 Emissions from Biomass	35,906	-	-	-	-	-	-

Ref.: Emission Inventories 1990-1996, Submission of 1990 to 1996 data to DGXI under the Monitoring Mechanism, Mission Interministérielle de l'Effet de Serre (MIES), 7 Oct 1998.

Note: emission data include DOMs and TOMs (overseas departments and territories).

France 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

France 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**480,639**	**126,355**	**2,785.9**	**292.7**	**1,863.7**	**8,633.6**	**2,666.0**
1 Energy	369,148	-	475.3	17.9	1,828.3	7,749.7	1,485.6
A Fuel Combustion	365,226	-	165.7	17.8	1,823.1	7,745.6	1,367.6
1 Energy Industries	55,104	-	2.2	1.9	144.6	15.4	4.4
2 Manufacturing Industries and Construction	79,302	-	7.7	4.4	291.7	634.7	29.3
3 Transport	134,137	-	21.0	7.1	1,039.4	5,106.4	1,043.2
4 Other Sectors	96,683	-	134.8	4.4	347.5	1,989.1	290.8
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	3,922	-	309.6	0.1	5.1	4.1	118.0
1 Solid Fuels	0	-	211.0	0.0	0.0	3.5	0.9
2 Oil and Natural Gas	3,922	-	98.6	0.1	5.1	0.7	117.1
2 Industrial Processes	18,576	-	2.7	80.4	11.1	599.1	84.3
A Mineral Products	11,323	-	0.0	0.0	0.0	0.0	2.0
B Chemical Industry	2,328	-	2.6	80.4	7.8	0.0	37.4
C Metal Production	4,428	-	0.1	0.0	3.3	599.1	2.6
D Other Production	498	-	0.0	0.0	0.0	0.0	42.4
E Production of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
F Consumption of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	1,908	-	0.0	2.0	0.0	0.0	612.3
4 Agriculture	0	-	1,564.0	171.1	0.0	0.0	19.6
A Enteric Fermentation	0	-	1,358.5	0.0	0.0	0.0	0.0
B Manure Management	0	-	171.8	10.1	0.0	0.0	0.0
C Rice Cultivation	0	-	10.6	0.2	0.0	0.0	0.0
D Agricultural Soils	0	-	23.1	160.8	0.0	0.0	19.6
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	87,220	126,355	95.3	17.9	1.5	52.9	435.9
A Changes in Forest and Other Woody Biomass Stocks	75,535	121,093	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	6,593	0	6.0	0.0	1.5	52.9	0.0
C Abandonment of Managed Lands	0	48	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	5,092	5,214	0.0	0.0	0.0	0.0	0.0
E Other	0	0	89.3	17.9	0.0	0.0	435.9
6 Waste	3,786	-	648.7	3.5	22.8	231.9	28.3
A Solid Waste Disposal on Land	0	-	605.7	0.0	0.0	0.0	6.0
B Wastewater Handling	1,426	-	13.0	2.1	0.0	0.0	3.2
C Waste Incineration	2,360	-	15.6	1.4	22.8	231.9	9.2
D Other	0	-	14.4	0.0	0.0	0.0	9.9
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	17,329	-	0.0	0.2	217.0	25.0	74.1
Aviation	10,113	-	0.0	0.0	79.7	23.2	11.3
Marine	7,216	-	0.0	0.2	137.3	1.9	62.8
CO_2 Emissions from Biomass	37,284	-	-	-	-	-	-

Ref.: Emission Inventories 1990-1996, Submission of 1990 to 1996 data to DGXI under the Monitoring Mechanism, Mission Interministérielle de l'Effet de Serre (MIES), 7 Oct 1998.

Note: emission data include DOMs and TOMs (overseas departments and territories).

France 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

France 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**493,512**	**128,095**	**2,711.7**	**297.4**	**1,782.8**	**8,349.7**	**2,539.4**
1 Energy	383,715	-	441.1	19.3	1,747.3	7,490.0	1,415.9
A Fuel Combustion	379,711	-	177.9	19.2	1,741.9	7,486.0	1,301.3
1 Energy Industries	59,537	-	2.0	2.0	152.4	18.0	4.3
2 Manufacturing Industries and Construction	80,606	-	8.1	4.4	250.7	618.3	24.1
3 Transport	135,368	-	19.4	8.0	983.6	4,684.0	961.7
4 Other Sectors	104,199	-	148.4	4.8	355.2	2,165.7	311.1
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	4,005	-	263.2	0.1	5.4	4.0	114.6
1 Solid Fuels	0	-	160.8	0.0	0.0	3.4	0.8
2 Oil and Natural Gas	4,005	-	102.4	0.1	5.4	0.7	113.8
2 Industrial Processes	17,313	-	2.5	81.1	11.5	575.1	84.9
A Mineral Products	11,107	-	0.0	0.0	0.0	0.0	1.9
B Chemical Industry	2,443	-	2.5	81.1	8.2	0.0	37.5
C Metal Production	3,244	-	0.1	0.0	3.3	575.1	2.6
D Other Production	519	-	0.0	0.0	0.0	0.0	42.9
E Production of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
F Consumption of Halocarbons and Sulphur Hexafluoride	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	1,847	-	0.0	2.0	0.0	0.0	592.7
4 Agriculture	0	-	1,565.5	173.7	0.0	0.0	17.8
A Enteric Fermentation	0	-	1,358.2	0.0	0.0	0.0	0.0
B Manure Management	0	-	174.6	10.2	0.0	0.0	0.0
C Rice Cultivation	0	-	9.5	0.2	0.0	0.0	0.0
D Agricultural Soils	0	-	23.0	163.4	0.0	0.0	17.8
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	86,846	128,095	95.3	17.9	1.5	52.9	399.6
A Changes in Forest and Other Woody Biomass Stocks	74,907	122,743	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	6,593	0	6.0	0.0	1.5	52.9	0.0
C Abandonment of Managed Lands	0	48	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	5,346	5,304	0.0	0.0	0.0	0.0	0.0
E Other	0	0	89.3	17.9	0.0	0.0	399.6
6 Waste	3,791	-	607.3	3.5	22.5	231.7	28.5
A Solid Waste Disposal on Land	0	-	563.5	0.0	0.0	0.0	5.6
B Wastewater Handling	1,440	-	13.1	2.1	0.0	0.0	3.4
C Waste Incineration	2,351	-	15.5	1.4	22.5	231.7	9.2
D Other	0	-	15.2	0.0	0.0	0.0	10.1
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	18,154	-	0.0	0.2	227.5	26.0	77.6
Aviation	10,588	-	0.0	0.0	83.4	24.0	11.7
Marine	7,566	-	0.0	0.2	144.1	2.0	65.9
CO_2 Emissions from Biomass	39,883	-	-	-	-	-	-

Ref.: Emission Inventories 1990-1996, Submission of 1990 to 1996 data to DGXI under the Monitoring Mechanism, Mission Interministérielle de l'Effet de Serre (MIES), 7 Oct 1998

Note: emission data include DOMs and TOMs (overseas departments and territories).

HFC/PFC/SF_6 emissions in France 1990, 1994-96

France 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.256**	**-**	**0.432**	**-**	**0.102**
2 Industrial Processes	-	0.256	-	0.432	-	0.102
A Mineral Products	-	0.000	-	0.000	-	0.000
B Chemical Industry	-	0.000	-	0.000	-	0.000
C Metal Production	-	0.000	-	0.339	-	0.036
D Other Production	-	0.000	-	0.000	-	0.000
E Production of Halocarbons and Sulphur Hexafluoride	-	0.256	-	0.068	-	0.000
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.000	-	0.025	-	0.065
G Other	-	0.000	-	0.000	-	0.000

France 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.320**	**-**	**0.170**	**-**	**0.109**
2 Industrial Processes	-	0.320	-	0.170	-	0.109
A Mineral Products	-	0.000	-	0.000	-	0.000
B Chemical Industry	-	0.000	-	0.000	-	0.000
C Metal Production	-	0.000	-	0.112	-	0.040
D Other Production	-	0.000	-	0.000	-	0.000
E Production of Halocarbons and Sulphur Hexafluoride	-	0.134	-	0.031	-	0.000
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.186	-	0.027	-	0.069
G Other	-	0.000	-	0.000	-	0.000

France 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.805**	**-**	**0.180**	**-**	**0.110**
2 Industrial Processes	-	0.805	-	0.180	-	0.110
A Mineral Products	-	0.000	-	0.000	-	0.000
B Chemical Industry	-	0.000	-	0.000	-	0.000
C Metal Production	-	0.000	-	0.097	-	0.041
D Other Production	-	0.000	-	0.000	-	0.000
E Production of Halocarbons and Sulphur Hexafluoride	-	0.135	-	0.025	-	0.000
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.670	-	0.058	-	0.070
G Other	-	0.000	-	0.000	-	0.000

France 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**1.550**	**-**	**0.199**	**-**	**0.113**
2 Industrial Processes	-	1.550	-	0.199	-	0.113
A Mineral Products	-	0.000	-	0.000	-	0.000
B Chemical Industry	-	0.000	-	0.000	-	0.000
C Metal Production	-	0.000	-	0.098	-	0.042
D Other Production	-	0.000	-	0.000	-	0.000
E Production of Halocarbons and Sulphur Hexafluoride	-	0.137	-	0.024	-	0.000
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.413	-	0.077	-	0.072
G Other	-	0.000	-	0.000	-	0.000

Ref.: Emission Inventories 1990-1996, Submission of 1990 to 1996 data to DGXI under the Monitoring Mechanism, Mission Interministérielle de l'Effet de Serre (MIES), 7 Oct 1998

Note: emission data include DOMs and TOMs (overseas departments and territories).

Germany 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Germany 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**1,014,500**	**3,862**	**5,571.0**	**224.6**	**2,709.2**	**11,219.2**	**3,224.6**
1 Energy	986,832	-	1,774.9	36.6	2,678.2	10,537.0	1,974.6
A Fuel Combustion	986,832	-	213.9	36.6	2,678.2	10,490.0	1,692.3
1 Energy Industries	412,896	-	8.0	14.3	602.6	179.0	8.0
2 Manufacturing Industries and Construction	196,457	-	12.4	6.0	355.0	828.0	12.0
3 Transport	162,281	-	63.7	10.3	1,422.6	6,772.0	1,490.3
4 Other Sectors	203,439	-	127.8	6.0	249.0	2,589.0	160.0
5 Other	11,760	-	2.0	0.0	49.0	122.0	22.0
B Fugitive Emissions from Fuels	NE	-	1,561.0	0.0	0.0	47.0	282.3
1 Solid Fuels	NO	-	1,227.0	NO	NO	20.0	6.0
2 Oil and Natural Gas	NE	-	334.0	0.0	0.0	27.0	277.0
2 Industrial Processes	27,668	-	0.0	82.0	31.0	682.2	90.0
A Mineral Products	24,664	-	0.0	-	6.0	0.0	0.0
B Chemical Industry	2,100	-	0.0	82.0	23.0	1.6	60.0
C Metal Production	904	-	0.0	-	2.0	680.6	3.0
D Other Production	NE	-	0.0	-	0.0	0.0	27.0
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	NO	-	NO	6.0	NO	NO	1,160.0
4 Agriculture	NO	-	1,902.4	96.0	NO	NO	NO
A Enteric Fermentation	NO	-	1,248.0	NO	NO	NO	NO
B Manure Management	NO	-	630.3	11.0	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	24.0	85.0	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	NO	NO	NO	NO	NO
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	3,862	NO	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	3,862	-	-	-	-	-
B Forest and Grassland Conversion	NO	-	-	-	-	-	-
C Abandonment of Managed Lands	-	NE	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	NE	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	NE	-	1,893.7	4.0	NO	NO	NO
A Solid Waste Disposal on Land	NO	-	1,841.8	NO	NO	NO	NO
B Wastewater Handling	NO	-	51.9	4.0	NO	NO	NO
C Waste Incineration	NE	-	NE	NE	NE	NE	NE
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	19,569	-	0.5	0.6	205.9	93.9	24.5
Aviation	11,589	-	0.2	0.2	50.6	56.6	9.3
Marine	7,980	-	0.3	0.4	155.3	37.3	15.2
CO_2 Emissions from Biomass	NE	-	-	-	-	-	-

Ref.: Updated national GHG Inventories 1990-96 and inventory 1997 (CO_2 also 1998); Submission by Umweltbundesamt Berlin to the EEA, 19 April 1999.

Germany 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Germany 1994	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**904,112**	**38,875**	**4,022.0**	**215.6**	**2,042.0**	**7,054.0**	**2,158.0**
1 Energy	877,158	-	1,338.0	38.6	2,028.0	6,473.0	973.0
A Fuel Combustion	877,158	-	119.0	38.6	2,028.0	6,461.0	837.0
1 Energy Industries	362,678	-	7.0	13.3	351.0	133.0	7.0
2 Manufacturing Industries and Construction	149,378	-	8.0	4.0	242.0	702.0	9.0
3 Transport	172,899	-	32.0	16.3	1,200.0	4,174.0	714.0
4 Other Sectors	187,470	-	71.0	5.0	213.0	1,392.0	99.0
5 Other	4,733	-	1.0	0.0	22.0	60.0	8.0
B Fugitive Emissions from Fuels	NE	-	1,219.0	0.0	0.0	12.0	136.0
1 Solid Fuels	NO	-	811.0	NO	NO	11.0	2.0
2 Oil and Natural Gas	NE	-	408.0	0.0	0.0	1.0	134.0
2 Industrial Processes	26,954	-	0.0	81.0	14.0	581.0	95.0
A Mineral Products	24,764	-	0.0	-	5.0	0.0	0.0
B Chemical Industry	1,575	-	0.0	81.0	7.0	1.0	65.0
C Metal Production	615	-	0.0	-	2.0	580.0	2.0
D Other Production	NE	-	0.0	-	0.0	0.0	28.0
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other		-	-	-	-	-	-
3 Solvent and Other Product Use	NO	-	NO	6.0	NO	NO	1,090.0
4 Agriculture	NO	-	1,570.0	86.0	NO	NO	NO
A Enteric Fermentation	NO	-	1,024.0	NO	NO	NO	NO
B Manure Management	NO	-	520.0	9.0	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	26.0	77.0	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	NO	NO	NO	NO	NO
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	38,875	NO	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	38,875	-	-	-	-	-
B Forest and Grassland Conversion	NO	-	-	-	-	-	-
C Abandonment of Managed Lands	-	NE	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	NE	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	NE	-	1,114.0	4.0	NO	NO	NO
A Solid Waste Disposal on Land	NO	-	1,114.0	NO	NO	NO	NO
B Wastewater Handling	NO	-	0.0	4.0	NO	NO	NO
C Waste Incineration	NE	-	NE	NE	NE	NE	NE
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	19,874	-	0.5	0.7	191.0	98.0	23.0
Aviation	13,398	-	0.2	0.3	65.0	68.0	11.0
Marine	6,476	-	0.3	0.4	126.0	30.0	12.0
CO_2 Emissions from Biomass	NE	-	-	-	-	-	-

Ref.: Updated national GHG Inventories 1990-96 and inventory 1997 (CO_2 also 1998); Submission by Umweltbundesamt Berlin to the EEA, 19 April 1999.

Germany 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Germany 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**904,488**	**32,247**	**3,902.0**	**217.4**	**1,946.0**	**6,885.0**	**1,981.0**
1 Energy	878,100	-	1,314.0	40.2	1,931.0	6,279.0	837.0
A Fuel Combustion	878,100	-	120.0	40.2	1,931.0	6,268.0	759.0
1 Energy Industries	360,000	-	7.0	13.6	339.0	129.0	7.0
2 Manufacturing Industries and Construction	148,000	-	8.0	4.0	235.0	698.0	9.0
3 Transport	175,000	-	30.0	16.6	1,125.0	3,933.0	634.0
4 Other Sectors	191,000	-	74.0	6.0	210.0	1,448.0	101.0
5 Other	4,100	-	1.0	0.0	22.0	60.0	8.0
B Fugitive Emissions from Fuels	NE	-	1,194.0	0.0	0.0	11.0	78.0
1 Solid Fuels	NO	-	837.0	NO	NO	11.0	2.0
2 Oil and Natural Gas	NE	-	357.0	0.0	0.0	0.0	76.0
2 Industrial Processes	26,388	-	0.0	82.0	15.0	606.0	94.0
A Mineral Products	23,815	-	0.0	-	6.0	0.0	0.0
B Chemical Industry	1,870	-	0.0	82.0	7.0	1.0	64.0
C Metal Production	703	-	0.0	-	2.0	605.0	2.0
D Other Production	NE	-	0.0	-	0.0	0.0	28.0
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other		-	-	-	-	-	-
3 Solvent and Other Product Use	NO	-	NO	6.0	NO	NO	1,050.0
4 Agriculture	NO	-	1,559.0	85.2	NO	NO	NO
A Enteric Fermentation	NO	-	1,018.0	NO	NO	NO	NO
B Manure Management	NO	-	515.0	8.6	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	26.0	76.6	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	NO	NO	NO	NO	NO
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	32,247	NO	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	32,247	-	-	-	-	-
B Forest and Grassland Conversion	NO	-	-	-	-	-	-
C Abandonment of Managed Lands	-	NE	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	NE	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	NE	-	1,029.0	4.0	NO	NO	NO
A Solid Waste Disposal on Land	NO	-	1,029.0	NO	NO	NO	NO
B Wastewater Handling	NO	-	0.0	4.0	NO	NO	NO
C Waste Incineration	NE	-	NE	NE	NE	NE	NE
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	19,874	-	0.5	0.6	191.0	98.0	23.0
Aviation	13,398	-	0.2	0.2	65.0	68.0	11.0
Marine	6,476	-	0.3	0.4	126.0	30.0	12.0
CO_2 Emissions from Biomass	NE	-	-	-	-	-	-

Ref.: Updated national GHG Inventories 1990-96 and inventory 1997 (CO_2 also 1998); Submission by Umweltbundesamt Berlin to the EEA, 19 April 1999.

Germany 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Germany 1996	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**918,932**	**35,006**	**3,573.0**	**224.0**	**1,887.0**	**6,717.0**	**1,877.0**
1 Energy	894,000	-	1,228.0	42.0	1,874.0	6,139.0	773.0
A Fuel Combustion	894,000	-	125.0	42.0	1,874.0	6,128.0	699.0
1 Energy Industries	361,000	-	7.0	13.0	342.0	127.0	7.0
2 Manufacturing Industries and Construction	140,000	-	8.0	3.0	228.0	673.0	9.0
3 Transport	174,000	-	29.0	21.0	1,061.0	3,730.0	568.0
4 Other Sectors	215,000	-	80.0	4.0	220.0	1,536.0	106.0
5 Other	4,000	-	1.0	1.0	23.0	62.0	9.0
B Fugitive Emissions from Fuels	NE	-	1,103.0	0.0	0.0	11.0	74.0
1 Solid Fuels	NO	-	734.0	NO	NO	11.0	2.0
2 Oil and Natural Gas	NE	-	369.0	0.0	0.0	0.0	72.0
2 Industrial Processes	24,932	-	0.0	87.0	13.0	578.0	94.0
A Mineral Products	22,392	-	0.0	-	6.0	0.0	0.0
B Chemical Industry	1,836	-	0.0	87.0	5.0	1.0	63.0
C Metal Production	704	-	0.0	-	2.0	577.0	2.0
D Other Production	NE	-	0.0	-	0.0	0.0	29.0
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other		-	-	-	-	-	-
3 Solvent and Other Product Use	NO	-	NO	6.0	NO	NO	1,010.0
4 Agriculture	NO	-	1,553.0	85.0	NO	NO	NO
A Enteric Fermentation	NO	-	1,012.0	NO	NO	NO	NO
B Manure Management	NO	-	515.0	9.0	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	26.0	76.0	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	NO	NO	NO	NO	NO
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	35,006	NO	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	35,006	-	-	-	-	-
B Forest and Grassland Conversion	NO	-	-	-	-	-	-
C Abandonment of Managed Lands	-	NE	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	NE	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	NE	-	792.0	4.0	NO	NO	NO
A Solid Waste Disposal on Land	NO	-	792.0	NO	NO	NO	NO
B Wastewater Handling	NO	-	0.0	4.0	NO	NO	NO
C Waste Incineration	NE	-	NE	NE	NE	NE	NE
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	19,874	-	0.5	0.6	191.0	98.0	23.0
Aviation	13,398	-	0.2	0.2	65.0	68.0	11.0
Marine	6,476	-	0.3	0.4	126.0	30.0	12.0
CO_2 Emissions from Biomass	NE	-	-	-	-	-	-

Ref.: Updated national GHG Inventories 1990-96 and inventory 1997 (CO_2 also 1998); Submission by Umweltbundesamt Berlin to the EEA, 19 April 1999.

HFC/PFC/SF_6 emissions in Germany 1990, 1994-96

Germany 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.200**	**-**	**0.397**	**-**	**0.163**
2 Industrial Processes	-	0.200	-	0.397	-	0.163
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	0.197	-	0.010	-	-
C Metal Production	-	-	-	0.369	-	0.007
D Other Production	-	0.003	-	0.018	-	0.004
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	0.000	-	-	-	0.152
G Other	-	-	-	-	-	-

Germany 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**1.942**	**-**	**0.245**	**-**	**0.242**
2 Industrial Processes	-	1.942	-	0.245	-	0.242
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	0.198	-	0.003	-	-
C Metal Production	-	-	-	0.219	-	0.008
D Other Production	-	0.002	-	0.023	-	0.002
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	1.742	-	-	-	0.232
G Other	-	-	-	-	-	-

Germany 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**2.030**	**-**	**0.245**	**-**	**0.261**
2 Industrial Processes	-	2.030	-	0.254	-	0.261
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	0.098	-	0.000	-	-
C Metal Production	-	-	-	0.230	-	0.006
D Other Production	-	0.003	-	0.022	-	0.004
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	1.928	-	0.002	-	0.252
G Other	-	-	-	-	-	-

Germany 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**2.275**	**-**	**0.256**	**-**	**0.244**
2 Industrial Processes	-	2.275	-	0.256	-	0.244
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	0.000	-	0.000	-	-
C Metal Production	-	-	-	0.216	-	0.003
D Other Production	-	0.024	-	0.037	-	0.004
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	2.252	-	0.003	-	0.236
G Other	-	-	-	-	-	-

Ref.: Updated national GHG Inventories 1990-96 and inventory 1997 (CO_2 also 1998); Submission by Umweltbundesamt Berlin to the EEA, 19 April 1999.

Greece 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Greece 1990	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**85,349**	**0**	**437.1**	**29.9**	**342.9**	**1,337.5**	**373.2**
1 Energy	77,256	-	57.5	6.7	305.8	1,180.7	252.5
A Fuel Combustion	77,256	-	13.3	6.7	305.3	1,179.6	225.9
1 Energy Industries	43,658	-	0.2	2.7	69.4	5.3	3.8
2 Manufacturing Industries and Construction	9,820	-	1.6	1.5	20.5	18.5	5.5
3 Transport	15,170	-	3.3	0.6	165.1	918.1	195.3
4 Other Sectors	8,168	-	8.2	2.0	50.3	237.6	21.3
5 Other	440	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	44.2	0.0	0.5	1.0	26.6
1 Solid Fuels	0	-	44.1	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	0.1	0.0	0.5	1.0	26.6
2 Industrial Processes	7,804	-	0.0	2.3	30.9	33.2	2.5
A Mineral Products	6,984	-	0.0	0.0	29.1	0.0	0.2
B Chemical Industry	470	-	0.0	2.3	1.3	2.5	1.7
C Metal Production	350	-	0.0	0.0	0.5	30.5	0.0
D Other Production	0	-	0.0	0.0	0.1	0.2	0.6
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	186	-	-	0.0	-	-	59.7
4 Agriculture	0	-	270.6	20.6	4.6	111.9	50.2
A Enteric Fermentation	-	-	139.8	0.0	0.0	0.0	0.0
B Manure Management	-	-	23.7	0.4	0.0	0.0	0.0
C Rice Cultivation	-	-	4.8	0.1	0.0	0.0	0.0
D Agricultural Soils	-	-	97.0	20.0	0.0	0.0	29.7
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	-	-	5.3	0.1	4.6	111.9	20.6
G Other	-	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	0	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	0	0	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	0	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	0	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	0	0.0	0.0	0.0	0.0	0.0
E Other	0	0	0.0	0.0	0.0	0.0	0.0
6 Waste	103	-	109.0	0.3	1.7	11.7	8.3
A Solid Waste Disposal on Land	0	-	102.0	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	6.1	0.0	0.0	0.0	0.0
C Waste Incineration	103	-	1.0	0.3	1.7	11.7	8.3
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	10,423	-	1.2	0.6	215.9	55.7	11.4
Aviation	2,452	-	0.4	0.1	20.4	32.5	5.8
Marine	7,971	-	0.8	0.5	195.5	23.2	5.7
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Climate Change Emissions Inventory, National Inventory for Greenhouse and Other Gases for the years 1990-1996',* Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998.

Greece 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Greece 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**88,721**	**0**	**449.5**	**28.9**	**358.1**	**1,295.8**	**389.1**
1 Energy	81,111	-	61.8	7.1	320.5	1,124.5	273.2
A Fuel Combustion	81,111	-	13.6	7.1	319.9	1,123.4	245.6
1 Energy Industries	47,119	-	0.2	2.9	80.3	6.2	4.1
2 Manufacturing Industries and Construction	9,027	-	2.5	1.3	19.6	13.2	6.8
3 Transport	16,728	-	3.7	1.0	172.5	881.5	215.3
4 Other Sectors	8,046	-	7.2	1.9	47.4	222.4	19.4
5 Other	192	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	48.2	0.0	0.6	1.2	27.7
1 Solid Fuels	0	-	48.2	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	0.1	0.0	0.6	1.2	27.7
2 Industrial Processes	7,325	-	0.0	1.8	30.5	24.4	1.0
A Mineral Products	7,046	-	0.0	0.0	29.1	0.0	0.0
B Chemical Industry	0	-	0.0	1.8	1.0	0.0	0.2
C Metal Production	279	-	0.0	0.0	0.4	24.3	0.0
D Other Production	0	-	0.0	0.0	0.0	0.1	0.8
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	180	-	-	0.0	-	-	57.7
4 Agriculture	0	-	275.7	19.8	5.4	134.9	48.6
A Enteric Fermentation	-	-	140.4	0.0	0.0	0.0	0.0
B Manure Management	-	-	26.1	0.5	0.0	0.0	0.0
C Rice Cultivation	-	-	6.8	0.0	0.0	0.0	0.0
D Agricultural Soils	-	-	96.0	19.1	0.0	0.0	29.4
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	-	-	6.4	0.1	5.4	134.9	19.2
G Other	-	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	0	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	0	0	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	0	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	0	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	0	-	-	-	-	-
E Other	0	0	0.0	0.0	0.0	0.0	0.0
6 Waste	106	-	112.0	0.3	1.7	12.0	8.6
A Solid Waste Disposal on Land	0	-	104.7	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	6.3	0.0	0.0	0.0	0.0
C Waste Incineration	106	-	1.0	0.3	1.7	12.0	8.6
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	13,203	-	1.6	0.8	279.5	71.7	14.5
Aviation	2,787	-	0.6	0.1	24.3	41.5	7.1
Marine	10,416	-	1.0	0.7	255.2	30.2	7.4
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Climate Change Emissions Inventory, National Inventory for Greenhouse and Other Gases for the years 1990-1996 ',* Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998.

Greece 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Greece 1995	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**90,306**	**0**	**454.0**	**28.1**	**357.7**	**1,317.5**	**397.2**
1 Energy	82,110	-	62.8	7.4	319.0	1,153.5	281.7
A Fuel Combustion	82,110	-	13.7	7.4	318.3	1,152.1	251.7
1 Energy Industries	47,148	-	0.2	3.2	79.3	5.9	4.1
2 Manufacturing Industries and Construction	9,781	-	2.5	1.4	21.2	14.4	6.8
3 Transport	16,850	-	3.9	1.0	173.0	909.5	221.9
4 Other Sectors	8,132	-	7.2	1.8	44.8	222.3	19.0
5 Other	198	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	49.1	0.0	0.7	1.4	29.9
1 Solid Fuels	0	-	49.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	0.1	0.0	0.7	1.4	29.9
2 Industrial Processes	7,912	-	0.0	1.8	32.0	24.8	1.9
A Mineral Products	7,392	-	0.0	0.0	30.5	0.0	0.0
B Chemical Industry	251	-	0.0	1.8	1.0	1.3	1.0
C Metal Production	268	-	0.0	0.0	0.4	23.4	0.0
D Other Production	0	-	0.0	0.0	0.0	0.2	0.9
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	179	-	-	0.0	-	-	57.6
4 Agriculture	0	-	279.0	18.6	5.0	127.1	47.4
A Enteric Fermentation	-	-	142.3	0.0	0.0	0.0	0.0
B Manure Management	-	-	27.6	0.5	0.0	0.0	0.0
C Rice Cultivation	-	-	7.4	0.1	0.0	0.0	0.0
D Agricultural Soils	-	-	95.6	17.9	0.0	0.0	29.3
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	-	-	6.1	0.1	5.0	127.1	18.2
G Other	-	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	0	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	0	0	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	0	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	0	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	0	-	-	-	-	-
E Other	0	0	0.0	0.0	0.0	0.0	0.0
6 Waste	106	-	112.2	0.3	1.7	12.0	8.6
A Solid Waste Disposal on Land	0	-	104.9	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	6.3	0.0	0.0	0.0	0.0
C Waste Incineration	106	-	1.0	0.3	1.7	12.0	8.6
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	13,812	-	1.7	0.8	297.3	73.1	14.8
Aviation	2,613	-	0.6	0.1	23.2	40.6	6.9
Marine	11,199	-	1.1	0.7	274.1	32.5	7.9
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Climate Change Emissions Inventory, National Inventory for Greenhouse and Other Gases for the years 1990-1996 ',* Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998.

Greece 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Greece 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**91,978**	**0**	**457.0**	**29.3**	**373.5**	**1,333.5**	**409.0**
1 Energy	83,582	-	64.9	7.8	333.9	1,169.5	293.4
A Fuel Combustion	83,582	-	14.0	7.8	333.3	1,168.3	261.1
1 Energy Industries	45,541	-	0.2	3.0	82.9	7.1	4.0
2 Manufacturing Industries and Construction	10,653	-	2.5	1.5	23.3	15.2	7.4
3 Transport	17,253	-	4.0	1.1	171.7	915.5	229.3
4 Other Sectors	10,039	-	7.3	2.2	55.3	230.5	20.4
5 Other	96	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	50.9	0.0	0.6	1.2	32.2
1 Solid Fuels	0	-	50.8	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	0.1	0.0	0.6	1.2	32.2
2 Industrial Processes	8,111	-	0.0	1.8	32.8	24.8	1.9
A Mineral Products	7,592	-	0.0	0.0	31.4	0.0	0.0
B Chemical Industry	251	-	0.0	1.8	1.0	1.3	1.0
C Metal Production	268	-	0.0	0.0	0.4	23.4	0.0
D Other Production	0	-	0.0	0.0	0.0	0.2	0.9
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	0	-	0.0	0.0	0.0	0.0	0.0
3 Solvent and Other Product Use	180	-	-	0.0	-	-	57.8
4 Agriculture	0	-	279.6	19.5	5.0	127.1	47.3
A Enteric Fermentation	-	-	142.3	0.0	0.0	0.0	0.0
B Manure Management	-	-	27.6	0.6	0.0	0.0	0.0
C Rice Cultivation	-	-	8.4	0.0	0.0	0.0	0.0
D Agricultural Soils	-	-	95.2	18.7	0.0	0.0	29.2
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	-	-	6.1	0.1	5.0	127.1	18.2
G Other	-	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	0	0.0	0.0	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	0	0	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	0	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	0	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	0	0	-	-	-	-	-
E Other	0	0	0.0	0.0	0.0	0.0	0.0
6 Waste	106	-	112.5	0.3	1.7	12.1	8.6
A Solid Waste Disposal on Land	0	-	105.2	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	6.3	0.0	0.0	0.0	0.0
C Waste Incineration	106	-	1.0	0.3	1.7	12.1	8.6
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	12,432	-	1.5	0.8	263.6	71.4	13.5
Aviation	2,582	-	0.5	0.1	22.3	40.7	6.5
Marine	9,850	-	1.0	0.6	241.3	30.8	7.0
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Climate Change Emissions Inventory, National Inventory for Greenhouse and Other Gases for the years 1990-1996 ',* Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998.

HFC/PFC/SF_6 emissions in Greece 1990, 1994-96

Greece 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.080**		**0.075**	**-**	**0.000**
2 Industrial Processes	-	0.080		0.075	-	0.000
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	0.000		0.100	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	0.100	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	0.000

Greece 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.183**	**-**	**0.059**	**-**	**0.000**
2 Industrial Processes	-	0.183	-	0.059	-	0.000
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	0.000	-	0.100	-	0.000
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	0.200	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	0.000

Greece 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.278**	**-**	**0.057**	**-**	**0.000**
2 Industrial Processes	-	0.278	-	0.057	-	0.000
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	0.000	-	0.100	-	0.000
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	0.300	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	0.000

Greece 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.320**	**-**	**0.057**	**-**	**0.000**
2 Industrial Processes	-	0.320	-	0.057	-	0.000
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	0.100	-	0.000
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	0.300	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	0.000

Ref.: '*Climate Change Emissions Inventory, National Inventory for Greenhouse and Other Gases for the years 1990-1996 ',* Ministry for the Environment, Physical Planning and Public Works, Athens, June 1998.

Ireland 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Ireland 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**30,719**	**5,160**	**811.3**	**29.4**	**114.6**	**429.0**	**180.0**
1 Energy	29,038	-	15.5	2.8	112.2	390.1	74.7
A Fuel Combustion	29,038	-	5.3	2.8	112.2	390.1	71.6
1 Energy Industries	10,863	-	0.0	1.4	46.4	3.3	0.3
2 Manufacturing Industries and Construction	5,431	-	0.2	0.4	11.3	0.9	0.3
3 Transport	4,885	-	1.2	0.2	45.3	305.3	62.6
4 Other Sectors	7,859	-	3.9	0.8	9.3	80.6	8.4
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	10.2	0.0	0.0	0.0	3.1
1 Solid Fuels	0	-	0.3	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	9.9	0.0	0.0	0.0	3.1
2 Industrial Processes	1,627	-	0.0	2.6	1.7	0.0	0.7
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	0	-	0.0	0.0	0.0	0.0	21.4
4 Agriculture	0	-	640.3	23.3	0.7	38.3	82.8
A Enteric Fermentation	0	-	551.4	0.0	0.0	0.0	0.0
B Manure Management	0	-	52.0	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	35.1	23.3	0.0	0.0	78.5
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	1.8	0.0	0.7	38.3	4.3
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	5,160	19.6	0.6	0.0	0.0	0.0
A Changes in Forest and Other Woody Biomass Stocks	0	5,160	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	-	19.6	0.6	0.0	0.0	0.0
6 Waste	54	-	136.0	0.0	0.1	0.6	0.5
A Solid Waste Disposal on Land	0	-	136.0	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	0.0	0.0	0.0	0.0	0.0
C Waste Incineration	54	-	0.0	0.0	0.1	0.6	0.5
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	1,172	-	0.1	0.0	5.4	2.2	0.4
Aviation	1,072	-	0.1	0.0	5.3	2.2	0.4
Marine	100	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	0	-	-	-	-	-	-

Ref.: '*Ireland: Greenhouse Gas Inventories and Projections*', Department of the Environment and Local Government, 22 July 1998.

Note: Ireland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Ireland 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Ireland 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**33,324**	**5,970**	**807.2**	**26.0**	**115.6**	**329.6**	**174.4**
1 Energy	31,443	0	14.8	3.5	115.2	329.0	69.8
A Fuel Combustion	31,443	0	4.1	3.5	115.2	329.0	65.4
1 Energy Industries	12,574	0	0.0	1.6	45.4	3.4	0.3
2 Manufacturing Industries and Construction	3,640	0	0.1	0.4	9.9	1.6	0.2
3 Transport	5,811	0	1.2	0.5	47.7	262.3	58.7
4 Other Sectors	9,418	0	2.7	1.0	12.2	61.7	6.3
5 Other	0	0	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	0	10.7	0.0	0.0	0.0	4.4
1 Solid Fuels	0	0	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	0	10.7	0.0	0.0	0.0	4.4
2 Industrial Processes	1,827	0	0.0	2.6	0.3	0.0	0.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	0	0	0.0	0.0	0.0	0.0	22.0
4 Agriculture	0	0	633.3	19.1	0.0	0.0	58.9
A Enteric Fermentation	0	0	548.2	0.0	0.0	0.0	0.0
B Manure Management	0	0	55.6	0.0	0.0	0.0	0.0
C Rice Cultivation	0	0	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	0	29.5	19.1	0.0	0.0	58.9
E Prescribed Burning of Savannas	0	0	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	0	0.0	0.0	0.0	0.0	0.0
G Other	0	0	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	5,970	23.2	0.8	0.0	0.0	23.2
A Changes in Forest and Other Woody Biomass Stocks	0	5,970	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	0	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	0	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	0	23.2	0.8	0.0	0.0	23.2
6 Waste	54	0	136.0	0.0	0.0	0.0	0.5
A Solid Waste Disposal on Land	0	0	136.0	0.0	0.0	0.0	0.0
B Wastewater Handling	0	0	0.0	0.0	0.0	0.0	0.0
C Waste Incineration	54	0	0.0	0.0	0.0	0.0	0.5
D Other	0	0	0.0	0.0	0.0	0.0	0.0
7 Other	0	0	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	1,350	-	0.0	0.0	8.6	4.4	1.1
Aviation	1,250	-	0.0	0.0	1.8	3.4	0.8
Marine	100	-	0.0	0.0	6.8	1.1	0.2
CO_2 Emissions from Biomass	0	-	-	-	-	-	-

Ref.: '*Ireland: Second Communication under the United Nations Framework Convention on Climate Change*'.

Note: Ireland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Ireland 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Ireland 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**34,116**	**6,230**	**814.2**	**26.2**	**113.1**	**302.4**	**174.7**
1 Energy	32,290	-	15.6	3.6	112.8	301.8	69.8
A Fuel Combustion	32,290	-	4.5	3.6	112.8	301.8	65.2
1 Energy Industries	13,374	-	0.0	1.7	42.0	3.6	0.3
2 Manufacturing Industries and Construction	3,452	-	0.1	0.4	9.6	1.5	0.1
3 Transport	6,198	-	1.9	0.6	49.2	238.9	59.2
4 Other Sectors	9,266	-	2.5	1.0	12.0	57.9	5.7
5 Other	0	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	11.1	0.0	0.0	0.0	4.5
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	11.1	0.0	0.0	0.0	4.5
2 Industrial Processes	1,772	-	0.0	2.6	0.3	0.0	0.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	0	-	0.0	0.0	0.0	0.0	20.0
4 Agriculture	0	-	636.9	19.1	0.0	0.0	58.9
A Enteric Fermentation	0	-	551.5	0.0	0.0	0.0	0.0
B Manure Management	0	-	55.9	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	29.5	19.1	0.0	0.0	58.9
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	6,230	25.8	0.9	0.0	0.0	25.5
A Changes in Forest and Other Woody Biomass Stocks	0	6,230	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	0	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	0	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	0	25.8	0.9	0.0	0.0	25.5
6 Waste	54	-	136.0	0.0	0.1	0.6	0.5
A Solid Waste Disposal on Land	0	-	136.0	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	0.0	0.0	0.0	0.0	0.0
C Waste Incineration	54	-	0.0	0.0	0.1	0.6	0.5
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	1,510	-	0.0	0.0	12.3	5.0	1.2
Aviation	1,410	-	-	-	12.3	5.0	1.2
Marine	100	-	-	-	IE	IE	IE
CO_2 Emissions from Biomass	0	-	-	-	-	-	-

Ref.: '*Ireland: Greenhouse Gas Inventories and Projections*', Department of the Environment and Local Government, 22 July 1998.

Note: Ireland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Ireland 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Ireland 1996	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**34,819**	**6,497**	**799.7**	**26.2**	**-**	**-**	**-**
1 Energy	33,027	-	16.1	3.7	-	-	-
A Fuel Combustion	33,027	-	3.9	3.7	-	-	-
1 Energy Industries	14,087	-	0.0	1.8	-	-	-
2 Manufacturing Industries and Construction	3,446	-	0.1	0.4	-	-	-
3 Transport	6,538	-	1.9	0.6	-	-	-
4 Other Sectors	8,956	-	1.9	1.0	-	-	-
5 Other	0	-	0.0	0.0	-	-	-
B Fugitive Emissions from Fuels	0	-	12.2	0.0	-	-	-
1 Solid Fuels	0	-	0.0	0.0	-	-	-
2 Oil and Natural Gas	0	-	12.2	0.0	-	-	-
2 Industrial Processes	1,738	-	0.0	2.6	-	-	-
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	0	-	0.0	0.0	-	-	-
4 Agriculture	0	-	654.7	19.0	-	-	-
A Enteric Fermentation	0	-	567.1	0.0	-	-	-
B Manure Management	0	-	58.3	0.0	-	-	-
C Rice Cultivation	0	-	0.0	0.0	-	-	-
D Agricultural Soils	0	-	29.3	19.0	-	-	-
E Prescribed Burning of Savannas	0	-	0.0	0.0	-	-	-
F Field Burning of Agricultural Residues	0	-	0.0	0.0	-	-	-
G Other	0	-	0.0	0.0	-	-	-
5 Land-Use Change & Forestry	0	6,497	26.9	0.9	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	0	6,497	0.0	0.0	-	-	-
B Forest and Grassland Conversion	0	0	0.0	0.0	-	-	-
C Abandonment of Managed Lands	0	0	0.0	0.0	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	0	26.9	0.9	-	-	-
6 Waste	54	-	102.0	0.0	-	-	-
A Solid Waste Disposal on Land	0	-	102.0	0.0	-	-	-
B Wastewater Handling	0	-	0.0	0.0	-	-	-
C Waste Incineration	54	-	0.0	0.0	-	-	-
D Other	0	-	0.0	0.0	-	-	-
7 Other	0	-	0.0	0.0	-	-	-
Memo Items:							
International Bunkers	1,605	-	0.0	0.0	-	-	-
Aviation	1,605	-	-	-	-	-	-
Marine	IE	-	-	-	-	-	-
CO_2 Emissions from Biomass	0	-	-	-	-	-	-

Ref.: '*Ireland: Greenhouse Gas Inventories and Projections*', Department of the Environment and Local Government, 22 July 1998.

Note: Ireland delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Italy 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Italy 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**441,653**	**35,891**	**2,328.7**	**164.5**	**1,942.8**	**7,892.2**	**2,221.6**
1 Energy	400,504	-	405.4	44.6	1,922.5	7,078.6	1,325.9
A Fuel Combustion	399,590	-	96.5	44.6	1,917.4	7,069.8	1,179.4
1 Energy Industries	148,445	-	5.0	19.9	458.6	30.9	5.2
2 Manufacturing Industries and Construction	78,117	-	8.1	9.5	295.5	522.7	15.4
3 Transport	95,063	-	61.7	3.6	965.9	5,685.7	1,048.9
4 Other Sectors	76,805	-	21.4	11.6	186.0	806.6	105.3
5 Other	1,159	-	0.2	0.0	11.4	23.9	4.7
B Fugitive Emissions from Fuels	914	-	309.0	0.0	5.1	8.8	146.5
1 Solid Fuels	-	-	5.0	-	-	-	3.0
2 Oil and Natural Gas	914	-	304.0	-	5.1	8.8	143.5
2 Industrial Processes	27,520	-	4.4	23.5	7.2	527.5	72.5
A Mineral Products	22,715	-	-	-	-	-	-
B Chemical Industry	2,350	-	2.3	23.5	3.8	15.5	49.6
C Metal Production	1,977	-	2.1	-	3.3	512.0	2.8
D Other Production	478	-	-	-	0.1	-	20.1
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	1,999	-	-	-	-	-	641.5
4 Agriculture	0	-	909.1	75.2	0.9	24.9	1.4
A Enteric Fermentation	-	-	643.1	-	-	-	-
B Manure Management	-	-	191.5	12.9	-	-	0.7
C Rice Cultivation	-	-	73.3	-	-	-	-
D Agricultural Soils	-	-	0.0	62.2	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	1.2	0.0	0.9	24.9	0.8
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	10,942	35,891	187.2	20.9	1.9	67.7	159.9
A Changes in Forest and Other Woody Biomass Stocks	8,736	35,817	-	-	-	-	-
B Forest and Grassland Conversion	2,154	-	7.7	0.1	1.9	67.7	7.7
C Abandonment of Managed Lands	-	74	-	-	-	-	-
D CO2 Emissions and Removals from Soil	52	-	-	-	-	-	-
E Other	-	-	179.4	20.9	-	-	152.2
6 Waste	688	-	822.7	0.3	10.2	193.4	20.4
A Solid Waste Disposal on Land	0	-	302.1	-	-	-	6.1
B Wastewater Handling	0	-	511.4	-	-	-	1.3
C Waste Incineration	688	-	9.2	0.3	10.2	193.4	13.0
D Other	0	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	12,204	-	1.1	0.6	206.3	23.5	8.2
Aviation	3,737	-	0.3	0.1	12.0	3.5	2.5
Marine	8,467	-	0.8	0.5	194.3	20.0	5.7
CO_2 Emissions from Biomass	3,100	-	-	-	-	-	-

Ref.: *'Excerpt from the Second National Communication to the United Nations Framework Convention on Climate Change',* Ministry of Environment, Department for Air and Noise Pollution and Industrial Risk, submitted to Commission on 24 March 1998.

Note: The Second National Communication includes CO_2 emissions from geothermal activity (National Total: 443,092 Gg).

Italy 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Italy 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**422,365**	**36,395**	**2,557.6**	**160.4**	**1,791.1**	**7,570.6**	**2,354.7**
1 Energy	385,395	-	458.5	41.7	1,769.9	6,951.3	1,458.1
A Fuel Combustion	384,232	-	106.2	41.7	1,764.2	6,942.9	1,303.7
1 Energy Industries	129,069	-	4.6	18.7	346.6	27.9	4.6
2 Manufacturing Industries and Construction	81,071	-	7.3	7.7	246.0	516.6	14.9
3 Transport	102,221	-	70.4	5.4	961.4	5,656.4	1,180.3
4 Other Sectors	69,717	-	23.7	9.8	189.5	711.5	96.6
5 Other	2,153	-	0.3	0.1	20.7	30.5	7.3
B Fugitive Emissions from Fuels	1,163	-	352.2	0.0	5.7	8.4	154.4
1 Solid Fuels	-	-	3.4	-	-	-	2.7
2 Oil and Natural Gas	1,163	-	348.8	-	5.7	8.4	151.7
2 Industrial Processes	22,852	-	4.5	20.6	4.8	290.5	70.5
A Mineral Products	19,077	-	-	-	-	-	-
B Chemical Industry	2,214	-	2.3	20.6	1.4	11.1	47.9
C Metal Production	1,022	-	2.3	-	3.3	279.3	2.9
D Other Production	539	-	-	-	0.0	-	19.7
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	1,976	-	-	-	-	-	634.1
4 Agriculture	0	-	915.1	75.9	0.9	25.2	1.9
A Enteric Fermentation	-	-	607.2	-	-	-	-
B Manure Management	-	-	181.9	12.4	-	-	0.6
C Rice Cultivation	-	-	124.8	-	-	-	-
D Agricultural Soils	-	-	0.0	63.5	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	1.2	0.0	0.9	25.2	1.2
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	11,421	36,395	192.4	21.6	0.7	23.1	163.9
A Changes in Forest and Other Woody Biomass Stocks	10,344	35,947	-	-	-	-	-
B Forest and Grassland Conversion	1,077	-	2.6	0.0	0.7	23.1	2.6
C Abandonment of Managed Lands	-	133	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	316	-	-	-	-	-
E Other	-	-	189.7	21.6	-	-	161.3
6 Waste	721	-	987.1	0.5	14.9	280.5	26.2
A Solid Waste Disposal on Land	0	-	426.5	-	-	-	7.7
B Wastewater Handling	0	-	511.4	-	-	-	1.3
C Waste Incineration	721	-	13.4	0.5	14.9	280.5	17.3
D Other	0	-	35.8	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	12,416	-	1.1	0.7	185.7	22.0	8.3
Aviation	4,926	-	0.4	0.2	15.6	4.5	3.3
Marine	7,491	-	0.7	0.5	170.1	17.5	5.0
CO_2 Emissions from Biomass	4,178	-	-	-	-	-	-

Ref.: *'Excerpt from the Second National Communication to the United Nations Framework Convention on Climate Change'*, Ministry of Environment, Department for Air and Noise Pollution and Industrial Risk, submitted to Commission on 24 March 1998.

Note: The Second National Communication includes CO_2 emissions from geothermal activity (National Total: 423,870 Gg).

Italy 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Italy 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**447,644**	**36,199**	**2,515.6**	**161.8**	**1,848.6**	**7,785.7**	**2,374.7**
1 Energy	410,278	-	467.2	44.0	1,827.0	7,154.9	1,489.4
A Fuel Combustion	409,116	-	115.0	44.0	1,821.3	7,146.5	1,335.0
1 Energy Industries	139,180	-	4.9	20.0	375.6	30.1	4.9
2 Manufacturing Industries and Construction	83,043	-	7.3	7.9	252.9	519.7	15.2
3 Transport	108,842	-	77.1	5.5	990.7	5,894.2	1,217.3
4 Other Sectors	76,481	-	25.4	10.6	190.8	685.8	93.5
5 Other	1,569	-	0.1	0.1	11.3	16.7	4.1
B Fugitive Emissions from Fuels	1,163	-	352.2	0.0	5.7	8.4	154.4
1 Solid Fuels	-	-	3.4	-	-	-	2.7
2 Oil and Natural Gas	1,163	-	348.8	-	5.7	8.4	151.7
2 Industrial Processes	22,985	-	4.6	20.4	4.8	290.8	71.1
A Mineral Products	19,077	-	-	-	-	-	-
B Chemical Industry	2,335	-	2.3	20.4	1.4	11.4	48.0
C Metal Production	1,034	-	2.3	-	3.3	279.3	2.9
D Other Production	539	-	-	-	0.0	-	20.2
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	1,962	-	-	-	-	-	629.5
4 Agriculture	0	-	871.7	75.9	0.9	25.2	1.9
A Enteric Fermentation	-	-	607.2	-	-	-	-
B Manure Management	-	-	181.9	12.4	-	-	0.6
C Rice Cultivation	-	-	81.4	-	-	-	-
D Agricultural Soils	-	-	0.0	63.5	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	1.2	0.0	0.9	25.2	1.2
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	11,692	36,199	183.3	20.9	1.0	34.2	156.1
A Changes in Forest and Other Woody Biomass Stocks	10,344	35,947	-	-	-	-	-
B Forest and Grassland Conversion	1,348	-	3.9	0.0	1.0	34.2	3.9
C Abandonment of Managed Lands	-	157	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	95	-	-	-	-	-
E Other	-	-	179.4	20.9	-	-	152.2
6 Waste	727	-	988.8	0.5	14.9	280.5	26.8
A Solid Waste Disposal on Land	0	-	464.0	-	-	-	8.2
B Wastewater Handling	0	-	511.4	-	-	-	1.3
C Waste Incineration	727	-	13.4	0.5	14.9	280.5	17.3
D Other	0	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	13,099	-	1.1	0.7	193.0	23.0	8.8
Aviation	5,447	-	0.4	0.2	17.5	5.0	3.7
Marine	7,651	-	0.7	0.5	175.5	18.0	5.1
CO_2 Emissions from Biomass	4,279	-	-	-	-	-	-

Ref.: *'Excerpt from the Second National Communication to the United Nations Framework Convention on Climate Change',* Ministry of Environment, Department for Air and Noise Pollution and Industrial Risk, submitted to Commission on 24 March 1998.

Note: The Second National Communication includes CO_2 emissions from geothermal activity (National Total: 449,159 Gg).

Luxembourg 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Luxembourg 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**13,300**	**0**	**24.0**	**1.0**	**23.0**	**171.0**	**19.0**
1 Energy	12,600	-	2.0	-	23.0	154.0	14.0
A Fuel Combustion	12,600	-	0.0	-	23.0	154.0	12.0
1 Energy Industries	1,900	-	0.0	-	1.0	1.0	-
2 Manufacturing Industries and Construction	6,600	-	-	-	11.0	98.0	1.0
3 Transport	2,900	-	-	-	11.0	48.0	11.0
4 Other Sectors	1,100	-	-	-	1.0	6.0	1.0
5 Other	100	-	-	-	-	1.0	-
B Fugitive Emissions from Fuels	0	-	2.0	0.0	0.0	0.0	2.0
1 Solid Fuels	-	-	-	0.0	-	-	-
2 Oil and Natural Gas	-	-	2.0	0.0	-	-	2.0
2 Industrial Processes	600	-	0.0	1.0	0.0	17.0	1.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	0	-	0.0	-	0.0	0.0	4.0
4 Agriculture	0	-	18.0	-	0.0	0.0	1.0
A Enteric Fermentation	-	-	16.0	-	-	-	-
B Manure Management	-	-	2.0	-	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	-	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	-	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	100	-	4.0	0.0	1.0	0.0	0.0
A Solid Waste Disposal on Land	1	-	4.0	-	-	-	-
B Wastewater Handling	-	-	1.0	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	100	-	1.0	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	300	-	-	-	-	-	-
Aviation	300	-	-	-	-	-	-
Marine	0	-	-	-	-	-	-
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Rapport National du Luxembourg en vue de la 1^e^ Conférence des Parties à la Convention-Cadre des Nations-Unies sur les Changements Climatiques*', Ministère de l'Environnement, Mars 1995.

Note: Luxembourg delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Luxembourg 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Luxembourg 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**11,998**	**0**	**21.9**	**0.7**	**22.4**	**144.7**	**18.5**
1 Energy	11,520	-	2.3	0.2	22.0	131.0	12.6
A Fuel Combustion	11,520	-	0.8	0.2	22.0	131.0	10.8
1 Energy Industries	1,064	-	0.0	0.0	0.3	0.0	0.0
2 Manufacturing Industries and Construction	5,475	-	0.1	0.0	9.7	76.3	0.3
3 Transport	3,685	-	0.2	0.1	10.4	44.0	9.1
4 Other Sectors	1,296	-	0.5	0.0	1.6	10.7	1.3
5 Other	-	-	-	-	-	-	-
B Fugitive Emissions from Fuels	0	-	1.5	0.0	0.0	0.0	1.8
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	1.5	0.0	0.0	0.0	1.8
2 Industrial Processes	447	-	0.0	0.0	0.2	13.7	1.1
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	12	-	0.0	0.0	0.0	0.0	3.8
4 Agriculture	0	-	16.9	0.5	0.0	0.0	0.2
A Enteric Fermentation	0	-	15.8	0.0	0.0	0.0	0.0
B Manure Management	0	-	1.1	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	0.0	0.5	0.0	0.0	0.2
E Prescribed Burning of Savannas	0	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	0	-	0.0	0.0	0.0	0.0	0.0
G Other	0	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	-	0.0	0.0	0.0	0.0	0.8
A Changes in Forest and Other Woody Biomass Stocks	0	-	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	-	0.0	0.0	0.0	0.0	0.8
6 Waste	19	-	2.7	0.0	0.3	0.0	0.0
A Solid Waste Disposal on Land	1	-	2.2	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	0.2	0.0	0.0	0.0	0.0
C Waste Incineration	18	-	0.0	0.0	0.3	0.0	0.0
D Other	0	-	0.2	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	194	-	0.0	0.0	0.1	0.5	0.2
Aviation	194	-	0.0	0.0	0.1	0.5	0.2
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *'Luxembourg CO_2 emissions in 1994 and 1995',* Administration de l'Environment, Grand Duché de Luxembourg, 29 August 1996.

Note: Luxembourg delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Luxembourg 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Luxembourg 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**7,078**	**0**	**22.1**	**0.7**	**20.0**	**104.1**	**17.4**
1 Energy	6,790	-	2.4	0.2	19.5	94.7	11.8
A Fuel Combustion	6,790	-	0.7	0.2	19.5	94.7	10.0
1 Energy Industries	820	-	0.0	0.0	0.2	0.0	0.0
2 Manufacturing Industries and Construction	3,474	-	0.0	0.0	7.6	43.9	0.2
3 Transport	1,182	-	0.2	0.1	10.2	41.4	8.6
4 Other Sectors	1,236	-	0.5	0.0	1.5	9.4	1.2
5 Other	78	-	-	-	-	-	-
B Fugitive Emissions from Fuels	0	-	1.8	0.0	0.0	0.0	1.8
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	1.8	0.0	0.0	0.0	1.8
2 Industrial Processes	271	-	0.0	0.0	0.2	9.3	0.9
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	0	-	0.0	0.0	0.0	0.0	0.0
C Metal Production	266	-	0.0	0.0	0.2	9.3	0.7
D Other Production	0	-	0.0	0.0	0.0	0.0	0.0
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	5	-	0.0	0.0	0.0	0.0	0.1
3 Solvent and Other Product Use	11	-	0.0	0.0	0.0	0.0	3.8
4 Agriculture	0	-	16.9	0.5	0.0	0.0	0.2
A Enteric Fermentation	-	-	15.8	0.0	0.0	0.0	0.0
B Manure Management	-	-	1.1	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	0.0	0.5	0.0	0.0	0.2
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	-	-	0.0	0.0	0.0	0.0	0.0
G Other	-	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	-	0.0	0.0	0.0	0.0	0.8
A Changes in Forest and Other Woody Biomass Stocks	0	-	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	-	0.0	0.0	0.0	0.0	0.8
6 Waste	6	-	2.7	0.0	0.3	0.0	0.0
A Solid Waste Disposal on Land	4	-	2.2	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	0.2	0.0	0.0	0.0	0.0
C Waste Incineration	0	-	0.0	0.0	0.3	0.0	0.0
D Other	2	-	0.3	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.8
Memo Items:							
International Bunkers	194	-	0.0	0.0	0.1	0.5	0.2
Aviation	194	-	0.0	0.0	0.1	0.5	0.2
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Emissions de CO_2 et autres gaz à effet de serre du Grand-Duché de Luxembourg, informations fournies conformément à la décision du Conseil N° 93/389/EEC*', Representation Permanente du Grand-Duché de Luxembourg aupres de l'Union Européenne, 4 August 1998'.

Note: Luxembourg delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Luxembourg 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Luxembourg 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**7,098**	**295**	**23.9**	**0.7**	**21.9**	**102.3**	**17.4**
1 Energy	6,837	-	2.6	0.2	21.7	94.0	12.0
A Fuel Combustion	6,837	-	0.7	0.2	21.7	94.0	10.2
1 Energy Industries	737	-	0.0	0.0	0.3	0.0	0.0
2 Manufacturing Industries and Construction	3,409	-	0.0	0.0	9.4	42.6	0.2
3 Transport	1,241	-	0.2	0.1	10.5	41.2	8.7
4 Other Sectors	1,375	-	0.5	0.0	1.1	9.0	1.1
5 Other	75	-	-	-	-	-	-
B Fugitive Emissions from Fuels	0	-	1.9	0.0	0.0	0.0	1.8
1 Solid Fuels	0	-	0.0	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	0	-	1.9	0.0	0.0	0.0	1.8
2 Industrial Processes	236	-	0.0	0.0	0.2	8.4	0.8
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	0	-	0.0	0.0	0.0	0.0	0.0
C Metal Production	231	-	0.0	0.0	0.2	8.4	0.6
D Other Production	0	-	0.0	0.0	0.0	0.0	0.0
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	5	-	0.0	0.0	0.0	0.0	0.1
3 Solvent and Other Product Use	11	-	0.0	0.0	0.0	0.0	3.7
4 Agriculture	0	-	17.6	0.5	0.0	0.0	0.2
A Enteric Fermentation	-	-	16.5	0.0	0.0	0.0	0.0
B Manure Management	-	-	1.1	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	0.0	0.0	0.0	0.0	0.0
D Agricultural Soils	0	-	0.0	0.5	0.0	0.0	0.2
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	0.0
F Field Burning of Agricultural Residues	-	-	0.0	0.0	0.0	0.0	0.0
G Other	-	-	0.0	0.0	0.0	0.0	0.0
5 Land-Use Change & Forestry	0	295	0.0	0.0	0.0	0.0	0.8
A Changes in Forest and Other Woody Biomass Stocks	0	295	0.0	0.0	0.0	0.0	0.0
B Forest and Grassland Conversion	0	-	0.0	0.0	0.0	0.0	0.0
C Abandonment of Managed Lands	0	-	0.0	0.0	0.0	0.0	0.0
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	0	-	0.0	0.0	0.0	0.0	0.8
6 Waste	14	-	3.7	0.0	0.0	0.0	0.0
A Solid Waste Disposal on Land	1	-	3.3	0.0	0.0	0.0	0.0
B Wastewater Handling	0	-	0.2	0.0	0.0	0.0	0.0
C Waste Incineration	13	-	0.0	0.0	0.0	0.0	0.0
D Other	0	-	0.2	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.8
Memo Items:							
International Bunkers	194	-	0.0	0.0	0.1	0.5	0.2
Aviation	194	-	0.0	0.0	0.1	0.5	0.2
Marine	0	-	0.0	0.0	0.0	0.0	0.0
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: '*Emissions de CO_2 et autres gaz à effet de serre du Grand-Duché de Luxembourg de 1996 et de 1997 (valeurs provisoires pour 1997)*', Representation Permanente du Grand-Duché de Luxembourg aupres de l'Union Européenne, 15 September 1998'.

Note: Luxembourg delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Netherlands 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Netherlands 1990	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**161,360**	**1,500**	**1,292.3**	**63.9**	**563.2**	**1,139.2**	**499.8**
1 Energy	157,950	-	213.5	5.3	545.0	979.7	266.4
A Fuel Combustion	157,530	-	34.8	5.3	543.9	973.5	218.8
1 Energy Industries	51,040	-	6.7	0.5	100.7	99.3	8.5
2 Manufacturing Industries and Construction	41,440	-	4.0	0.1	65.7	114.2	4.7
3 Transport	28,560	-	7.8	4.6	336.9	748.9	200.5
4 Other Sectors	35,400	-	16.3	0.1	40.6	11.1	5.1
5 Other	1,100	-	-	-	-	-	-
B Fugitive Emissions from Fuels	420	-	178.8	-	1.1	6.2	47.6
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	420	-	178.8	-	1.1	6.2	47.6
2 Industrial Processes	1,880	-	3.4	31.5	13.5	153.6	130.4
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	10	-	0.0	0.5	0.1	2.4	101.4
4 Agriculture	-	-	505.0	22.2	-	-	0.2
A Enteric Fermentation	-	-	402.0	-	-	-	-
B Manure Management	-	-	103.0	0.7	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	21.5	-	-	0.2
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	1,500	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	1,500	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	1,520	-	568.4	0.5	4.5	3.5	1.4
A Solid Waste Disposal on Land	-	-	562.1	-	0.3	1.4	0.2
B Wastewater Handling	-	-	6.3	0.5	-	-	-
C Waste Incineration	1,520	-	0.0	0.1	4.2	2.1	1.3
D Other	-	-	-	-	-	-	-
7 Other	-	-	2.0	3.8	-	-	-
Memo Items:							
Nature	-	-	125.0	2.4	16.3	26.7	3.2
International Bunkers	40,400	-	-	-	-	-	-
Aviation	4,500	-	-	-	-	-	-
Marine	35,900	-	-	-	-	-	-
CO_2 Emissions from Biomass	3,080	-	-	-	-	-	-

Ref.: '*Greenhouse gas emissions in the Netherlands 1990-1996: Updated methodology. A report on the International Commitments with respect to Greenhouse Gas Emission Inventories for the United Nations Framework Convention on Climate Change and the European Union's Greenhouse Gas Monitoring Mechanism',* National Institute of Public Health and the Environment, Bilthoven, The Netherlands, December 1997.

Note: The Netherlands delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Netherlands 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Netherlands 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**168,390**	**1,700**	**1,203.0**	**70.1**	**493.3**	**905.1**	**387.6**
1 Energy	165,750	-	202.3	7.2	479.6	797.0	215.8
A Fuel Combustion	165,560	-	33.7	6.9	479.1	789.4	173.5
1 Energy Industries	54,780	-	7.6	0.1	80.7	103.3	9.1
2 Manufacturing Industries and Construction	40,950	-	2.6	0.1	54.4	114.3	2.6
3 Transport	30,800	-	6.3	6.6	304.4	559.9	156.5
4 Other Sectors	38,500	-	17.3	0.1	39.5	11.9	5.3
5 Other	530	-	-	-	-	-	-
B Fugitive Emissions from Fuels	190	-	168.5	0.4	0.5	7.6	42.3
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	190	-	168.5	0.4	0.5	7.6	42.3
2 Industrial Processes	1,430	-	5.3	31.6	10.4	101.7	88.2
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	10	-	0.3	0.5	0.1	2.1	82.3
4 Agriculture	-	-	483.0	26.4	-	-	0.2
A Enteric Fermentation	-	-	382.0	-	-	-	-
B Manure Management	-	-	101.0	0.8	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	25.6	-	-	0.2
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	1,700	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	1,700	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	1,200	-	510.2	0.5	3.2	4.3	1.2
A Solid Waste Disposal on Land	-	-	505.1	-	0.3	1.4	0.2
B Wastewater Handling	-	-	5.1	0.5	-	-	-
C Waste Incineration	1,200	-	0.0	0.1	2.9	2.9	1.0
D Other	-	-	-	-	-	-	-
7 Other	-	-	2.0	3.8	-	-	-
Memo Items:							
Nature	-	-	125.0	2.4	16.3	26.7	3.2
International Bunkers	43,200	-	-	-	-	-	-
Aviation	6,700	-	-	-	-	-	-
Marine	36,500	-	-	-	-	-	-
CO_2 Emissions from Biomass	3,500	-	-	-	-	-	-

Ref.: '*Greenhouse gas emissions in the Netherlands 1990-1996: Updated methodology. A report on the International Commitments with respect to Greenhouse Gas Emission Inventories for the United Nations Framework Convention on Climate Change and the European Union's Greenhouse Gas Monitoring Mechanism',* National Institute of Public Health and the Environment, Bilthoven, The Netherlands, December 1997.

Note: The Netherlands delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Netherlands 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Netherlands 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**176,910**	**1,700**	**1,173.0**	**71.9**	**481.0**	**890.0**	**363.0**
1 Energy	173,730	-	209.0	7.9	468.0	788.0	215.0
A Fuel Combustion	173,530	-	35.2	7.9	467.3	778.9	170.0
1 Energy Industries	56,700	-	8.7	0.5	77.5	105.9	11.0
2 Manufacturing Industries and Construction	42,710	-	2.7	0.1	52.0	117.9	2.7
3 Transport	31,860	-	6.2	7.2	297.4	541.2	150.8
4 Other Sectors	39,780	-	17.6	0.1	40.4	13.8	5.5
5 Other	2,490	-	-	-	-	-	-
B Fugitive Emissions from Fuels	200	-	174.0	-	0.6	9.5	44.7
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	200	-	174.0	-	0.6	9.5	44.7
2 Industrial Processes	1,750	-	5.0	31.6	10.5	98.0	76.3
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	50	-	0.0	0.4	0.1	2.1	70.5
4 Agriculture	-	-	476.0	27.6	-	-	0.2
A Enteric Fermentation	-	-	377.0	-	-	-	-
B Manure Management	-	-	99.0	0.8	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	26.8	-	-	0.2
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	1,700	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	1,700	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	1,380	-	480.6	0.5	2.8	1.8	1.2
A Solid Waste Disposal on Land	-	-	479.1	-	0.3	1.4	0.2
B Wastewater Handling	130	-	1.5	0.5	-	-	-
C Waste Incineration	1,250	-	0.0	0.0	2.4	0.4	1.1
D Other	-	-	-	-	-	-	-
7 Other	-	-	2.0	3.8	-	-	-
Memo Items:							
Nature	-	-	125.0	2.4	16.3	26.7	3.2
International Bunkers	44,600	-	-	-	-	-	-
Aviation	7,100	-	-	-	-	-	-
Marine	37,500	-	-	-	-	-	-
CO_2 Emissions from Biomass	3,630	-	-	-	-	-	-

Ref.: '*Greenhouse gas emissions in the Netherlands 1990-1996: Updated methodology. A report on the International Commitments with respect to Greenhouse Gas Emission Inventories for the United Nations Framework Convention on Climate Change and the European Union's Greenhouse Gas Monitoring Mechanism',* National Institute of Public Health and the Environment, Bilthoven, The Netherlands, December 1997.

Note: The Netherlands delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Netherlands 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Netherlands 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**184,870**	**1,700**	**1,178.9**	**72.4**	**471.4**	**860.3**	**347.3**
1 Energy	181,870	-	230.8	8.5	460.0	761.2	208.3
A Fuel Combustion	181,730	-	39.3	8.5	459.5	754.1	167.2
1 Energy Industries	56,340	-	10.2	0.5	77.4	107.3	13.5
2 Manufacturing Industries and Construction	42,680	-	2.7	0.1	51.4	116.6	2.9
3 Transport	33,370	-	6.0	7.8	284.3	515.2	144.3
4 Other Sectors	45,880	-	20.4	0.1	46.4	15.1	6.5
5 Other	3,460	-	-	-	-	-	-
B Fugitive Emissions from Fuels	140	-	191.6	-	0.4	7.1	41.1
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	140	-	191.6	-	0.4	7.1	41.1
2 Industrial Processes	1,740	-	4.5	31.6	9.7	95.1	71.3
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	10	-	0.0	0.4	0.1	2.1	66.7
4 Agriculture	-	-	476.0	27.5	-	-	0.2
A Enteric Fermentation	-	-	377.0	-	-	-	-
B Manure Management	-	-	99.0	0.8	-	-	-
C Rice Cultivation	-	-	-	-	-	-	-
D Agricultural Soils	-	-	-	26.7	-	-	0.2
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	1,700	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	1,700	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	1,250	-	465.6	0.6	1.7	1.9	0.8
A Solid Waste Disposal on Land	-	-	464.1	-	0.3	1.4	0.2
B Wastewater Handling	-	-	1.5	0.5	-	-	-
C Waste Incineration	1,250	-	-	0.1	1.4	0.5	0.7
D Other	-	-	-	-	-	-	-
7 Other	-	-	2.0	3.8	-	-	-
Memo Items:							
Nature	-	-	125.0	2.4	16.3	26.7	3.2
International Bunkers	45,800	-	-	-	-	-	-
Aviation	8,200	-	-	-	-	-	-
Marine	37,600	-	-	-	-	-	-
CO_2 Emissions from Biomass	4,280	-	-	-	-	-	-

Ref.: '*Greenhouse gas emissions in the Netherlands 1990-1996: Updated methodology. A report on the International Commitments with respect to Greenhouse Gas Emission Inventories for the United Nations Framework Convention on Climate Change and the European Union's Greenhouse Gas Monitoring Mechanism',* National Institute of Public Health and the Environment, Bilthoven, The Netherlands, December 1997.

Note: The Netherlands delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

HFC/PFC/SF_6 emissions in the Netherlands 1990, 1994-96

Netherlands 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.489**	**-**	**0.363**	**0.058**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Netherlands 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.711**	**-**	**0.353**	**0.061**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Netherlands 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.855**	**-**	**0.353**	**0.061**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Netherlands 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**1.187**	**-**	**0.343**	**0.061**	**-**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Ref.: 'Greenhouse gas emissions in the Netherlands 1990-1996: Updated methodology. A report on the International Commitments with respect to Greenhouse Gas Emission Inventories for the United Nations Framework Convention on Climate Change and the European Union's Greenhouse Gas Monitoring Mechanism', National Institute of Public Health and the Environment, Bilthoven, The Netherlands, December 1997.

Portugal 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Portugal 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**47,123**	**1,152**	**815.8**	**14.4**	**346.2**	**1,254.5**	**282.1**
1 Energy	43,440	-	26.5	2.1	341.7	1,223.1	173.2
A Fuel Combustion	43,281	-	22.2	2.1	341.7	1,223.1	126.0
1 Energy Industries	17,015	-	8.6	0.6	77.9	277.7	26.6
2 Manufacturing Industries and Construction	7,225	-	1.6	0.2	18.2	25.3	7.6
3 Transport	14,060	-	4.8	0.5	196.9	646.7	66.7
4 Other Sectors	4,468	-	7.1	0.8	45.2	273.3	24.7
5 Other	512	-	0.2	0.0	3.6	0.2	0.3
B Fugitive Emissions from Fuels	159	-	4.3	NA	NA	NA	47.1
1 Solid Fuels	9	-	3.1	NA	NA	NA	0.0
2 Oil and Natural Gas	150	-	1.1	NA	NA	NA	47.1
2 Industrial Processes	3,421	-	0.4	1.9	4.5	30.8	17.6
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	262	-	NA	NA	NA	NA	84.1
4 Agriculture	NE	-	210.7	7.4	NE	NE	NE
A Enteric Fermentation	NA	-	123.9	NE	NE	NA	NA
B Manure Management	NA	-	67.8	IE	NE	NA	NA
C Rice Cultivation	NA	-	19.0	0.0	NA	NA	NA
D Agricultural Soils	NA	-	NE	7.4	NE	NA	NE
E Prescribed Burning of Savannas	NA	-	NA	NA	-	-	0.0
F Field Burning of Agricultural Residues	NE	-	NE	NE	-	-	0.0
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	1,152	NA	NA	NA	NA	NA
A Changes in Forest and Other Woody Biomass Stocks	-	IE	-	-	-	-	-
B Forest and Grassland Conversion	-	IE	-	-	-	-	-
C Abandonment of Managed Lands	-	IE	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	1,152	-	-	-	-	-
6 Waste	0	-	578.3	2.9	0.0	0.6	7.3
A Solid Waste Disposal on Land	-	-	IE	IE	IE	IE	IE
B Wastewater Handling	-	-	IE	IE	IE	IE	IE
C Waste Incineration	-	-	IE	IE	IE	IE	IE
D Other	-	-	578.3	2.9	0.0	0.6	7.3
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	2,062	-	2.1	0.0	36.5	2.4	0.1
Aviation	158	-	IE	IE	IE	IE	IE
Marine	1,904	-	2.1	0.0	36.5	2.4	0.1
CO_2 Emissions from Biomass	10,866	-	-	-	-	-	-

Ref.: *'Portugal's Second Report to be submitted to the Conference of the Parties to the Framework Convention on Climate Change',* Ministry of the Environment, 1997.

Note: Portugal delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Portugal 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Portugal 1994	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**50,841**	**1,152**	**834.3**	**14.5**	**379.2**	**1,462.4**	**318.6**
1 Energy	47,154	-	25.6	2.4	374.6	1,428.9	208.0
A Fuel Combustion	46,953	-	22.2	2.4	374.6	1,428.9	146.5
1 Energy Industries	17,150	-	8.6	0.6	78.5	277.9	26.5
2 Manufacturing Industries and Construction	7,178	-	1.7	0.2	19.0	28.3	7.8
3 Transport	16,849	-	4.7	0.8	226.3	847.8	87.0
4 Other Sectors	5,074	-	7.1	0.8	46.0	274.8	24.8
5 Other	701	-	0.2	0.0	4.9	0.2	0.4
B Fugitive Emissions from Fuels	201	-	3.4	NA	NA	NA	61.5
1 Solid Fuels	5	-	2.0	NA	NA	NA	0.0
2 Oil and Natural Gas	196	-	1.4	NA	NA	NA	61.5
2 Industrial Processes	3,421	-	0.4	1.9	4.5	32.9	17.7
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	266	-	NA	NA	NA	NA	85.2
4 Agriculture	NE	-	194.8	7.2	NE	NE	NE
A Enteric Fermentation	NA	-	118.6	NE	NE	NA	NA
B Manure Management	NA	-	63.0	IE	NE	NA	NA
C Rice Cultivation	NA	-	13.2	0.0	NA	NA	NA
D Agricultural Soils	NA	-	NE	7.2	NE	NA	NE
E Prescribed Burning of Savannas	NA	-	NA	NA	-	-	0.0
F Field Burning of Agricultural Residues	NE	-	NE	NE	-	-	0.0
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	1,152	NA	NA	NA	NA	NA
A Changes in Forest and Other Woody Biomass Stocks	-	IE	-	-	-	-	-
B Forest and Grassland Conversion	-	IE	-	-	-	-	-
C Abandonment of Managed Lands	-	IE	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	1,152	-	-	-	-	-
6 Waste	0	-	613.5	2.9	0.0	0.6	7.8
A Solid Waste Disposal on Land	0	-	528.3	0.0	0.0	0.6	6.7
B Wastewater Handling	0	-	85.2	2.9	0.0	0.0	1.1
C Waste Incineration	0	-	0.0	0.0	0.0	0.0	0.0
D Other	0	-	0.0	0.0	0.0	0.0	0.0
7 Other	0	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	3,300	-	1,850.0	1.7	0.0	30.1	2.3
Aviation	1,800	-	1,850.0	1.7	0.0	30.1	2.3
Marine	1,500	-	IE	IE	IE	IE	IE
CO_2 Emissions from Biomass	11,052	-	-	-	-	-	-

Ref.: *'Portugal's Second Report to be submitted to the Conference of the Parties to the Framework Convention on Climate Change',* Ministry of the Environment, 1997.

Note: Portugal delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Spain 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Spain 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**226,423**	**28,970**	**2,181.2**	**94.2**	**1,164.4**	**4,733.8**	**1,123.3**
1 Energy	208,006	-	762.4	20.2	1,140.5	4,019.7	639.4
A Fuel Combustion	207,592	-	75.6	20.2	1,140.5	4,019.7	450.5
1 Energy Industries	75,184	-	12.4	10.2	274.2	21.6	29.6
2 Manufacturing Industries and Construction	47,971	-	6.0	5.2	187.5	432.7	17.5
3 Transport	58,260	-	12.2	2.0	566.0	2,620.5	327.5
4 Other Sectors	26,177	-	45.1	2.8	112.7	944.9	75.9
5 Other	-	-	-	-	-	-	-
B Fugitive Emissions from Fuels	414	-	686.7	0.0	0.0	0.0	188.9
1 Solid Fuels	-	-	612.5	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	414	-	74.3	0.0	0.0	0.0	188.9
2 Industrial Processes	17,690	-	2.0	10.4	11.8	247.4	52.1
A Mineral Products	15,067	-	0.0	0.0	0.0	0.0	0.0
B Chemical Industry	688	-	0.6	10.4	8.2	0.0	18.7
C Metal Production	1,417	-	1.3	0.0	1.8	247.4	1.5
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	518	-	0.0	0.0	1.9	0.0	31.9
3 Solvent and Other Product Use	0	-	0.0	0.0	0.0	0.0	309.5
4 Agriculture	0	-	925.6	63.5	5.8	396.7	96.3
A Enteric Fermentation	0	-	345.6	0.0	0.0	0.0	0.0
B Manure Management	0	-	464.6	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	10.8	0.4	0.0	0.0	0.0
D Agricultural Soils	0	-	82.7	63.2	0.0	0.0	74.4
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	0	-	21.9	0.0	5.8	396.7	21.9
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	28,970	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	28,970	-	-	-	-	-
6 Waste	0	-	491.3	0.1	6.4	69.9	26.1
A Solid Waste Disposal on Land	0	-	471.5	0.0	5.2	57.8	20.7
B Wastewater Handling	0	-	0.0	0.0	0.0	0.0	0.3
C Waste Incineration	-	-	-	-	-	-	-
D Other	0	-	19.8	0.1	1.2	12.1	5.1
7 Other	727	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	18,024	-	2.0	0.3	272.9	17.0	11.4
Aviation	5,948	-	1.5	-	23.6	9.8	0.2
Marine	12,076	-	0.6	0.3	249.3	7.2	11.2
CO_2 Emissions from Biomass	12,304	-	-	-	-	-	-

Ref.: '*Inventario de gases de effecto invernadero 1990-1995'*, Submission to the Commission under the Monitoring Mechanism, 5 March 1999

Note (1): The national communication excludes CO_2 emissions from sector 4 and 6 for the national total as they are considered to be from renewable sources (sector 4: 18 725 Gg and sector 6: 2 161 Gg CO_2).

Note (2): Spain delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the *Revised 1996 IPCC Guidelines* for consistency reasons.

Spain 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Spain 1994	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**237,446**	**28,970**	**2,331.5**	**87.5**	**1,205.8**	**4,624.2**	**1,186.3**
1 Energy	220,168	-	696.3	21.8	1,181.9	3,959.8	669.0
A Fuel Combustion	219,730	-	75.1	21.8	1,181.9	3,959.8	467.2
1 Energy Industries	77,645	-	12.5	10.6	278.8	26.1	31.4
2 Manufacturing Industries and Construction	52,657	-	6.3	5.7	198.3	422.0	19.3
3 Transport	61,625	-	13.1	2.7	592.8	2,582.4	343.1
4 Other Sectors	27,803	-	43.2	2.9	112.0	929.3	73.4
5 Other	-	-	-	-	-	-	-
B Fugitive Emissions from Fuels	438	-	621.3	0.0	0.0	0.0	201.8
1 Solid Fuels	0	-	528.1	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	438	-	93.2	0.0	0.0	0.0	201.8
2 Industrial Processes	16,469	-	2.3	8.0	8.8	242.0	48.1
A Mineral Products	14,215	-	0.0	0.0	0.0	0.0	0.0
B Chemical Industry	643	-	1.0	8.0	5.4	0.0	22.0
C Metal Production	1,304	-	1.3	0.0	1.9	242.0	1.5
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	307	-	0.0	0.0	1.6	0.0	24.6
3 Solvent and Other Product Use	0	-	0.0	0.0	0.0	0.0	341.9
4 Agriculture	0	-	949.4	57.5	5.1	346.0	90.1
A Enteric Fermentation	0	-	345.2	0.0	0.0	0.0	0.0
B Manure Management	0	-	499.3	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	8.0	0.3	0.0	0.0	0.0
D Agricultural Soils	0	-	78.2	57.2	0.0	0.0	71.1
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	0	-	18.9	0.0	5.1	346.0	18.9
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	28,970	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	28,970	-	-	-	-	-
6 Waste	0	-	683.4	0.1	9.9	76.4	37.3
A Solid Waste Disposal on Land	0	-	655.6	0.0	5.5	61.8	22.1
B Wastewater Handling	0	-	0.0	0.0	0.0	0.0	0.6
C Waste Incineration	-	-	-	-	-	-	-
D Other	0	-	27.8	0.1	4.4	14.5	14.6
7 Other	809	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	19,144	-	2.,3	0.3	286.9	18.5	12.2
Aviation	6,726	-	1.7	-	26.7	11.1	0.2
Marine	12,418	-	0.6	0.3	260.2	7.4	12.0
CO_2 Emissions from Biomass	12,631	-	-	-	-	-	-

Ref.: '*Inventario de gases de effecto invernadero 1990-1995',* Submission to the Commission under the Monitoring Mechanism, 5 March 1999

Note (1): The national communication excludes CO_2 emissions from sector 4 and 6 for the national total as they are considered to be from renewable sources (sector 4: 18 400 Gg and sector 6: 2 562 Gg CO_2).

Note (2): Spain delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Spain 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Spain 1995	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**247,703**	**-**	**2,370.4**	**90.5**	**1,221.6**	**4,356.8**	**1,152.0**
1 Energy	230,093	-	700.6	23.3	1,200.1	3,732.8	643.0
A Fuel Combustion	229,675	-	71.9	23.3	1,200.1	3,732.8	445.2
1 Energy Industries	84,330	-	12.9	11.8	293.6	29.8	31.4
2 Manufacturing Industries and Construction	52,968	-	5.3	5.5	194.1	357.5	16.7
3 Transport	64,268	-	11.8	3.0	598.3	2,433.6	324.2
4 Other Sectors	28,110	-	41.9	3.0	114.0	911.9	72.9
5 Other	-	-	-	-	-	-	-
B Fugitive Emissions from Fuels	418	-	628.7	0.0	0.0	0.0	197.8
1 Solid Fuels	0	-	520.1	0.0	0.0	0.0	0.0
2 Oil and Natural Gas	418	-	108.6	0.0	0.0	0.0	197.8
2 Industrial Processes	17,278	-	2.0	8.4	9.2	244.4	49.7
A Mineral Products	14,806	-	0.0	0.0	0.0	0.0	0.0
B Chemical Industry	656	-	0.9	8.4	5.6	0.0	22.3
C Metal Production	1,503	-	1.1	0.0	1.9	244.4	1.6
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	313	-	0.0	0.0	1.7	0.0	25.8
3 Solvent and Other Product Use	0	-	0.0	0.0	0.0	0.0	331.9
4 Agriculture	0	-	949.3	58.6	4.5	302.8	87.6
A Enteric Fermentation	0	-	342.9	0.0	0.0	0.0	0.0
B Manure Management	0	-	504.7	0.0	0.0	0.0	0.0
C Rice Cultivation	0	-	6.5	0.2	0.0	0.0	0.0
D Agricultural Soils	0	-	78.8	58.4	0.0	0.0	71.2
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	0	-	16.4	0.0	4.5	302.8	16.4
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	-	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	-	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	0	-	718.5	0.2	7.9	76.9	39.7
A Solid Waste Disposal on Land	0	-	659.2	0.0	5.5	61.8	22.1
B Wastewater Handling	0	-	0.0	0.0	0.0	0.0	0.6
C Waste Incineration	-	-	-	-	-	-	-
D Other	0	-	59.3	0.2	2.3	15.1	17.0
7 Other	332	-	0.0	0.0	0.0	0.0	0.0
Memo Items:							
International Bunkers	19,144	-	2.,3	0.3	286.9	18.5	12.2
Aviation	6,726	-	1.7	-	26.7	11.1	0.2
Marine	12,418	-	0.6	0.3	260.2	7.4	12.0
CO_2 Emissions from Biomass	12,438	-	-	-	-	-	-

Ref.: '*Inventario de gases de effecto invernadero 1990-1995'*, Submission to the Commission under the Monitoring Mechanism, 5 March 1999.

Note (1): The national communication excludes CO_2 emissions from sector 4 and 6 for the national total as they are considered to be from renewable sources (sector 4: 17 386 Gg and sector 6: 2 623 Gg CO_2).

Note (2): Spain delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Sweden 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Sweden 1990	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**55,443**	**34,368**	**284.0**	**26.0**	**336.0**	**1,211.0**	**516.0**
1 Energy	51,381	-	40.0	6.0	313.0	1,205.0	382.0
A Fuel Combustion	51,328	-	40.0	6.0	313.0	1,205.0	356.0
1 Energy Industries	8,849	-	1.0	1.0	16.0	6.0	3.0
2 Manufacturing Industries and Construction	13,050	-	5.0	2.0	23.0	28.0	6.0
3 Transport	18,650	-	23.0	3.0	261.0	1,046.0	216.0
4 Other Sectors	10,672	-	10.0	1.0	12.0	124.0	131.0
5 Other	107	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	53	-	0.0	-	0.0	0.0	26.0
1 Solid Fuels	-	-	0.0	-	-	-	-
2 Oil and Natural Gas	53	-	0.0	-	0.0	0.0	26.0
2 Industrial Processes	3,786	-	0.0	3.0	23.0	6.0	42.0
A Mineral Products	2,018	-	-	-	-	0.0	6.0
B Chemical Industry	0	-	0.0	3.0	5.0	0.0	5.0
C Metal Production	396	-	0.0	0.0	2.0	2.0	0.0
D Other Production	31	-	-	-	0.0	0.0	0.0
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	1,341	-	0.0	0.0	10.0	4.0	30.0
3 Solvent and Other Product Use	276	-	-	0.0	-	-	92.0
4 Agriculture	-	-	160.0	17.0	0.0	0.0	-
A Enteric Fermentation	-	-	147.0	-	-	-	-
B Manure Management	-	-	13.0	2.0	-	-	-
C Rice Cultivation	-	-	0.0	-	-	-	-
D Agricultural Soils	-	-	-	15.0	-	-	-
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	-
F Field Burning of Agricultural Residues	-	-	0.0	0.0	0.0	0.0	-
G Other	-	-	0.0	0.0	-	-	-
5 Land-Use Change & Forestry	0	34,368	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	0	34,368	-	-	-	-	-
B Forest and Grassland Conversion	0	-	-	-	-	-	-
C Abandonment of Managed Lands	-	0	-	-	-	-	-
D CO2 Emissions and Removals from Soil	0	0	-	-	-	-	-
E Other	0	0	-	-	-	-	-
6 Waste	-	-	85.0	0.0	0.0	0.0	0.0
A Solid Waste Disposal on Land	-	-	85.0	-	-	-	-
B Wastewater Handling	-	-	0.0	0.0	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	0.0	0.0	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	4,207	-	0.0	0.0	52.0	6.0	2.0
Aviation	2,045	-	0.0	NE	4.0	4.0	1.0
Marine	2,162	-	NE	NE	48.0	3.0	1.0
CO_2 Emissions from Biomass	21,450	-	-	-	-	-	-

Ref.: Updated national GHG inventories 1990, 1996, and inventory 1997; Submission by the Swedish EPA to the EEA, 1 April 1999

Sweden 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Sweden 1994	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**58,438**	**30,000**	**302.4**	**9.3**	**329.5**	**1,142.4**	**477.5**
1 Energy	53,962	-	39.0	6.8	302.5	1,088.4	358.1
A Fuel Combustion	53,946	-	39.0	6.8	302.5	1,088.4	343.4
1 Energy Industries	11,068	-	1.7	1.2	14.2	7.4	4.6
2 Manufacturing Industries and Construction	13,938	-	5.4	2.2	18.1	30.1	5.5
3 Transport	18,685	-	20.8	2.9	260.3	914.6	187.5
4 Other Sectors	10,148	-	11.1	0.5	9.9	136.3	145.8
5 Other	107	-	-	-	-	-	-
B Fugitive Emissions from Fuels	16	-	-	-	-	-	14.7
1 Solid Fuels	-	-	-	-	-	-	-
2 Oil and Natural Gas	16	-	-	-	-	-	14.7
2 Industrial Processes	4,227	-	-	2.3	27.0	54.0	36.0
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	249	-	-	-	-	-	83.4
4 Agriculture	-	-	202.3	0.2	-	-	-
A Enteric Fermentation	-	-	183.7	-	-	-	-
B Manure Management	-	-	18.7	-	-	-	-
C Rice Cultivation	-	-	-	0.2	-	-	-
D Agricultural Soils	-	-	-	-	-	-	-
E Prescribed Burning of Savannas	-	-	-	-	-	-	-
F Field Burning of Agricultural Residues	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	30,000	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	30,000	-	-	-	-	-
B Forest and Grassland Conversion	-	-	-	-	-	-	-
C Abandonment of Managed Lands	-	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	-	-	61.0	-	-	-	-
A Solid Waste Disposal on Land	-	-	61.0	-	-	-	-
B Wastewater Handling	-	-	-	-	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	5,400	-	0.1	NE	54.0	6.2	1.6
Aviation	2,100	-	IE	-	IE	IE	IE
Marine	3,300	-	0.1	-	54.0	6.2	1.6
CO_2 Emissions from Biomass	-	-	-	-	-	-	-

Ref.: *'Swedish submission of annual inventories of greenhouse gases for 1996 (preliminary) and revisions for the years 1990 through 1995'*, Ministry of the Environment, 9 March 1998.

Note: Sweden delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Sweden 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES							
Sweden 1995	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**58,108**	**30,000**	**297.0**	**9.2**	**309.0**	**1,089.0**	**457.0**
1 Energy	53,401	-	38.0	6.8	281.0	1,040.0	337.0
A Fuel Combustion	53,385	-	38.0	6.8	281.0	1,040.0	322.0
1 Energy Industries	10,493	-	2.0	1.1	11.8	10.7	5.2
2 Manufacturing Industries and Construction	13,541	-	5.7	2.3	20.0	32.2	6.2
3 Transport	19,341	-	20.2	2.9	241.0	873.1	178.9
4 Other Sectors	9,903	-	10.1	0.5	8.6	124.2	132.2
5 Other	107	-	NE	NE	NE	NE	NE
B Fugitive Emissions from Fuels	16	-	NE	-	-	-	14.7
1 Solid Fuels	NO	-	NO	-	-	-	NO
2 Oil and Natural Gas	16	-	NE	-	-	-	14.7
2 Industrial Processes	4,458	-	NE	2.3	27.5	49.0	36.1
A Mineral Products	-	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	-	-	-	-	-	-	-
3 Solvent and Other Product Use	249	-	-	NE	-	-	83.4
4 Agriculture	-	-	198.0	0.2	-	-	-
A Enteric Fermentation	-	-	179.3	-	-	-	-
B Manure Management	-	-	19.1	-	-	-	-
C Rice Cultivation	NO	-	NO	NO	-	-	-
D Agricultural Soils	NE	-	-	0.2	-	-	-
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	NO	NO	NO	NO	NO
G Other	-	-	-	-	-	-	-
5 Land-Use Change & Forestry	-	30,000	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	-	30,000	-	-	-	-	-
B Forest and Grassland Conversion	NE	-	-	-	-	-	-
C Abandonment of Managed Lands	NE	-	-	-	-	-	-
D CO2 Emissions and Removals from Soil	-	-	-	-	-	-	-
E Other	-	-	-	-	-	-	-
6 Waste	-	-	61.0	-	-	-	-
A Solid Waste Disposal on Land	-	-	61.0	-	-	-	-
B Wastewater Handling	-	-	NE	-	-	-	-
C Waste Incineration	IE	-	IE	IE	IE	IE	IE
D Other	-	-	-	-	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	5,367	-	0.1	NE	54.0	6.0	1.5
Aviation	2,067	-	IE	-	IE	IE	IE
Marine	3,300	-	0.1	-	54.0	6.0	1.5
CO_2 Emissions from Biomass	IE	-	IE	IE	IE	IE	IE

Ref.: *'Swedish submission of annual inventories of greenhouse gases for 1996 (preliminary) and revisions for the years 1990 through 1995'*, Ministry of the Environment, 9 March 1998.

Note: Sweden delivered data in accordance with the *1995 IPCC Guidelines*. This table presents these data in the format of the Revised 1996 IPCC Guidelines for consistency reasons.

Sweden 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

Sweden 1996	EMISSION ESTIMATES (Gg)						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**63,352**	**31,774**	**261.0**	**26.0**	**301.0**	**1,082.0**	**458.0**
1 Energy	59,391	-	38.0	7.0	273.0	1,033.0	338.0
A Fuel Combustion	59,391	-	38.0	7.0	273.0	1,033.0	323.0
1 Energy Industries	14,295	-	2.0	2.0	15.0	13.0	5.0
2 Manufacturing Industries and Construction	14,400	-	5.0	3.0	48.0	40.0	10.0
3 Transport	19,573	-	19.0	2.0	172.0	829.0	160.0
4 Other Sectors	11,016	-	11.0	1.0	38.0	151.0	149.0
5 Other	107	-	0.0	0.0	0.0	0.0	0.0
B Fugitive Emissions from Fuels	0	-	0.0	-	0.0	0.0	15.0
1 Solid Fuels	-	-	0.0	-	-	-	-
2 Oil and Natural Gas	-	-	0.0	-	0.0	0.0	15.0
2 Industrial Processes	3,711	-	0.0	3.0	27.0	49.0	36.0
A Mineral Products	1,953	-	-	-	-	0.0	0.0
B Chemical Industry	0	-	0.0	3.0	4.0	0.0	3.0
C Metal Production	457	-	0.0	0.0	4.0	49.0	1.0
D Other Production	31	-	-	-	0.0	0.0	33.0
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-	-
G Other	1,271	-	0.0	0.0	13.0	0.0	0.0
3 Solvent and Other Product Use	250	-	-	0.0	-	-	83.0
4 Agriculture	-	-	163.0	17.0	0.0	0.0	-
A Enteric Fermentation	-	-	146.0	-	-	-	-
B Manure Management	-	-	16.0	2.0	-	-	-
C Rice Cultivation	-	-	0.0	-	-	-	-
D Agricultural Soils	-	-	-	15.0	-	-	-
E Prescribed Burning of Savannas	-	-	0.0	0.0	0.0	0.0	-
F Field Burning of Agricultural Residues	-	-	0.0	0.0	0.0	0.0	-
G Other	-	-	0.0	0.0	-	-	-
5 Land-Use Change & Forestry	0	31,774	-	-	-	-	-
A Changes in Forest and Other Woody Biomass Stocks	0	31,774	-	-	-	-	-
B Forest and Grassland Conversion	0	-	-	-	-	-	-
C Abandonment of Managed Lands	-	0	-	-	-	-	-
D CO2 Emissions and Removals from Soil	0	0	-	-	-	-	-
E Other	0	0	-	-	-	-	-
6 Waste	-	-	61.0	0.0	0.0	0.0	0.0
A Solid Waste Disposal on Land	-	-	61.0	-	-	-	-
B Wastewater Handling	-	-	0.0	0.0	-	-	-
C Waste Incineration	-	-	-	-	-	-	-
D Other	-	-	0.0	0.0	-	-	-
7 Other	-	-	-	-	-	-	-
Memo Items:							
International Bunkers	4,899	-	0.0	0.0	53.0	3.0	0.0
Aviation	1,302	-	0.0	0.0	4.0	1.0	0.0
Marine	3,597	-	0.0	0.0	50.0	3.0	0.0
CO_2 Emissions from Biomass	25,833	-	-	-	-	-	-

Ref.: Updated national GHG inventories 1990, 1996, and inventory 1997; Submission by the Swedish EPA to the EEA, 1 April 1999

HFC/PFC/SF_6 emissions in Sweden 1990, 1994-96

Sweden 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.000**	**0.000**	**0.000**	**NE**	**0.000**	**NE**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Sweden 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.150**	**-**	**0.060**	**-**	**0.052**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Sweden 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**-**	**0.150**	**-**	**0.060**	**-**	**0.050**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Sweden 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
2 Industrial Processes	-	-	-	-	-	-
A Mineral Products	-	-	-	-	-	-
B Chemical Industry	-	-	-	-	-	-
C Metal Production	-	-	-	-	-	-
D Other Production	-	-	-	-	-	-
E Production of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
F Consumption of Halocarbons and Sulphur Hexafluoride	-	-	-	-	-	-
G Other	-	-	-	-	-	-

Ref.: *'Swedish submission of annual inventories of greenhouse gases for 1996 (preliminary) and revisions for the years 1990 through 1995'*, Ministry of the Environment, 9 March 1998 and Updated national GHG Inventories 1990, 1996, and inventory 1997; Submission by the Swedish EPA to the EEA, 1 April 1999

United Kingdom 1990

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

United Kingdom 1990	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	CO_2	CO_2 **Removals**	CH_4	N_2O	NO_x	CO	NMVOC
Total National Emissions and Removals	**614,825**	**11,453**	**4,438.0**	**215.0**	**2,747.0**	**6,685.0**	**2,550.0**
1 Energy	568,589	-	1,424.8	15.5	2,722.6	6,366.7	1,571.3
A Fuel Combustion	558,774	-	105.3	15.5	2,715.1	6,331.4	1,148.5
1 Energy Industries	230,775	-	7.5	6.3	885.0	315.8	6.9
2 Manufacturing Industries and Construction	94,627	-	13.1	3.1	245.4	690.6	46.9
3 Transport	115,901	-	31.5	4.2	1,389.5	4,852.9	979.2
4 Other Sectors	112,207	-	53.0	1.7	141.0	463.9	113.7
5 Other	5,264	-	0.2	0.2	54.3	8.2	1.8
B Fugitive Emissions from Fuels	9,815	-	1,319.5	NE	7.4	35.3	422.8
1 Solid Fuels	907	-	818.6	NO	2.3	1.6	3.6
2 Oil and Natural Gas	8,908	-	500.9	NE	5.2	33.7	419.3
2 Industrial Processes	13,916	-	0.8	95.3	11.0	49.7	244.3
A Mineral Products	8,132	-	NO	NO	NO	NO	9.8
B Chemical Industry	1,365	-	NO	95.2	8.1	NE	150.4
C Metal Production	4,420	-	0.8	0.0	3.0	49.7	5.2
D Other Production	NO	-	NO	NO	NO	NO	78.9
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other	NO	-	NO	NO	NO	NO	NO
3 Solvent and Other Product Use	NO	-	NO	NO	NO	NO	680.5
4 Agriculture	NO	-	1,089.6	103.8	9.1	266.0	35.0
A Enteric Fermentation	NO	-	953.0	NO	NO	NO	NO
B Manure Management	NO	-	124.0	5.2	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	NO	98.4	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	13.0	0.3	9.1	266.0	35.0
G Other	NO	-	NO	NO	NO	NO	NO
5 Land-Use Change & Forestry	31,660	11,453	NE	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	9,685	NE	NO	NO	NO	NO
B Forest and Grassland Conversion	26,563	-	NE	NO	NO	NO	NO
C Abandonment of Managed Lands	-	1,402	NO	NO	NO	NO	NO
D CO2 Emissions and Removals from Soil	1,430	-	NE	NO	NO	NO	NO
E Other	3,667	367	NE	NO	NO	NO	NO
6 Waste	660	-	1,923.0	0.4	4.5	2.9	19.0
A Solid Waste Disposal on Land	0	-	1,890.0	NO	NO	NO	18.9
B Wastewater Handling	0	-	33.0	NE	NO	NO	NO
C Waste Incineration	660	-	0.0	0.4	4.5	2.9	0.1
D Other	-	-	-	-	-	-	-
7 Other	NO	-	NO	NO	NO	NO	0.0
Memo Items:							
International Bunkers	21,349	-	3.5	0.9	192.4	75.6	41.3
Aviation	14,790	-	2.9	0.5	72.8	60.1	36.9
Marine	6,559	-	0.6	0.4	119.6	15.5	4.4
CO_2 Emissions from Biomass	1,136	-	-	-	-	-	-

Ref.: *'UK Greenhouse Gas Emission Inventory, 1990 to 1996',* December 1998.

United Kingdom 1994

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

United Kingdom 1994	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**583,502**	**18,040**	**3,785.0**	**188.0**	**2,289.0**	**5,359.0**	**2,248.0**
1 Energy	540,873	-	894.9	17.8	2,279.0	5,313.5	1,385.0
A Fuel Combustion	531,436	-	100.1	17.8	2,273.2	5,279.0	947.6
1 Energy Industries	198,905	-	12.8	5.7	647.1	240.5	8.9
2 Manufacturing Industries and Construction	92,249	-	12.9	2.9	234.0	687.0	46.3
3 Transport	118,353	-	26.9	7.3	1,210.5	3,922.9	790.7
4 Other Sectors	118,221	-	47.2	1.6	142.1	422.8	100.5
5 Other	3,707	-	0.2	0.2	39.5	5.9	1.3
B Fugitive Emissions from Fuels	9,437	-	794.8	NE	5.8	34.5	437.4
1 Solid Fuels	208	-	326.7	NO	0.8	0.5	2.7
2 Oil and Natural Gas	9,228	-	468.2	NE	5.0	34.0	434.7
2 Industrial Processes	11,836	-	0.5	72.6	7.2	43.2	225.1
A Mineral Products	7,057	-	NO	NO	NO	NO	10.2
B Chemical Industry	1,095	-	NO	72.5	4.6	NE	129.5
C Metal Production	3,685	-	0.5	0.0	2.6	43.2	5.0
D Other Production	NO	-	NO	NO	NO	NO	80.4
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other	NO	-	NO	NO	NO	NO	NO
3 Solvent and Other Product Use	NO	-	NO	NO	NO	NO	620.3
4 Agriculture	NO	-	1,063.6	97.6	0.0	0.0	0.0
A Enteric Fermentation	NO	-	939.8	NO	NO	NO	NO
B Manure Management	NO	-	123.8	5.1	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	NO	92.6	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	0.0	0.0	0.0	0.0	0.0
G Other	NO	-	NO	NO	NO	NO	NO
5 Land-Use Change & Forestry	30,355	18,040	NE	NE	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	10,495	NE	NE	NO	NO	NO
B Forest and Grassland Conversion	25,418	-	NE	NO	NO	NO	NO
C Abandonment of Managed Lands	-	7,179	NE	NO	NO	NO	NO
D CO2 Emissions and Removals from Soil	1,270	-	NO	NO	NO	NO	NO
E Other	3,667	367	NE	NO	NO	NO	NO
6 Waste	439	-	1,826.0	0.3	3.1	2.3	18.0
A Solid Waste Disposal on Land	0	-	1,790.0	NO	NO	NO	17.9
B Wastewater Handling	0	-	36.0	NE	NO	NO	NO
C Waste Incineration	439	-	0.0	0.3	3.1	2.3	0.1
D Other	-	-	-	-	-	-	-
7 Other	NO	-	NO	NO	NO	NO	0.0
Memo Items:							
International Bunkers	24,243	-	3.8	1.0	201.7	84.9	47.2
Aviation	18,094	-	3.2	0.6	89.6	70.3	43.0
Marine	6,150	-	0.6	0.4	112.1	14.5	4.2
CO_2 Emissions from Biomass	1,136	-	-	-	-	-	-

Ref.: *'UK Greenhouse Gas Emission Inventory, 1990 to 1996',* December 1998.

United Kingdom 1995

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

United Kingdom 1995	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**574,054**	**18,826**	**3,751.0**	**183.0**	**2,137.0**	**4,935.0**	**2,117.0**
1 Energy	531,977	-	912.5	18.9	2,129.5	4,888.6	1,262.7
A Fuel Combustion	524,887	-	90.0	18.9	2,123.7	4,863.9	861.8
1 Energy Industries	199,905	-	14.5	5.9	595.0	229.8	7.2
2 Manufacturing Industries and Construction	90,142	-	12.9	2.7	224.1	640.5	43.4
3 Transport	117,288	-	25.4	8.8	1,128.2	3,628.7	718.0
4 Other Sectors	114,156	-	37.1	1.4	139.0	359.3	91.9
5 Other	3,396	-	0.2	0.1	37.4	5.5	1.2
B Fugitive Emissions from Fuels	7,091	-	822.5	NE	5.8	24.7	400.9
1 Solid Fuels	185	-	360.6	NO	0.7	0.5	2.7
2 Oil and Natural Gas	6,905	-	461.9	NE	5.1	24.2	398.1
2 Industrial Processes	11,344	-	0.7	66.1	4.5	44.4	221.2
A Mineral Products	7,173	-	NO	NO	NO	NO	9.6
B Chemical Industry	786	-	NO	66.1	1.7	NE	125.6
C Metal Production	3,385	-	0.7	0.0	2.8	44.4	5.0
D Other Production	NO	-	NO	NO	NO	NO	81.0
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other	NO	-	NO	NO	NO	NO	NO
3 Solvent and Other Product Use	NO	-	NO	NO	NO	NO	615.5
4 Agriculture	NO	-	1,054.0	98.0	0.0	0.0	NO
A Enteric Fermentation	NO	-	931.6	NO	NO	NO	NO
B Manure Management	NO	-	122.4	5.0	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	NO	93.0	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NE	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	0.0	0.0	0.0	0.0	0.0
G Other	NO	-	NO	NO	NO	NO	NO
5 Land-Use Change & Forestry	30,300	18,826	NE	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	10,584	NE	NO	NO	NO	NO
B Forest and Grassland Conversion	25,104	-	NE	NO	NO	NO	NO
C Abandonment of Managed Lands	-	7,876	NE	NO	NO	NO	NO
D CO2 Emissions and Removals from Soil	1,529	-	NO	NO	NO	NO	NO
E Other	3,667	367	NE	NO	NO	NO	NO
6 Waste	432	-	1,784.0	0.3	3.0	2.0	16.6
A Solid Waste Disposal on Land	0	-	1,750.0	NO	NO	NO	17.5
B Wastewater Handling	0	-	34.0	NO	NO	NO	NO
C Waste Incineration	432	-	0.0	0.3	3.0	2.0	0.1
D Other	-	-	-	-	-	-	-
7 Other	NO	-	NO	NO	NO	NO	0.0
Memo Items:							
International Bunkers	26,086	-	4.0	1.0	217.2	89.8	49.8
Aviation	19,487	-	3.4	0.6	96.8	74.2	45.3
Marine	6,599	-	0.6	0.4	120.3	15.6	4.5
CO_2 Emissions from Biomass	1,136	-	-	-	-	-	-

Ref.: *'UK Greenhouse Gas Emission Inventory, 1990 to 1996'*, December 1998.

United Kingdom 1996

IPCC TABLE 7A - SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES

United Kingdom 1996	**EMISSION ESTIMATES (Gg)**						
Greenhouse Gas Source and Sink Categories	**CO_2**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**NMVOC**
Total National Emissions and Removals	**593,422**	**18,672**	**3,712.0**	**189.0**	**2,052.0**	**4,641.0**	**2,028.0**
1 Energy	551,369	-	893.5	20.5	2,044.6	4,594.1	1,199.6
A Fuel Combustion	543,880	-	93.5	20.5	2,038.7	4,567.7	800.4
1 Energy Industries	199,698	-	17.0	6.1	556.1	207.0	8.0
2 Manufacturing Industries and Construction	91,742	-	13.2	2.6	223.7	656.1	44.4
3 Transport	121,882	-	24.2	10.2	1,070.7	3,330.2	651.9
4 Other Sectors	127,481	-	39.0	1.6	153.2	369.3	94.9
5 Other	3,077	-	0.2	0.1	35.1	5.1	1.2
B Fugitive Emissions from Fuels	7,488	-	800.0	NE	5.9	26.4	399.2
1 Solid Fuels	50	-	338.4	NO	0.4	0.2	2.7
2 Oil and Natural Gas	7,438	-	461.6	NE	5.5	26.2	396.5
2 Industrial Processes	11,703	-	0.7	70.3	4.4	45.2	207.8
A Mineral Products	7,036	-	NO	NO	NO	NO	8.5
B Chemical Industry	862	-	NO	70.3	1.6	NE	113.3
C Metal Production	3,805	-	0.7	0.0	2.8	45.2	5.1
D Other Production	NO	-	NO	NO	NO	NO	81.0
E Production of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	NO	-	NO	NO	NO	NO	NO
G Other	NO	-	NO	NO	NO	NO	NO
3 Solvent and Other Product Use	NO	-	NO	NO	NO	NO	603.7
4 Agriculture	NO	-	1,063.6	98.3	0.0	0.0	0.0
A Enteric Fermentation	NO	-	939.9	NO	NO	NO	NO
B Manure Management	NO	-	123.7	5.1	NO	NO	NO
C Rice Cultivation	NO	-	NO	NO	NO	NO	NO
D Agricultural Soils	NO	-	NO	93.2	NO	NO	NO
E Prescribed Burning of Savannas	NO	-	NO	NO	NO	NO	NO
F Field Burning of Agricultural Residues	NO	-	0.0	0.0	0.0	0.0	0.0
G Other	NO	-	NO	NO	NO	NO	NO
5 Land-Use Change & Forestry	29,971	18,672	NE	NO	NO	NO	NO
A Changes in Forest and Other Woody Biomass Stocks	-	10,624	NE	NO	NO	NO	NO
B Forest and Grassland Conversion	24,789	-	NE	NO	NO	NO	NO
C Abandonment of Managed Lands	-	7,681	NE	NO	NO	NO	NO
D CO2 Emissions and Removals from Soil	1,515	-	NO	NO	NO	NO	NO
E Other	3,667	367	NE	NO	NO	NO	NO
6 Waste	378	-	1,754.0	0.2	2.7	1.9	17.3
A Solid Waste Disposal on Land	0	-	1,720.0	NO	NO	NO	17.2
B Wastewater Handling	0	-	34.0	NO	NO	NO	NO
C Waste Incineration	378	-	0.0	0.2	2.7	1.9	0.1
D Other	-	-	-	-	-	-	-
7 Other	NO	-	NO	NO	NO	NO	0.0
Memo Items:							
International Bunkers	28,163	-	4.2	1.1	235.8	95.8	52.9
Aviation	20,950	-	3.6	0.6	104.3	78.8	48.1
Marine	7,213	-	0.7	0.5	131.5	17.1	4.9
CO_2 Emissions from Biomass	1,136	-	-	-	-	-	-

Ref.: *'UK Greenhouse Gas Emission Inventory, 1990 to 1996',* December 1998.

HFC/PFC/SF_6 emissions in The United Kingdom 1990, 1994-96

United Kingdom 1990	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**0.034**	**1.049**	**0.037**	**0.308**	**0.100**	**0.024**
2 Industrial Processes	0.034	1.049	0.037	0.308	0.100	0.024
A Mineral Products	NO	NO	NO	NO	NO	NO
B Chemical Industry	NO	NO	NO	NO	NO	NO
C Metal Production	NO	NO	NO	0.300	0.020	0.020
D Other Production	NO	NO	NO	NO	NO	NO
E Production of Halocarbons and Sulphur Hexafluoride	NO	1.040	NO	0.000	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	0.034	0.009	0.037	0.008	0.080	0.004
G Other	NO	NO	NO	NO	NO	NO

United Kingdom 1994	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**1.299**	**1.577**	**0.062**	**0.069**	**0.100**	**0.026**
2 Industrial Processes	1.299	1.577	0.062	0.069	0.100	0.026
A Mineral Products	NO	NO	NO	NO	NO	NO
B Chemical Industry	NO	NO	NO	NO	NO	NO
C Metal Production	NO	NO	NO	0.060	0.020	0.020
D Other Production	NO	NO	NO	NO	NO	NO
E Production of Halocarbons and Sulphur Hexafluoride	NO	1.206	NO	0.000	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	1.299	0.371	0.062	0.009	0.080	0.006
G Other	NO	NO	NO	NO	NO	NO

United Kingdom 1995	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**1.903**	**1.958**	**0.122**	**0.081**	**0.105**	**0.030**
2 Industrial Processes	1.903	1.958	0.122	0.081	0.105	0.030
A Mineral Products	NO	NO	NO	NO	NO	NO
B Chemical Industry	NO	NO	NO	NO	NO	NO
C Metal Production	NO	NO	NO	0.055	0.025	0.025
D Other Production	NO	NO	NO	NO	NO	NO
E Production of Halocarbons and Sulphur Hexafluoride	NO	1.168	NO	0.000	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	1.903	0.791	0.122	0.026	0.080	0.005
G Other	NO	NO	NO	NO	NO	NO

United Kingdom 1996	HFC		PFC		SF_6	
Estimates in Gg	P	A	P	A	P	A
Total National Emissions and Removals	**2.509**	**2.150**	**0.128**	**0.079**	**0.110**	**0.035**
2 Industrial Processes	2.509	2.150	0.128	0.079	0.110	0.035
A Mineral Products	NO	NO	NO	NO	NO	NO
B Chemical Industry	NO	NO	NO	NO	NO	NO
C Metal Production	NO	NO	NO	0.050	0.030	0.030
D Other Production	NO	NO	NO	NO	NO	NO
E Production of Halocarbons and Sulphur Hexafluoride	NO	1.208	NO	0.000	NO	NO
F Consumption of Halocarbons and Sulphur Hexafluoride	2.509	0.942	0.128	0.029	0.080	0.005
G Other	NO	NO	NO	NO	NO	NO

Ref.: *'UK Greenhouse Gas Emission Inventory, 1990 to 1996',* December 1998