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SUBSIDIARY BODY FOR IMPLEMENTATION

Sixth session  
Bonn, 28 July - 5 August 1997  
Item 4 (a) of the provisional agenda

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Sixth session  
Bonn, 28 July - 5 August 1997  
Item 6 (a) of the provisional agenda

NATIONAL COMMUNICATIONS

COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I  
TO THE CONVENTION

Updated information on greenhouse gas emissions and projections

Note by the secretariat

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## I. INTRODUCTION

### A. Mandate

1. The Conference of the Parties, at its second session (COP 2), by its decision 9/CP.2,<sup>1</sup> requested Annex I Parties to submit their second national communication by 15 April 1997. For those Parties which were due to submit the first communication in 1996, an update of this communication was to be submitted by the same date; second national communications by Parties with economies in transition should in principle be submitted not later than 15 April 1998. National inventory data on emissions by sources and removals by sinks are to be submitted on an annual basis by 15 April of each year. By the same decision, COP 2 requested the secretariat to prepare the documentation on the results of the review of second national communications, including compilation and synthesis and/or other reports, according to schedules to be adopted by the subsidiary bodies. A first compilation and synthesis of second national communications from Annex I Parties should be available for consideration by the Conference of the Parties at its third session.
2. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its fifth session, *inter alia*, requested the secretariat to prepare an initial compilation and synthesis by the seventh session of the SBSTA of all communications received by 15 April 1997 (see document FCCC/SBSTA/1997/4).

### B. Scope of the note

3. The present note compiles, in a preliminary manner, the latest available **numerical data** on greenhouse gas inventories and projections drawn from both first and second national communications as well as from in-depth review reports and annual inventory submissions, where appropriate. Thus this note is not to be regarded as a compilation and synthesis report, since no discussion or conclusions are contained in the note, but rather as a presentation of the most recent information on the actual trends in greenhouse gas emissions for the years 1990-1995 and projections for the year 2000 and up to 2020 as reported by Annex I Parties. It was felt that this information may be helpful as reference data to be taken into account in the Berlin Mandate process. An initial compilation and synthesis of second national communications containing the late submissions will be prepared for consideration at the seventh sessions of the subsidiary bodies as requested by the SBSTA at its fifth session.

### C. Possible action by the subsidiary bodies

4. No action is envisaged by the subsidiary bodies in relation to this note.

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<sup>1</sup> For decisions adopted by the Conference of the Parties at its second session, see document FCCC/CP/1996/15/Add.1

## II. TABLES OF INVENTORIES OF ANTHROPOGENIC EMISSIONS AND REMOVALS IN 1990-95 AND PROJECTED ANTHROPOGENIC EMISSIONS UP TO THE YEAR 2020

### A. General notes

5. Data on inventories of emissions and removals as well as data on projections are included in the tables below. The purpose of these tables is to present in as much a consistent and comparable fashion as possible the latest available inventory and projections data. However, it should be borne in mind that part of the information presented in these tables is provisional and has not been subject to a technical analysis and review by experts. The data provided by the Parties will be further reviewed and analysed for incorporation in the first compilation and synthesis of second national communications from Annex I Parties.
6. In some cases, the figures presented differ from those in the second compilation and synthesis report of first national communications (FCCC/CP/1996/12 and Add.1 and 2) or from first national communications as originally submitted. This is mainly due to the fact that all Parties when submitting their second national communication or the latest inventory data have revised their earlier estimates. These revised estimates are marked in the tables in *italics*.
7. Footnotes to the tables were kept to a minimum. It should be noted that the footnotes to the tables contained in the second compilation and synthesis report (FCCC/CT/1996/12 and Add.1 and 2) have not been reproduced in this document.
8. The tables comprise estimates provided by all Annex I Parties. At the time of writing the secretariat received second national communications from eleven Annex I Parties, namely Canada, Finland, France, Germany, Ireland, Netherlands, New Zealand, Norway, Sweden, Switzerland and the United Kingdom, as well as from Monaco<sup>2</sup>. Data for Belgium contained in its first communication have also been included in the tables since the communication was received by the secretariat after publication of the second compilation and synthesis report. Some Parties (Hungary, Japan, Latvia, Russian Federation and Slovakia) made available to the secretariat greenhouse gas inventories (in some cases advance or preliminary ones); these data have been taken into account in this note. In a number of cases updated information made available by Parties to the review teams during the in-depth reviews of their first communication have also been included in the tables.

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<sup>2</sup> Monaco notified the Depository of its intention to be bound by subparagraphs (a) and (b) of Article 4.2.

### B. Explanatory notes to the tables

9. Blanks in the tables signify an absence of quantitative information. The secretariat has chosen to leave the spaces blank in order not to complicate the reading of the tables. The figure "zero" appears in the tables only when reported as such by the Parties.

References to "guidelines" are to document FCCC/CP/1996/15/Add.1, decision 9/CP.2, annex to this decision entitled "Revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention".

When converting units of mass for non-CO<sub>2</sub> gases into carbon dioxide-equivalent terms, global warming potentials (GWP) over a 100-year time horizon provided by the Intergovernmental Panel on Climate Change (IPCC) in its Second Assessment Report (1995) have been used unless otherwise indicated.

The following chemical symbols have been used:

CF <sub>4</sub>	Tetrafluoromethane
CFCs	Chlorofluorocarbons
C <sub>2</sub> F <sub>6</sub>	Hexafluoroethane
CH <sub>4</sub>	Methane
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
N <sub>2</sub> O	Nitrous oxide
NO <sub>x</sub>	Nitrogen oxides
NMVOCs	Non-methane volatile organic compounds
PFCs	Perfluorocarbons
SF <sub>6</sub>	Sulphur hexafluoride
VOCs	Volatile organic compounds

The following weights have been used:

Gg	Gigagrams (10 <sup>9</sup> grams)
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Table A.1 Anthropogenic CO<sub>2</sub> emissions, excluding land-use change and forestry<sup>a</sup>, 1990 and 1994 (Gigagrams and percentage of total by Party)

	Energy <sup>b</sup>		Industrial Processes		Other <sup>c</sup>		Total			
	1990 (Gg)	1994 (Gg)	1990 (Gg)	1994 (Gg)	1990 (Gg)	1994 (Gg)	1990 (Gg)	1994 (Gg)		
Australia	266 468	278 208	97.4	97.4	6 655	7 293	2.4	2.6	273 123	285 501
Austria	57 100	108 843	90.4	90.4	2 100	10 456	3.5	8.7	59 200	120 392
Belgium	103 234	54 317	93.9	93.9	9 188	2 916	8.1	5.0	113 405	57 864
Bulgaria (1990)	76 113	453 100	94.0	94.0	5 538	25 100	6.1	5.2	82 372	482 000
Bulgaria (1998) <sup>d</sup>	90 327	453 100	93.5	94.0	5 890	21 800	6.1	5.2	96 878	482 000
Canada	433 620	1 604 073	96.7	96.7	21 800	5 417	4.7	1.7	464 000	1 654 900
Czech Republic	160 073	61 805	97.9	97.9	5 417	1 327	3.3	2.1	165 490	63 132
Denmark	50 997	21 413	98.0	99.0	1 028	215	2.0	1.0	52 025	21 628
Estonia	37 184	58 420	98.4	98.6	613	840	1.6	1.4	37 797	59 250
Finland	52 700	353 277	94.3	94.7	1 200	14 335	2.2	3.8	53 800	373 085
France	356 691	879 300	97.3	97.2	16 638	27 515	4.4	2.8	378 379	904 500
Germany	986 640	57 046	92.8	96.4	27 515	25 200	2.7	2.8	1 014 155	82 100
Greece	76 210	3 587	95.0	95.0	5 890	1 397	7.2	2.4	82 100	71 673
Hungary (1990)	68 105	1 852	95.7	81.7	3 587	409	5.0	18.0	71 673	83 676
Hungary (1985-87) <sup>d</sup>	80 089	31 443	94.5	94.4	3 391	1 827	4.3	5.5	83 676	2 147
Iceland	1 753	29 038	93.6	93.5	391	61 303	18.2	5.1	2 147	2 265
Ireland	29 038	1 33 291	93.6	93.5	1 627	27 591	5.3	5.5	30 719	33 324
Italy	401 350	1 052 964	93.6	93.5	1 627	27 591	6.4	5.1	428 941	1 211 740
Japan	1 052 964	22 606	98.4	98.4	58 795	371	5.2	1.6	1 124 532	22 976
Latvia	22 606	10 626	93.7	93.7	371	585	1.6	1.2	22 976	11 343
Luxembourg	10 626	0	0.0	0.0	585	0	5.2	100.0	11 343	71
Monaco	0	172 300	98.4	98.3	1 850	2 000	1.1	1.1	167 550	175 200
Netherlands	164 800	24 655	90.6	90.2	2 387	2 671	9.4	9.8	25 476	27 326
New Zealand	23 089	30 834	80.7	81.6	6 514	6 615	18.3	17.5	35 544	37 785
Norway	28 698	465 281	97.2	97.2	6 514	13 599	2.8	2.8	414 930	478 880
Poland (1990)	465 281	38 686	91.8	91.0	3 462	4 157	8.2	9.0	478 880	46 212
Poland (1988) <sup>d</sup>	38 686	1 614 800	99.9	98.9	41 471	18 717	1.7	1.1	42 148	1 633 517
Portugal	198 472	2 334 120	98.3	92.9	3 447	3 065	5.7	7.1	198 479	43 454
Romania (1990) <sup>e</sup>	198 472	40 389	94.3	92.9	17 696	7 8	7.8	0.1	2 375 591	60 032
Romania (1989) <sup>e, f</sup>	2 334 120	56 585	94.3	92.9	3 447	3 065	5.7	7.1	227 322	43 454
Russian Federation	56 585	209 425	92.1	92.2	17 696	4 200	6.8	7.2	60 032	55 445
Slovakia	209 425	51 382	92.7	90.6	3 787	2 730	7.8	6.3	227 322	43 340
Spain	51 382	40 386	89.6	98.4	3 363	8 373	7.5	1.5	55 445	58 500
Sweden	40 386	569 813	98.2	98.2	9 911	23 083	1.7	0.5	45 070	43 340
Switzerland	569 813	4 901 992	98.9	99.5	55 030	23 083	1.1	0.5	580 237	551 574
United Kingdom	4 901 992	11 156 228	97.1	97.7	345 427	228 229	2.6	2.0	4 957 022	5 126 084
United States	11 156 228	31 113	97.7	97.7	345 427	228 229	2.6	2.0	13 625 718	11 416 869
<b>Total</b>	<b>12 662 447</b>	<b>11 156 228</b>	<b>97.1</b>	<b>97.7</b>	<b>345 427</b>	<b>228 229</b>	<b>2.6</b>	<b>2.0</b>	<b>13 625 718</b>	<b>11 416 869</b>

- \* In light of the different ways of reporting used by Parties, emissions from land-use change and forestry were excluded from the table for comparison and consistency purposes, however are presented in Table A.2.
- <sup>a</sup> Includes fuel combustion and fugitive fuel emissions.
- <sup>b</sup> Includes emissions from solvent use, agriculture and waste.
- <sup>c</sup> Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989) Party did not provide inventory data according to IPCC reporting format. Estimate calculated by the secretariat using the per capita emissions and population figures provided by Party
- <sup>d</sup> An estimate of 9,244 Gg of emissions from industrial processes was reported but not included to avoid double counting, as the Party included these emissions in fuel combustion (industry)
- \* The percentage of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Poland and Romania since data for the individual categories for these Parties were not included in the table. The emissions for non-1990 base years were also not taken into account in the overall total or total percentages for categories

**Table A.2 Anthropogenic CO<sub>2</sub> emissions and removals<sup>a</sup> from land-use change and forestry and impact on total CO<sub>2</sub> emissions, 1990 and 1994 or 1995<sup>b</sup>, (Gigagrams)**

	Land-use change and forestry, net emissions or removals		National CO <sub>2</sub> emissions excluding land-use change and forestry		National CO <sub>2</sub> emissions including land-use change and forestry		Percentage reduction or increase (-/+) of national CO <sub>2</sub> emissions taking into account land-use change and forestry	
	1990 (Gg)	1994 / 1995 (Gg)	1990 (Gg)	1994 / 1995 (Gg)	1990 (Gg)	1994 / 1995 (Gg)	1990 %	1994 / 1995 %
<i>Australia<sup>c</sup></i>	121 688	-27 512	273 123	285 501	394 811	257 989	-45	-10
<i>Austria</i>	-15 000	-2 057	59 200	120 392	44 200	118 335	-25	-2
<i>Belgium</i>	-2 057	-6 941	113 405	57 864	111 348	50 923	-7	-12
<i>Bulgaria (1990)</i>	-5 801	-6 941	82 372	57 864	76 571	50 923	-5	-12
<i>Bulgaria (1988)<sup>a</sup></i>	-4 657	-5 454	96 878	128 817	92 221	123 363	-1	1
<i>Canada</i>	-2 281	1 646	165 490	21 628	163 209	23 274	5	8
<i>Czech Republic</i>	-2 600	1 646	52 025	59 250	49 425	46 250	(-35)	(-12)
<i>Denmark</i>	1 796	(-14 000)	37 797	385 347	39 593	338 546	-9	-12
<i>Estonia</i>	(-30 000)	-30 000	53 800	894 500	23 800	864 500	-3	-3
<i>Finland<sup>c</sup></i>	-33 218	-4 820	378 379	59 196	345 161	54 376	-6	-8
<i>France</i>	-30 000	-4 820	1 014 155	83 676	984 155	54 376	-4	-8
<i>Germany</i>	-4 467	-4 820	71 673	59 196	67 206	54 376	-6	-8
<i>Greece</i>	-3 097	-4 820	83 676	59 196	80 579	54 376	-4	-8
<i>Hungary (1990)</i>	-4 467	-4 820	71 673	59 196	67 206	54 376	-6	-8
<i>Hungary (1985-87)<sup>a</sup></i>	-3 097	-4 820	83 676	59 196	80 579	54 376	-4	-8
<i>Iceland</i>	-5 160	-6 230	30 719	33 931	25 559	27 701	-17	-18
<i>Ireland</i>	-36 730	-94 619	428 941	1 218 377	392 211	1 123 758	-9	-8
<i>Italy</i>	-83 341	-15 831	1 124 532	11 267	1 041 191	1 123 758	-7	-8
<i>Japan</i>	-14 300	-1 700	22 976	183 400	8 676	-4 564	-62	-141
<i>Latvia</i>	-1 500	-13 487	167 550	37 880	166 050	181 700	-1	-1
<i>Luxembourg</i>	-20 569	-13 637	25 476	37 880	4 907	13 880	-81	-49
<i>Netherlands</i>	-10 200	-13 637	35 544	478 880	25 344	24 243	-29	-36
<i>New Zealand</i>	-1 408	-568 850	478 880	1 633 517	166 050	1 064 667	-1	-35
<i>Norway</i>	-1 408	-5 118	478 880	48 516	4 907	43 398	-7	-11
<i>Poland (1990)</i>	-2 925	-5 118	198 479	55 445	195 554	39 070	-10	-62
<i>Poland (1988)<sup>d</sup></i>	-392 690	-5 118	2 375 591	44 170	1 982 901	564 114	-10	-10
<i>Portugal</i>	-2 925	-5 100	198 479	551 574	195 554	4 668 084	3	2
<i>Romania (1990)</i>	-392 690	-4 580 000	2 375 591	5 126 084	1 982 901	4 668 084	-9	-9
<i>Romania (1989)<sup>d</sup></i>	-392 690	-4 580 000	2 375 591	5 126 084	1 982 901	4 668 084	-9	-9
<i>Russian Federation</i>	-4 257	-5 100	60 032	44 170	55 775	39 070	-62	-12
<i>Slovakia</i>	-23 166	-5 100	227 322	44 170	204 156	39 070	-10	-62
<i>Spain</i>	-34 368	-5 100	55 445	44 170	21 077	39 070	-62	-12
<i>Sweden</i>	-4 360	-5 100	45 070	44 170	40 710	39 070	-10	-10
<i>Switzerland</i>	20 240	12 540	580 237	551 574	600 477	564 114	3	2
<i>United Kingdom<sup>e</sup></i>	-436 000	-458 000	4 957 022	5 126 084	4 521 022	4 668 084	-9	-9
<i>United States</i>	-436 000	-458 000	4 957 022	5 126 084	4 521 022	4 668 084	-9	-9



- <sup>a</sup> Negative values in Gg denote removal of CO<sub>2</sub>. Positive values denote a net source of emissions.
- <sup>b</sup> Estimates for Australia, Belgium, Bulgaria, Estonia, Hungary, Russia, United Kingdom and United States are for 1994.
- <sup>c</sup> The 1990 estimate includes emissions from forest and grassland conversion of 152,062 Gg. Emissions from forest and grassland conversion were not estimated for 1994.
- <sup>d</sup> Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).
- <sup>e</sup> The estimates include emissions and removals from wetland drainage and peat extraction.

Table A.3.1 Total anthropogenic CO<sub>2</sub> emissions, excluding land-use change and forestry, 1990 - 1995 (Gigagrams and percentage)

	Percentage relative to 1990, 1990=100										Last Reported Value	
	1990 (Gg)	1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)				
Australia	273 123	101	102	103	105		285 501					
Austria	59 200	108	100									
Belgium	113 405	105	104	101	106		120 392					
Bulgaria (1990)	82 372	78	72	74	70		57 864					
Bulgaria (1988) <sup>a</sup>	96 878	67	61	63	60		57 864					
Canada	464 000	98	101	101	104	108		499 526				
Czech Republic	165 490	93	85	81		78		128 817				
Denmark	52 025	121	110	114	121		63 132					
Estonia	37 797	97	73	55	57		21 628					
Finland	53 800	0	97	99	110	104		56 050				
France	378 379	106	106	99	99	102		385 347				
Germany	1 014 155	96	91	91	89	88		894 500				
Greece	82 100											
Hungary (1990) <sup>b</sup>	71 673	94	84	85	83		59 196					
Hungary (1985-87) <sup>a,b</sup>	83 676	81	72	73	71		59 196					
Iceland	2 147	96	102	107	105	106		2 282				
Ireland	30 719	103	105	104	108	110		33 931				
Italy	428 941											
Japan	1 124 532	102	103	101	108	108		1 218 377				
Larvia	22 976					49		11 267				
Luxembourg	11 343											
Monaco	71											
Netherlands	167 550	104	103	105	105	109		183 400				
New Zealand	25 476	102	110	107	107	107		27 367				
Norway	35 544	95	97	101	106	107		37 880				
Poland (1990)	414 930	96	90									
Poland (1988) <sup>a</sup>	478 880	83	78									
Portugal	42 148	106	118	112	110		46 212					
Romania (1990) <sup>a</sup>	171 103	83	72	70								
Romania (1989)	198 479	71	62	61								
Russian Federation	2 375 591	88	81	77	69	81		1 633 517				
Slovakia	60 032				72			48 516				
Spain	227 322											
Sweden	55 445	100	101	101	106	105		58 108				
Switzerland	45 070	104	101	98	96	98		44 170				
United Kingdom	580 237	101	98	96	95		551 574					
United States	4 957 022	99	100	103	103		5 126 084					

<sup>a</sup> Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

<sup>b</sup> The estimates for the base year and 1990 do not include emissions from waste while emissions from waste of 754 Gg annually are included in subsequent years

Table A.3.2 CO<sub>2</sub> emissions from fuel combustion, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	262 623	101	102	103	104		273 934	
Austria	57 100	108	100					
Belgium	103 234	105	104	101	105		108 843	
Bulgaria (1990)	76 113	79	73	76	71		54 317	
Bulgaria (1988)*	90 327	67	61	64	60		54 317	
Canada	426 000	98	101	101	104	108		460 886
Czech Republic	160 073	93	85	82		78		121 647
Denmark	50 997	121	109	113	121		61 805	
Estonia	37 184	98	74	56	58		21 413	
Finland	52 600		98	99	111			55 130
France	356 259	106	105	100	98	105		350 588
Germany	986 640	96	91	91	89	88		869 300
Greece	76 210							
Hungary (1990)	68 105	96	86	86	84		57 046	
Hungary (1985-87)*	80 089	81	73	73	71		57 046	
Iceland	1 674	97	105	108	106	106		1 774
Ireland	29 038	103	105	104	108	111		32 105
Italy	401 350							
Japan	1 052 864	102	103	101	108	108		1 138 478
Kazakhstan	22 606					49		11 163
Luxembourg	10 626							
Monaco								
Netherlands	164 800	104	103	105	105	109		180 400
New Zealand	22 474	101	110	106	107	107		24 004
Norway	26 938	97	100	104	109	107		28 534
Poland (1990)	465 229		78					
Poland (1988)*	38 686	105	119	111	109		42 055	
Portugal								
Romania								
Romania (1989)*	198 472							
Russian Federation	2 334 120				69		1 614 800	43 426
Slovakia	56 585	88	81	77	71	80		
Spain	209 012							
Sweden	51 329	100	101	101	105	104		53 385
Switzerland	40 330	105	102	99	97	100		40 130
United Kingdom	562 522	101	99	96	95		534 123	
United States	4 895 432	99	100	103	104		5 098 000	

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Table A.3.3 CO<sub>2</sub> emissions from transport, 1990 - 1995 (Cigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	59 596	99	101	103	105		62 689	
Austria	16 200	109	109				22 473	
Belgium	20 018	102	110	110	112		7 179	
Bulgaria (1990)	11 756	58	60	71	61		7 179	
Bulgaria (1988)*	10 753	64	65	76	67	107		150 453
Canada	140 000	96	97	99	105	112		8 912
Czech Republic	7 959	86	102	104			11 887	
Denmark	10 491	106	106	109	113			
Estonia	2 656							
Finland	11 500	101	101	96	99	97		11 130
France	124 921	102	104	104	106	108		154 623
Germany	158 647	102	106	109	106	108		170 700
Greece	14 460							
Hungary (1990)	8 208	90	88	87	88		7 212	
Hungary (1985-87)*	7 741	95	93	92	93		7 212	
Iceland	1 376	102	107	110	109	110		1 521
Ireland	4 885	105	114	113	119	127		6 209
Italy	95 624							
Japan	207 431	105	107	108	113	117		242 133
Latvia	5 661					34		1 926
Luxembourg	908							
Monaco	26 800	100	104	106	108	112		30 100
Netherlands	8 748	100	104	109	117	126		10 983
New Zealand	13 885	98	99	103	103	105		14 578
Norway								
Poland (1990)	34 792	108	87	124	134		13 369	
Poland (1988)*	9 947		119					
Portugal								
Romania (1990)	7 893							
Romania (1989)*								
Russian Federation								
Slovakia	5 168	86	80	78	80	81		4 210
Spain	60 218	100	103	99	101	104		19 341
Sweden	18 650	104	100	100	101	99		14 865
Switzerland	14 668	99	101	102	102		121 961	
United Kingdom	119 255							
United States	1 502 626				103		1 551 000	

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990, Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

Table A.3.4 CO<sub>2</sub> emissions from small combustion, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	12 178	101	103	107	108		13 181	
Austria	12 100	116	103				28 674	
Belgium	23 861	112	115	112	111		3 325	
Bulgaria (1990)	5 378	76	86	77	62		3 325	
Bulgaria (1988)*	8 941	46	52	46	37			74 425
Canada	69 830	97	101	107	106	107		19 039
Czech Republic	35 948	83	66	64		53		
Denmark	8 062	106	101	101	97		7 826	
Estonia	1 581							
Finland	7 900		110	100	105	110		8 710
France	99 860	110	110	106	101	102		101 586
Germany	198 190	101	93	98	92	94		186 100
Greece	8 260							
Hungary (1990)	20 877	104	83	84	81		16 960	
Hungary (1985-87)*	23 174	94	75	76	73		16 960	
Iceland	49	97	92	89	74	75		37
Ireland	7 859	120	118	114	120	118		9 265
Italy	75 585							
Japan	158 298	104	107	107	105	112		177 084
Larvia	4 590					45		2 084
Luxembourg	1 174							
Moraco								
Netherlands	37 300	114	106	112	105	109		40 700
New Zealand	2 766	95	108	98	105	100		2 775
Norway	2 506	85	76	74	79	75		1 891
Poland (1990)								
Poland (1988)*	105 287		67					
Portugal	3 274	159	165	169	174		5 696	
Romania (1990)								
Romania (1989)*								
Russian Federation								
Slovakia	13 813					59		8 090
Spain	25 609							
Sweden	10 672	96	96	94	96	93		9 903
Switzerland	18 322	105	104	101	95	100		18 290
United Kingdom	111 377	110	107	110	104		116 373	
United States	551 002				109		601 000	

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

Table A.4.1 Total anthropogenic CH<sub>4</sub> emissions, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
<i>Australia</i>	5 590	95	95	95	95		5 302	
<i>Austria</i>	603							
<i>Belgium</i>	634	99	99	100	100		635	
<i>Bulgaria (1990)</i>	1 380	97	89	81	77		1 068	
<i>Bulgaria (1988)*</i>	1 413	94	87	79	76			
<i>Canada</i>	3 200	100	103	109	113	117		3 732
<i>Czech Republic</i>	888	92	86	82	83	83		733
<i>Denmark</i>	407	100	100	100	99		401	
<i>Estonia</i>	323	89	70	56	58		188	
<i>Finland</i>	246		110	99	100	98		241
<i>France</i>	3 017	100	97	97	95	94		2 874
<i>Germany</i>	5 682	92	91	88	85	84		4 788
<i>Greece</i>	343							
<i>Hungary (1990)<sup>b</sup></i>	545						776	
<i>Hungary (1985-87)*<sup>b</sup></i>	664	101	91	92	93	92	776	
<i>Iceland</i>	23	98	99	99	99	100		21
<i>Ireland</i>	811							872
<i>Italy</i>	3 901	99	99	99	98		1 548	
<i>Japan</i>	1 575							
<i>Latvia</i>	159							
<i>Luxembourg</i>	24					65		103
<i>Monaco</i>								
<i>Netherlands</i>	1 104	102	98	97	97	96		1 063
<i>New Zealand</i>	1 706	98	95	93	95	96		1 635
<i>Norway</i>	432	100	101	104	108	109		469
<i>Poland (1990)</i>	6 100							
<i>Poland (1988)*</i>	3042	100	100	100	99		225	
<i>Portugal</i>	227							
<i>Romania (1990)</i>	1 954	88	77	77				
<i>Romania (1989)*</i>	2 328	74	65	65				
<i>Russian Federation</i>	26 690						23 880	
<i>Slovakia</i>	409	93	90	81	77	77		315
<i>Spain</i>	2 151							
<i>Sweden</i>	324	99	99	99	94	91		296
<i>Switzerland</i>	244	100	99	99	97	97		235
<i>United Kingdom</i>	4 402	99	97	92	87		3843	
<i>United States</i>	27 000	101	101	99	104		28 171	

<sup>4</sup> Some EIT Parties by COP2 decision 9/C.P.2 were allowed to use different base years from 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).  
<sup>b</sup> Although estimates were reported for the years 1991-1994, it was not possible to present the trends since the estimates for energy-related emissions for the base year and 1990 were not fully consistent with estimates for 1991-1994 and estimates of emissions from waste were only reported for 1991-1994.

Table A.4.2 CH<sub>4</sub> emissions from fugitive fuel, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last Reported Value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	1 213	98	102	99	100		1 218	
Austria	92							
Belgium	53	93	83	82	84		45	
Bulgaria (1990)	311	83	78	74	72		225	
Bulgaria (1988)*	315	82	77	74	71		225	
Canada	1 400	100	107	114	121	128		1 791
Czech Republic	460	90	87	84		88		405
-Denmark	11	106	105	101	101		11	
Estonia	217	85	64	48	50		109	
Finland	332	99	98	102	101	100		333
France	1 563	94	93	83	75		1 170	
Germany	39							
Greece	366						379	
Hungary (1990) <sup>b</sup>	448						379	
Hungary (1985-87)* <sup>b</sup>								
Iceland	10	95	100	105	105	109		11
Ireland	348							
Italy	166	103	105	104	102		169	
Japan	2					58		
Larvia	2							
Luxembourg	2							
Monaco	179	105	91	88	95			170
Netherlands	25	88	89	88	93			27
New Zealand	21	105	129	138	143			30
Norway								
Poland (1990)	1 222		65					
Poland (1988)*	2	95	80	80				
Portugal	0							
Romania (1990)	1 416							
Romania (1989)*	18 900							
Russian Federation	122	93	84	87	91		17 200	106
Slovakia	695				86	87		
Spain								
Sweden	15	99	97	94	91	87		13
Switzerland	1 238	100	94	81	65		808	
United Kingdom	7 641	99	97	90	100		7 630	
United States								

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

<sup>b</sup> Although estimates were reported for the years 1991-1994, it was not possible to present the trends since the estimates for energy-related emissions for the base year and 1990 were not fully consistent with estimates for 1991-1994.



Table A.4.3 CH<sub>4</sub> emissions from agriculture, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	3 223	100	98	98			3 141	
Austria	259				97			
Belgium	388	99	99	100	100		389	
Bulgaria (1990)	258	86	67	53	48		124	
Bulgaria (1988)*	307	73	56	45	40		124	
Canada	890	101	100	104	108	112		996
Czech Republic	204	91	83	73		68		139
Denmark	263	100	99	100	97		256	
Estonia	60	100	91	78	77		46	
Finland	101	96	93	92	92	87		88
France	1 626	98	96	96	96	95		1 351
Germany	2 044	88	84	83	81		1 660	
Greece	175							
Hungary (1990)	173	97	83	73	70		121	
Hungary (1985-87)*	208	80	69	61	58		121	
Iceland	12	99	96	95	95	96		11
Ireland	640	98	98	99	99	99		63
Italy	1 860							
Japan	843	100	101	102	101		849	
Latvia	111					40		
Luxembourg	18							
Monaco								
Netherlands	505	102	100	98	96	94		
New Zealand	1 513	98	95	93	95	96		1 460
Norway	91	102	104	102	107	105		96
Poland (1990)								
Poland (1988)*	862		82					
Portugal	176	100	100	100	100		176	
Romania (1990)	610							
Romania (1989)*	4 890							
Russian Federation	187	92	81	70	77	65	3 770	122
Slovakia	887							
Spain	200	98	99	99	101	99		
Sweden	151	101	100	100	98	98		197
Switzerland	1 143	98	98	97	98		1 116	148
United Kingdom	8 596	99	102	102	107		9 196	

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990, Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

Table A.4.4 CH<sub>4</sub> emissions from waste, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100							Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)		
Australia	704	102	104	107	109		767			
Austria	228						184			
Belgium	174	102	104	105	106		704			
Bulgaria (1990)	802	105	100	92	88		704			
Bulgaria (1988) <sup>a</sup>	732	115	110	100	96			889		
Canada	840	99	100	102	104	106		144		
Czech Republic	149	99	99	97		97				
Denmark	122	100	100	100	100		122			
Estonia	42	98	74	67	71		30			
Finland	126	102	105	106	105	106		133		
France	800	99	97	95	83	85		678		
Germany	1 870	97	101	101	102		1 900			
Greece	110						255			
Hungary (1990) <sup>b</sup>										
Hungary (1985-87) <sup>a,b</sup>	11	103	86	89	90	87		10		
Iceland	136	100	100	100	100	101		138		
Ireland	1 611									
Italy	397	97	95	94	94		373			
Japan	44					118		51		
Latvia	4									
Luxembourg										
Monaco	379	100	99	99	100	100		380		
Netherlands	155	101	98	96	91	85		132		
New Zealand	302	100	100	102	106	107		322		
Norway										
Poland (1990)	906	100	104	100	100		35			
Poland (1988) <sup>a</sup>	35									
Portugal										
Romania (1990)	241									
Romania (1989) <sup>a</sup>	1 940	105	117	106	101	95	1 950	63		
Russian Federation	66									
Slovakia	491	100	100	100	100					
Spain	85					72		61		
Sweden	69	99	99	98	98	97		67		
Switzerland		98	98	96	95		1 826			
United Kingdom	1 923	101	100	100	102		10 400			
United States	10 150									

<sup>a</sup> Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990, Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

<sup>b</sup> Although estimates were reported for the years 1991-1994, it was not possible to present the trends since the estimates of emissions from waste were only reported for 1991-1994

Table A.5.1 Total anthropogenic N<sub>2</sub>O emissions, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991	1992	1993	1994	1995	1994 (Gg)	1995 (Gg)
Australia	81.2	98	98	100	100		81.6	
Austria	4.1							
Belgium	30.8	100	97	99	105		32.3	
Bulgaria (1990)	29.6	78	65	59	61		18.0	
Bulgaria (1988)*	30.8	75	63	57	58		18.0	
Canada	86.0	101	107	109	116	125		107.8
Czech Republic	24.0	96	96	88	88	90		21.6
Denmark	10.3	104	103	105	106		10.9	
Estonia	2.4	98	77	60	55		1.3	
Finland	18.0	94	94	100	100	100		18.0
France	181.7	99	96	90	93	95		173.5
Germany	226.0	97	100	96	97	93		210.0
Greece	13.7							
Hungary (1990)	11.4	65	63	60	72		8.2	
Hungary (1985-87)*	12.9	58	56	53	63		8.2	
Iceland	0.5	100	98	98	96	104		0.6
Ireland	29.4	86	87	87	88	89		26.0
Italy	120.3							
Japan	105.3	103	101	102	104		110.0	
Latvia	2.4					28		0.7
Luxembourg	0.6							
Monaco	51.2							
Netherlands	47.5	104	111	112	113	114		58.5
New Zealand	15.0	96	97	97	97	98		46.7
Norway	156.0	100	87	93	93	93		140
Poland (1990)	58.9		32					
Poland (1988)*	10.6	105	111	106	103			
Portugal	106.8	85	64	92			10.9	
Romania (1990)	122.7	74	56	80				
Romania (1989)*	228.0				59			
Russian Federation	10.7	87	73	58	59	64		6.8
Slovakia	93.9							
Spain	9.2	100	96	100	103	100		9.2
Sweden	11.5	101	102	103	103	103		11.8
Switzerland	112.5	95	81	72	83			
United Kingdom	411.4	97	97	97	87		93.7	
United States								359.0

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990, Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

Table A.5.2 N<sub>2</sub>O emissions from transport, 1990 - 1995 (Gigagrams and percentage)

	Percentage relative to 1990, 1990=100										Last reported value	
	1990	1991	1992	1993	1994	1995	1994	1995	1994	1995		
	(Gg)	%	%	%	%	%	(Gg)	(Gg)	(Gg)	(Gg)		
Australia	5.2	112	137	154	171		8.9					
Austria	0.5						1.2					
Belgium	0.9	97	108	118	129		0.1					
Bulgaria (1990)	0.3	67	33	67	33		0.1					
Bulgaria (1988)*	0.2	103	51	103	51	166			48.0			
Canada	29.0	107	121	138	155	100			1.0			
Czech Republic	1.0	100	100	100	200		0.8					
Denmark	0.4	125	150	200								
Estonia	0.0					100			2.0			
Finland	2.0	106	112	123	146	167			6.7			
France	4.0	127	145	154	173		19.0					
Germany	11.0											
Greece	1.2											
Hungary (1990)	0.8											
Hungary (1985-87)*	0.0	100	100	100	100	100			0.0			
Iceland	0.2	244	250	244	256	272			0.5			
Ireland	3.5											
Italy	12.9	104	106	106	107	93			13.8	0.1		
Japan	0.1											
Latvia	0.0											
Luxembourg												
Monaco	4.9	110	124	135	147	157			7.7			
Netherlands	0.4	101	106	110	117	126			0.5			
New Zealand	1.0	100	100	100	100	100			1.0			
Norway												
Poland (1990)	106											
Poland (1988)*	0.4	100	125	125	125		0.5					
Portugal												
Romania (1990)	0.3											
Romania (1989)*												
Russian Federation												
Slovakia	2.1											
Spain	2.6	100	100	100	108	112			2.9			
Sweden	1.1	111	122	134	145	157			1.8			
Switzerland	3.1	105	125	168	220				6.8			
United Kingdom	92.3	108	108	108	115				106.0			
United States												

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

Table A.5.3 N<sub>2</sub>O emissions from agriculture, 1990 - 1995 (Gigagrams and percentage)

	Percentage relative to 1990, 1990=100						Last reported value	
	1990 (Gg)	1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	68.2	100	98	99	99		67.4	
Austria	2.0							
Belgium	10.9	100	100	98	99		10.8	
Bulgaria (1990)	8.2	73	44	35	32		2.6	
Bulgaria (1988)*	13.4	45	27	22	19		2.6	
Canada	11.0	100	109	118	118	121		13.3
Czech Republic	2.0	100	100	100	100	85		1.7
Denmark	8.5	100	100	100	100		8.5	
Estonia	0.9	99	77	55	55		0.5	
Finland	10.0	100	90	90	90	90		9.0
France	54.5	99	97	93	95	97		52.6
Germany	96.0	91	86	84	90		86.0	
Greece	7.5							
Hungary (1990)	4.1	27	26	24	29		1.2	
Hungary (1985-87)*	4.6	25	24	21	26		1.2	
Iceland	0.5	100	98	98	98	104		0.5
Ireland	23.3	80	80	81	82	82		19.1
Italy	58.7							
Japan	9.7	98	96	95	94		9.1	
Latvia	1.4							
Luxembourg	0.5							
Monaco								
Netherlands	22.2	103	118	118	120	121		26.9
New Zealand	44.9	96	96	96	97	98		44.1
Norway	6.0	100	100	100	100	100		6.0
Poland (1990)	31.5							
Poland (1988)*	3.6	100	100	100	100		3.6	
Portugal								
Romania (1990)								
Romania (1989)*	25.3							
Russian Federation	190.0						100.0	
Slovakia	7.7	90	68	53	57	57		4.4
Spain	63.4							
Sweden	0.2	100	100	100	100	100		0.2
Switzerland	9.2	100	99	98	97	96		8.3
United Kingdom	10.4	100	97	92	95		9.9	
United States	187.9	106	106	106	115		216.0	

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990, Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

**Table A.6 Anthropogenic emissions of other greenhouse gases, 1990 and 1995<sup>a, b</sup>**  
(Gigagrams of CO<sub>2</sub> equivalent, percentage relative to 1990, 1990=100 per cent)

	HFCs <sup>c</sup>			PFCs <sup>d</sup>			SF <sub>6</sub> <sup>e</sup>			Total		
	1990		1995	1990		1995	1990		1995	1990	1995	
	Gg	%	Gg	%	Gg	%	Gg	%	Gg	%		
Australia			4 842	2 096	43					4 842	2 096	43
Canada		500	5 936	6 019	101	2 868	1 888	66	8 804	8 407	95	
Denmark						215			215			
France	2 970		2 002			141			5 113			
Germany	260	2 878	2 693	1 665	62	3 895	5 998	154	6 849	10 542	154	
Iceland		25	312	54	18				312	79	25	
Italy			103						103			
Japan	2 080	14 560	5 416	14 217	263	38 240	52 580	138	45 736	81 357	178	
Netherlands	4 910	8 452	2 458	2 391	97	1 386	1 457	105	8 755	12 302	141	
New Zealand		183	601	196	33	552	4 368	791	1 153	4 748	412	
Norway		244	2 545	1 441		2 198	573	26	4 744	2 259	48	
Sweden		195	400	390	98	956	1 242	130	1 356	1 827	135	
Switzerland		260		66			717			1 043		
United Kingdom	1 366	2 051	2 085	473	23	573	621	108	4 025	3 146	78	
United States	48 695	66 075	18 133	14 840	82	22 466	24 617	110	89 294	105 532	118	

<sup>a</sup> When the data for 1995 were not available the data for 1994 are given in *italics*.  
<sup>b</sup> With the exception of Canada, the Netherlands, the United Kingdom and the United States, which reported actual emissions, and Japan, which reported potential emissions, Parties did not indicate clearly whether emissions reported are potential or actual ones.  
<sup>c</sup> Finland, Germany, New Zealand and the United Kingdom only reported aggregated data for HFC figures. The secretariat therefore assumed that all these emissions were HFC-134a.  
<sup>d</sup> Finland, New Zealand and the United Kingdom reported only aggregated PFC figures. The secretariat therefore assumed that approximately 90 per cent was CF<sub>4</sub> and 10 per cent C<sub>2</sub>F<sub>6</sub>.

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**Table A.7 Total anthropogenic emissions of all greenhouse gases<sup>a</sup>, 1990 - 1995 (Gigagrams of CO<sub>2</sub> equivalent and percentage)**

	Percentage relative to 1990, 1990=100										Last Reported Value	
	1990	1991	1992	1993	1994	1995	1994	1995	1994	1995	(Gg)	(Gg)
<i>Australia</i>												
<i>Austria</i>	420 521	99	99	100	101						424 241	
<i>Belgium</i>	73 134	104	103	101	105						143 746	
<i>Bulgaria (1990)</i>	136 258	83	75	75	71						85 870	
<i>Bulgaria (1988)<sup>b</sup></i>	136 099	73	67	66	63						85 870	
<i>Canada</i>	566 664	98	101	103	105	109					619 869	
<i>Czech Republic</i>	191 578	93	85	82		79					150 912	
<i>Denmark</i>	63 974	117	108	111	117						74 924	
<i>Estonia</i>	45 309	96	73	55	57						25 969	
<i>Finland</i>	64 546	97	97	99	108	103					66 691	
<i>France</i>	503 181	103	103	97	96	99					498 855	
<i>Germany</i>	1 210 387	96	92	91	90	88					1 070 691	
<i>Greece</i>	93 550											
<i>Hungary (1990)<sup>c</sup></i>	86 652										78 039	
<i>Hungary (1985-87)<sup>b,c</sup></i>	101 619										78 039	
<i>Iceland</i>	3 109	96	94	95	94	96						2 977
<i>Ireland</i>	56 861	99	100	100	103	104						59 060
<i>Italy</i>	548 259											
<i>Japan</i>	1 235 986	102	104	103	109	50					1 347 200	
<i>Larvia</i>	27 059											
<i>Luxembourg</i>	12 028											
<i>Monaco</i>	71											
<i>Netherlands</i>	215 357	99	99	104	105	110					236 154	
<i>New Zealand</i>	77 188	99	100	99	104	105					80 913	
<i>Norway</i>	54 011	96	93	96	101	102						54 878
<i>Poland (1990)</i>	591 390	67	74									
<i>Poland (1988)<sup>b</sup></i>	561 021	71	78									
<i>Portugal</i>	50 195	105	116	110	108						54 314	
<i>Romania (1990)</i>	245 245	84	72	74								
<i>Romania (1989)<sup>b</sup></i>	285 404	72	62	64								
<i>Russian Federation</i>	3 006 761										2 176 692	
<i>Slovakia</i>	71 938	88	82	77	72	80						57 239
<i>Spain</i>	301 602											
<i>Sweden</i>	66 457	97	101	100	105	104					69 004	
<i>Switzerland</i>	53 749	103	101	98	97	100						
<i>United Kingdom</i>	711 579	100	97	94	93	93					664 471	
<i>United States</i>	5 740 851	99	101	102	103						5 934 137	



- \* Aggregated emissions of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and where reported HFCs, PFCs, SF<sub>6</sub> (see table A.6), using IPCC 1995 global warming potentials.
- b Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990. Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)
- c Although estimates were reported for the years 1991-1994, it was not possible to present the trends since the estimates for energy-related emissions for the base year and 1990 were not fully consistent with estimates for 1991-1994 and estimates of emissions from waste were not provided for all gases for all years.

Table B.1. Projected anthropogenic emissions of CO<sub>2</sub> for the year 2000, excluding land-use change and forestry (Gigagrams)

	Data from inventory		Data from projection		Variations	
	Base level <sup>a</sup>	Base level <sup>b</sup>	2000 level <sup>c</sup>	from inventory	from projection	
	(Gg)	(Gg)	(Gg)	(Percentage)		
Australia	273 123	288 965	332 799	15.1	15.1	
Austria	59 200	59 900	65 800	11.1	9.8	
Belgium	113 405	[121 000]	125 200	10.4	3.5	
Bulgaria <sup>d</sup> (1990)	82 372	82 990	69 898	-15.8	-15.8	
Bulgaria (1988)	96 878	96 878	69 898	-27.9	-27.9	
Canada	464 000	463 700	500 600	8.0	8.0	
Czech Republic	165 490	163 584	135 536	-18.2	-17.1	
Denmark	52 025	58 353	53 753	3.3	-7.9	
Estonia	37 797	37 800	17 500 - 23 000	(-53.7)-(-39.2)	(-53.7)-(-39.2)	
Finland	53 800	53 800	(58 000 - 60 000)	(7.8 - 11.5)	(7.8 - 11.5)	
France	378 379	383 167	397 833	5.1	3.8	
Germany	1 014 155	1 014 000	894 000	-11.8	-12.0	
Greece	82 100	82 100	94 500	15.1	15.1	
Hungary (1990)	71 673	69 116	68 741	-4.1	-0.5	
Hungary <sup>d</sup> (1985-87)	83 676	81 534	68 741	-17.8	-15.7	
Iceland	2 147	2 147	2 456	14.4	14.4	
Ireland	30 719	30 719	34 988	13.8	13.8	
Italy	428 941	423 776	482 440	12.5	13.8	
Japan	1 124 532	1 173 000	1 200 000	3.9	2.3	
Latvia	22 976	22 976	16 956	-26.2	-26.2	
Luxembourg	11 343	11 244	7 556	-33.3	-32.8	
Netherlands	167 550	[173 000]	168 000	0	-2.9	
New Zealand	25 476	25 476	31 080	21.9	21.9	
Norway	35 544	36 000	44 000	23.7	22.0	
Poland (1990)	414 930	338 000-455 000	(-18.5)-(-9.7)			
Poland <sup>d</sup> (1988)	478 880	458 000	338 000-455 000		(-26.2)-(-0.7)	
Portugal	42 148	38 689	54 274	28.8	40.3	
Romania (1990)	171 103					
Romania <sup>d</sup> (1989)	198 479					
Russian Federation	2 375 591	2 330 000	1 930 000 - 2 026 000	(-19.1)-(-15.1)	(-17.2)-(-13.0)	
Slovakia	60 032	57 808	48 639	-16.5	-15.9	
Spain	227 322	222 908	276 523		24.1	
Sweden	55 445	[57 600]	60 100	8.3	4.3	
Switzerland	45 070	[47 100]	43 900	-2.6	-6.8	
UK	580 237	580 000	550 000	-5.1	-5.1	
USA	4 957 022	5 012 789	5 163 136	4.2	3.0	

<sup>a</sup> Data from inventory table A.1.

<sup>b</sup> Differences in 1990 levels between inventories and projections are, for example, due to revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources. For some countries differences are also due to statistical adjustments. Several countries, as indicated through square brackets, have made temperature adjustments for the projection base level (Belgium, the Netherlands, Sweden, Switzerland). Denmark's emissions are adjusted for electricity imports. Sweden's base year for projections is 1995.

<sup>c</sup> "With measures" levels for 2000.

<sup>d</sup> Some EIT parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

**Note**

Additional information on the projections from Parties which submitted second national communications is given as notes in the C.1 table.

Table B.2. Projections of CO<sub>2</sub> removals or emissions in land-use change and forestry<sup>a</sup> for the year 2000 (Gigagrams)

	Data from inventory	Data from projection		Variations from projection
	Base level <sup>b</sup> (Gg)	Base level <sup>c</sup> (Gg)	2000 level <sup>d</sup> (Gg)	(Percentage)
<i>Australia</i>	121 688	130 843	121 992	-6.8
<i>Austria</i>	-15 000			
<i>Belgium</i>	-2 057	-2 100	-2 100	0
<i>Bulgaria (1990)</i>	-5 801	-5 801	-5 801	0
<i>Bulgaria<sup>e</sup> (1988)</i>	-4 657	-4 657	-5 801	0
<i>Canada</i>				
<i>Czech Republic</i>	-2 281	-2 300	-2 800	-22.8
<i>Denmark</i>	-2 600	-2 600	-2 600	0
<i>Estonia</i>	1 796			
<i>Finland<sup>f</sup></i>	-31 000	-31 000	(-12 000)-(-17 000)	(62)-(46)
<i>France</i>	-33 128	-32 000	-39 000	-21.8
<i>Germany</i>	-30 000			
<i>Greece</i>				
<i>Hungary (1990)</i>	-4 467			
<i>Hungary<sup>e</sup> (1985-1987)</i>	-3 097			
<i>Ireland</i>	-5 160	-5 160	-7 580	-46.8
<i>Italy</i>	-36 730	-36 730	-46 730	-27.2
<i>Japan</i>	-83 341	-90 000	-92 000	-2.2
<i>Latvia</i>	-14 300	-14 300	-8 940	37.5
<i>Luxembourg</i>				
<i>Netherlands</i>	-1 500	-1 500	-1 700	-13.0
<i>New Zealand<sup>g</sup></i>	-20 569	-20 569	-18 994	8.0
<i>Norway</i>	-9 400	-9 400	-11 000	17.0
<i>Poland (1990)</i>				
<i>Poland<sup>e</sup> (1988)</i>	-1 408			
<i>Portugal</i>				
<i>Romania (1990)</i>				
<i>Romania<sup>e</sup> (1989)</i>	-2 925			
<i>Russian Federation</i>	-392 620			
<i>Slovakia</i>	-4 257			
<i>Spain</i>	-23 166	-23 170	-25 700	-10.9
<i>Sweden<sup>h</sup></i>	-34 368	-34 000	-29 000	14.7
<i>Switzerland</i>	-4 360	-4 360	-5 100	-17.0
<i>UK</i>	20 240	20 600	11 100	-46.1
<i>USA</i>	-436 000	-476 710	-539 049	-13.1

<sup>a</sup> Negative values in Gg denote removal of CO<sub>2</sub>. Positive values denote a net source of emissions. Negative values in percentage denote more removals in 2000 than in 1990, or a decrease in net emissions.

<sup>b</sup> Data from inventory table A.2.

<sup>c</sup> Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, or the fact that only a subset of the sources was projected.

<sup>d</sup> "With measures" levels for 2000.

<sup>e</sup> Some EIT countries have asked for special consideration under Article 4.6 to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

<sup>f</sup> The emissions for land-use change and forestry in both Finland and the United Kingdom include emissions and uptakes from wetland drainage and peat extraction. The range of emissions given for Finland results from the two scenarios given in its national communication.

<sup>g</sup> New Zealand reported three different scenarios on the basis of different planting strategies. The "Central estimate of New Planting post 1997" is given in the table.

<sup>h</sup> Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995.

Note

Additional information on the projections from Parties which submitted second national communications is given as notes in the C.1 table.

Table B.3. Projected anthropogenic emissions of CH<sub>4</sub><sup>a</sup> for the year 2000 (Gigagrams)

	Data from inventory	Data from projection		Variations from projection
	Base level <sup>b</sup>	Base level <sup>c</sup>	2000 level <sup>d</sup>	(Percentage)
	(Gg)	(Gg)	(Gg)	
<i>Australia</i>	5 589	6 244	6 480	3.8
<i>Austria</i>	603	-600	-600	-0
<i>Belgium</i>	634			
<i>Bulgaria (1990)</i>	1 380	1 006	1 057	5.1
<i>Bulgaria<sup>e</sup> (1988)</i>	1 413	1 119	1 057	-5.5
<i>Canada</i>	3 200	3 148	3 546	12.6
<i>Czech Republic</i>	888	623	511	-18.0
<i>Denmark</i>	407	406	354	-12.8
<i>Estonia</i>	323			
<i>Finland</i>	246	246	226	-8.0
<i>France</i>	3 017	2 900	2 900	0
<i>Germany</i>	5 682	5 682	3 892	-31.5
<i>Greece</i>	343	343	< 343	< 0.0
<i>Hungary (1990)</i>	545	492	278	-43.5
<i>Hungary<sup>e</sup> (1985-87)</i>	664	605	278	-54.0
<i>Iceland</i>	23	23	21	-8.0
<i>Ireland</i>	811	811	837	3.2
<i>Italy</i>	3 901	3 900	2 965	-24.0
<i>Japan</i>	1 575	1 380	1 150	-16.7
<i>Latvia</i>	159	159	114	-28.2
<i>Luxembourg</i>	24	25	26	6.1
<i>Netherlands</i>	1 103	1 067	788	-33.6
<i>New Zealand</i>	1 706	1 706	1 541	-9.7
<i>Norway</i>	432	432	414	-4.0
<i>Poland (1990)</i>	6 100	6 100	1 780	-70.9
<i>Poland<sup>e</sup> (1988)</i>	3 042	6 060	1 780	-70.6
<i>Portugal</i>	226			
<i>Romania (1990)</i>	1 954			
<i>Romania<sup>e</sup> (1989)</i>	2 328			
<i>Russian Federation</i>	26 900			
<i>Slovakia</i>	409	342	293	-14.3
<i>Spain</i>	2 151			
<i>Sweden<sup>f</sup></i>	324	302	284	-6.0
<i>Switzerland</i>	244	244	229	-6.0
<i>UK</i>	4 402	4 402	3 418	-22.3
<i>USA</i>	27 000	27 669	22 335	-19.3

<sup>a</sup> Figures provided in CO<sub>2</sub> and C equivalents have been converted.

<sup>b</sup> Data from inventory table A.4.1.

<sup>c</sup> Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources.

<sup>d</sup> "With measures" levels for 2000.

<sup>e</sup> Some EIT parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

<sup>f</sup> Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995

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Table B.4. Projected anthropogenic emissions of N<sub>2</sub>O<sup>a</sup> for the year 2000 (Gigagrams)

	Data from inventory	Data from projection		Variations from projection
	Base level <sup>b</sup> (Gg)	Base level <sup>c</sup> (Gg)	2000 level <sup>d</sup> (Gg)	(Percentage)
<i>Australia</i>	81.2	60.1	61.1	1.5
<i>Austria</i>	4.1	- 4.2	- 4.2	- 0
<i>Belgium</i>	31.0			
<i>Bulgaria (1990)</i>	29.6	14.3	16.3	14.0
<i>Bulgaria<sup>e</sup> (1988)</i>	30.8	17.4	16.3	-6.3
<i>Canada</i>	86.0	86.0	74.0	-14.0
<i>Czech Republic</i>	24.0			
<i>Denmark</i>	10.3	10.5	11.5	9.5
<i>Estonia</i>	2.4			
<i>Finland</i>	18.0	18.0	21.5	19.4
<i>France</i>	181.7	177.0	93.0	- 47.0
<i>Germany</i>	226.0	226.0	162.0	-28.0
<i>Greece</i>	13.7	13.7	13.7	0.0
<i>Hungary (1990)</i>	11.4	7.3	6.2	-14.3
<i>Hungary<sup>e</sup> (1985-87)</i>	12.9	8.4	6.2	-26.2
<i>Iceland</i>	0.6	0.6	0.6	0
<i>Ireland</i>	29.4	29.4	26.0	-11.5
<i>Italy</i>	120.3	119.4	123.6	3.5
<i>Japan</i>	105.3	47.0	- 52.0	8.3
<i>Latvia</i>	2.4	2.4	1.4	-41.6
<i>Luxembourg</i>	0.6	0.7	0.7	0
<i>Netherlands</i>	51.2	62.6	65.2	4.0
<i>New Zealand</i>	47.5	47.5	46.0	-3.0
<i>Norway</i>	15.0	15.3	16.0	4.5
<i>Poland (1990)</i>	156.0		61.8	
<i>Poland (1988)</i>	58.9	73.0	61.8	-15.3
<i>Portugal</i>	10.5			
<i>Romania (1990)</i>	106.8			
<i>Romania (1989)</i>	122.7			
<i>Russian Federation</i>	228.0			
<i>Slovakia</i>	10.7	14.7	14.1	-4.1
<i>Spain</i>	93.9			
<i>Sweden<sup>f</sup></i>	9.2	9.3	9.3	1.0
<i>Switzerland</i>	11.5	11.5	11.7	1.7
<i>UK</i>	112.5	111.7	42.9	-61.6
<i>USA</i>	411.4	529.7	421.0	-20.5

<sup>a</sup> Figures provided in Mt C equivalents have been converted.

<sup>b</sup> Data from inventory table A.5.1.

<sup>c</sup> Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources.

<sup>d</sup> "With measures" levels for 2000.

<sup>e</sup> Some EIT parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989).

<sup>f</sup> Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995.

## Comments

Twenty-six Parties projected emissions of N<sub>2</sub>O. One Party provided figures covering a sector that only represented a minor part of the emissions in 1990, while another four did not cover all sources represented in the inventories. Fifteen Parties, representing 58 per cent of the aggregated inventory figure for 1990, projected stabilization or decreases compared to their base years, four of the decreases being more than 35 per cent, often due to expected changes in industrial processes. One only gave an indication that overall emissions were not expected to increase. Nine Parties, representing 26 per cent of the aggregated inventory figures for 1990, projected increases, eight of these less than 10 per cent.

## Notes\*

**Australia:** The effects of measures are subtracted (p. 76) from the "without measures" scenario (p.72) to obtain a "with measures" figure.

**Austria:** This is a "without measures" projection (p.88).

**Bulgaria:** Baseline scenario was chosen as it was seen to be closest to implemented policies and measures. N<sub>2</sub>O from agriculture was not included.

**Canada:** The projection is updated following the IDR and the figures refer to energy-related and industry emissions, while agriculture is not included.

**France:** The projection figures are taken from the summary of the communication, where they were given as carbon equivalents.

**Germany:** Projections for 2000 were submitted on 29 April 1996.

**Greece:** An increase in emissions is expected for the year 2000, but no specific projection was provided.

**Japan:** The projection figure for 2000 refers only to the effects of energy conservation and waste reduction measures (p.144).

**Monaco:** Emissions are expected to be negligible in 2000 as in 1990.

**Netherlands:** The projection figure for 2000 incorporates the effects of policies and measures initiated under NEPP2. However, a number of policies implemented to reduce N<sub>2</sub>O emissions associated with fertilizer application and animal manure have not been incorporated because of a lack of knowledge about their effects (p.65).

**Poland:** 1990 inventory data were given in the CORINAIR format and no separate figure compatible with the 2000 projection was provided.

**Switzerland:** The projection figure covers only a minor part of the sources (from transportation) and does not allow for calculation of trends (p.80).

**Hungary:** The corresponding 1985-1987 inventory figure was 8.36 Gg. The projection figures include fuel-related emissions only. The 2000 S scenario is used (table 6.2 b, p.74).

**Poland:** Different methods were used for calculating 1988 and 1990 figures. The communication states that the methodology used for 1990 overestimates the emissions and this, rather than a real increase, explains the difference. Therefore a comparison with the 1990 figures appears to be non-applicable.

**Romania:** No projections were provided.

\*All references in parentheses are to the national communications.

Table B.5. Projected emissions of other greenhouse gases for the year 2000 (Gigagrams)

	Base level projections <sup>a</sup>			2000 level			Variations from projections		
	HFCs <sup>b</sup>	PFCs <sup>c</sup>	SF <sub>6</sub> <sup>d</sup>	HFCs <sup>b</sup>	PFCs <sup>c</sup>	SF <sub>6</sub> <sup>d</sup>	HFCs	PFCs	SF <sub>6</sub>
	(CO <sub>2</sub> equivalent in Gg) <sup>e</sup>			(CO <sub>2</sub> equivalent in Gg) <sup>e</sup>			(Percentage)		
Australia		4 842			1 700				-59
Canada	500	7 144	2 868	2 000	7 420	1 912	300	3.9	-33
Finland	79	271	96	130	339	120	65	25	25
Germany	260	2 694	3 896	6 336	799	4 971	2 337	-70	28
Iceland		311		26	55		0		-82
Italy		106		2 500	63				
Netherlands	4 880	2 234	1 386	4 763	2 512	1 625	-2	12	17
New Zealand	183	601	550	213	230	5 067	16	-62	821
Norway	200	2 500	2 200	800	1 300	525	300	-48	-76
Sweden	200	400	1 000	800	500	1 200	300	25	20
UK	1 366	2 085	574	2 390	575	1 028	75	-72	79
USA	67 500	17 000		120 300	9 700		78	-43	

<sup>a</sup> The figures are rounded.

<sup>b</sup> Finland, Germany, New Zealand and the United Kingdom only reported aggregated data for HFC. The secretariat therefore assumed that all these emissions were HFC-134a. Finland, New Zealand and Sweden used 1995 as base level for the HFC projections.

<sup>c</sup> Finland, New Zealand and the United Kingdom reported only aggregated PFC figures. In order to estimate the CO<sub>2</sub> equivalent, the secretariat assumed that approximately 90 per cent was CF<sub>4</sub> and 10 per cent was C<sub>2</sub>F<sub>6</sub>. Finland and Sweden used 1995 as base level for the PFC projections.

<sup>d</sup> Finland, New Zealand and Sweden used 1995 as base level for the SF<sub>6</sub> projections.

<sup>e</sup> Australia, Italy and the USA reported emissions based on 1994 GWPs, as given in their first national communications, whilst all other countries presented in the table reported on the basis of 1995 GWPs as given in their second national communications. The assumed time-horizon = 100 years.



Table A.3.2 CO<sub>2</sub> emissions from fuel combustion, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	262 623	101	102	103	104		273 934	
Austria	57 100	108	100					
Belgium	103 234	105	104	101	105		108 843	
Bulgaria (1990)	76 113	79	73	76	71		54 317	
Bulgaria (1988)*	90 327	67	61	64	60		54 317	
Canada	426 000	98	101	101	104	108		460 886
Czech Republic	160 073	93	85	82		78		124 647
Denmark	50 997	121	109	113	121		61 805	
Estonia	37 184	98	74	56	58		21 413	
Finland	52 600		98	99	111	105		55 130
France	356 259	106	105	100	98	100		356 585
Germany	986 640	96	91	91	89	88		869 300
Greece	76 210							
Hungary (1990)	68 105	96	86	86	84		57 046	
Hungary (1985-87)*	80 089	81	73	73	71		57 046	
Iceland	1 674	97	105	108	106	106		1 774
Ireland	29 038	103	105	104	108	111		22 105
Italy	401 350							
Japan	1 052 964	102	103	101	108	108		1 138 478
Lithuania	22 606					49		11 163
Luxembourg	10 626							
Monaco								
Netherlands	164 800	104	103	105	105	109		180 400
New Zealand	22 474	101	110	106	107	107		24 004
Norway	26 938	97	100	104	109	107		28 554
Poland (1990)								
Poland (1988)*	465 229		78				42 055	
Portugal	38 686	105	119	111	109			
Romania								
Romania (1989)*	198 472							
Russian Federation	2 334 720				69		1 614 800	
Slovakia	56 585	88	81	77	71	80		45 426
Spain	209 012							
Sweden	51 329	100	101	101	105	104		53 385
Switzerland	40 330	105	102	99	97	100		40 130
United Kingdom	562 522	101	99	96	95		534 123	
United States	4 895 432	99	100	103	104		5 098 000	

\* Some EIT Parties by COP2 decision 9/CP.2 were allowed to use different base years from 1990; Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

Table A.3.3 CO<sub>2</sub> emissions from transport, 1990 - 1995 (Gigagrams and percentage)

	1990 (Gg)	Percentage relative to 1990, 1990=100					Last reported value	
		1991 %	1992 %	1993 %	1994 %	1995 %	1994 (Gg)	1995 (Gg)
Australia	59 596	99	101	103	105		62 689	
Austria	16 200	109	109					
Belgium	20 018	102	110	110	112		22 473	
Bulgaria (1990)	11 756	58	60	70	61		7 179	
Bulgaria (1988)*	10 753	64	65	76	67		7 179	
Canada	140 000	96	97	99	105	107		150 453
Czech Republic	7 959	86	102	104	112	112		8 912
Denmark	10 491	106	106	109	113		11 887	
Estonia	2 656							
Finland	11 500	101	101	96	99	97		11 130
France	124 921	102	104	104	106	108		134 623
Germany	158 647	102	106	109	106	108		170 700
Greece	14 460							
Hungary (1990)	8 208	90	88	87	88		7 212	
Hungary (1985-87)*	7 741	95	93	92	93		7 212	
Iceland	1 376	102	107	110	109	110		1 521
Ireland	4 885	105	114	113	119	127		6 209
Italy	95 624							
Japan	207 431	105	107	108	113	117		242 123
Latvia	5 661					34		1 926
Luxembourg	908							
Monaco								
Netherlands	26 800	100	104	106	108	112		30 100
New Zealand	8 748	100	104	109	117	126		10 983
Norway	13 885	98	99	103	103	105		14 578
Poland (1990)								
Poland (1988)*	34 792	87	87	124	134		13 369	
Portugal	9 947	108	119					
Romania (1990)								
Romania (1989)*	7 893							
Russian Federation								
Slovakia	5 168	86	80	78	80	81		4210
Spain	60 218							
Sweden	18 650	100	103	99	101	104		19 341
Switzerland	14 668	104	100	100	101	99		14 863
United Kingdom	119 255	99	101	102	102		121 961	
United States	1 502 626				103		1 551 000	

\* Some EIT Parties by COP2 decision 9/C.P.2 were allowed to use different base years from 1990: Bulgaria (1988), Hungary (average of 1985-1987), Poland (1988) and Romania (1989)

Notes\*

In the following no account is taken of uncertainties, methods used, nor is a thorough discussion of the projections presented here. This will be undertaken in the compilation and synthesis of the second national communications. The purpose of the notes is to give some background information, which may be essential for the understanding of the figures as presented in the table.

**Belgium:** The projection given in table B.1 is based on a scenario with "implemented measures". In addition, Belgium provided two other projections scenarios, one "without measures" and one with "measures under consideration". The "without measures" scenario projects CO<sub>2</sub> emissions to be 129,300 Gg in the year 2000, while the "measures under consideration" scenario leads to 116,300 Gg CO<sub>2</sub> emissions in the year 2000. Belgium also provided long-term projections for energy sector related emissions.

**Finland:** The range of emissions as given in the table reflects two scenarios, one being the energy market scenario (EMS) without national or international measures to curb CO<sub>2</sub> emissions, and the other one, the "energy policy scenario" (EPO), which assumes strengthening current control measures. Two different types of strengthening the control measures are examined within the EPO scenario, one in which the use of wood and gas is increased, and one in which more nuclear power is built.

**Germany:** The scenario presented in table B.1 is the "with-measures scenario"/"IWG-measures scenario" where CO<sub>2</sub>-reduction measures are taken into account to the greatest possible extent. In addition, a "without-measures scenario"/"reference scenario" was presented where efficiency improvements are the main factor that counter increases in CO<sub>2</sub> emissions. The latter leads to a reduction of CO<sub>2</sub> emissions by 3% instead of 12% under the scenario reported in the table.

**The Netherlands:** The "favourable CO<sub>2</sub> scenario", which is presented in the table, is according to the Dutch second national communication the scenario which is "more-or-less consistent with the present policy goal" (p.75). This scenario is subdivided into two other scenarios, the "favourable-high" and the "favourable-low" scenario, which refer to different levels of resulting energy demand. In addition, a "trend-scenario" was developed that "can be considered as an existing-policy scenario" (p.75). This scenario leads to stabilisation of CO<sub>2</sub> emissions in the year 2000 with respect to the base level used in the projection.

**New Zealand:** The "with measure" scenario as presented in the table is estimated to reduce the growth in energy-related CO<sub>2</sub> emissions by about 21.5% below the "business-as-usual" scenario.

**Norway:** The emission projections presented in the table are based on a variant of the "Reference Alternative" scenario based on current policies. In addition, a "baseline reference scenario" was developed, which assumes stabilization of global CO<sub>2</sub> emissions at 1990 levels by means of a global CO<sub>2</sub> tax.

**Sweden:** Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995.

**Switzerland:** The projection for the year 2000 as given in the table results from a scenario with "implemented measures". Bunker fuel emissions were deducted from the total CO<sub>2</sub> emission level. A second scenario was developed with "measures under consideration". Under this scenario, a 10% reduction of emissions would be reached as compared to the 3% reduction under the "implemented measures" scenario.

**The United Kingdom:** Land-use change and forestry were deducted from the summary CO<sub>2</sub> figure.

\* All references in the parentheses are to the national communications.

Table C.2. CO<sub>2</sub> projections in land-use change and forestry until 2020\* (Gigagrams)

	Base level (1990)		Least reported inventory <sup>a</sup> (Gg)	Projection and percentage deviation relative to the projection base level, base year = 100 per cent							
	Inventory (Gg)	Projection <sup>b</sup> (Gg)		2000		2005		2010		2020	
				(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)
Finland <sup>d</sup>	(-31 000)- (-19 000)	-24 500	(-13 000)- (-7 000)	(-17 000)- (-12 000)	(31)-(52)	(-15 000)-(-22 000)	(39)-(11)	(-27 000)-(+1 000)	(-10)-(-100)		
Ireland	-5 160	-5 160	-6 230	-7 580	-47	-8 630	67	-9 690	88		
Netherlands	-1 500	-1 500	-1 700	-1 700	-13	-1 700	-13	-1 700	-13		
New Zealand	-20 569	-20 569	-13 490	-18 944	8	-21 807	-1	-21 208	-3		
Norway	-9 400	-9 400	-13 637	-11 000	17	-12 200	30	-13 400	43		
Sweden <sup>e</sup>	-34 368	-34 000	NR	-29 000	15	-26 000	24	-22 000	35		
Switzerland	-4 360	-4 360	-5 100	-5 100	-17	-5 100	-17	-5 100	-17		
UK	20 240	20 600	12 540	11 100	-46	6 900	-57	8 700	-58		

\* Negative values in Gg denote removal of CO<sub>2</sub>. Positive values denote a net source of emissions. Negative values in percentage denote more removals in 2000 than in 1990, or a decrease in net emissions. Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, or the fact that only a subset of the sources was projected.  
<sup>b</sup> All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.  
<sup>c</sup> Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995.  
<sup>d</sup> Deviation relative to the projection base level calculated on the basis of the mean of the range (-30 000)-(-19 000) Gg.

Comments

The emissions for land-use change and forestry in both Finland and the United Kingdom include emissions and uptakes from wetland drainage and peat extraction. The range of emissions given for Finland results from the two scenarios given in the national communication. New Zealand reported three different scenarios on the basis of different planting strategies. The "Central estimate of New Planting post 1997" is given in the table.

Table C.3. Projected anthropogenic emissions of CH<sub>4</sub> until 2020

	Base level (1990)		Last reported inventory <sup>a</sup> (Gg)	Projection and percentage deviation relative to the projection base level, base year = 100 per cent							
	Inventory (Gg)	Projection (Gg)		2000		2005		2010		2020	
				(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)
Canada	3 200	3 148	3 732	3 546	13	3 600	14	3 719	18	4 179	33
Finland	246	246	241	226	-8	206	-16	191	-22	179	-27
Germany	5 682	5 682	4 788	3 892	-32	3 004	-47	2 759	-51	2 505	-56
Ireland	811	811	812	837	3	838	3	839	4		
Netherlands	1 103	1 067	1 062	788	-34	700	-34	611	-43	594	-44
New Zealand	1 706	1 706	1 635	1 541	-10	1 552	9	1 573	-8	1 604	-6
Norway	432	432	469	414	-4	377	-13	332	-23	325	-25
Sweden <sup>b</sup>	324	302	296	284	-6	284	-6	211	-30	262	-13
Switzerland	244	244	235	229	-6	211	-13	192	-21		
UK	4 402	4 402	3 843	3 418	-22	3 227	-27	2 852	-35	2 670	-39

<sup>a</sup>All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.

<sup>b</sup>Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level<sup>1</sup> are thus given in relation to 1995.

Table C.4. Projected anthropogenic emissions of N<sub>2</sub>O until 2020 (Gigagrams)

	Base level (1990)		Last reported inventory <sup>a</sup> (Gg)	Projection and percentage deviation relative to the projection base level, base year = 100 per cent											
	Inventory (Gg)	Projection (Gg)		2000		2005		2010		2020					
				(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)				
Canada	86.0	86.0	107.8	74.0	-14	77.1	-10	81.1	-6	88.3	3				
Finland	18.0	18.0	18.0	21.5	19	23 - 25	28 - 38	24 - 25	33 - 39	23 - 26	28 - 44				
Germany	226.0	226.0	210.0	162.0	-28	159.0	-30	157.0	-31	156.0	-31				
Ireland	29.4	29.4	26.0	26.0	-12	26.0	-12	26.0	-12						
Netherlands	51.2	62.6	58.5	65.2	4	67.0	7	68.1	9	70.1	12				
New Zealand	47.5	47.5	46.7	46.0	-3	45.6	-4	45.7	-4	45.7	-4				
Norway	15.0	15.3	14.0	16.0	5	16.5	8	16.9	11	17.7	16				
Sweden <sup>b</sup>	9.2	9.3	9.2	9.3	1	10.5	13	11.5	24	12.7	37				
Switzerland	11.5	11.5	11.8	11.7	2	11.6	1	11.3	2						
UK	112.5	111.7	93.7	42.9	-62	48.3	-57	50.8	-55	53.3	-53				

<sup>a</sup>All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.

<sup>b</sup>Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995.

Table C.5.1. Projected emissions of HFCs until 2020\* (Gigagrams, CO<sub>2</sub> equivalent)<sup>b</sup>

	Base level (1990)		Last reported inventory <sup>d</sup>		Projection and percentage deviation relative to the projection base level, base year = 100 per cent							
	Inventory		Projection <sup>c</sup>		2000		2005		2010		2020	
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)
Canada			500	500	2000	300	4000	700	7000	1 300	14 000	2 700
Finland			79	79	130	65	156	97	195	145	195	145
Germany	260	260	260	2 878	6 336	2 337	10 388	3 895	12 609	4 750	12 355	4 652
Netherlands	4 911	4 880	4 880	8 453	4 763	-2	5 767	18	8 964	84	16 119	230
New Zealand		183	183	183	213	16	247	35	287	57	583	219
Norway		200	200	200	800	300	1 300	550	1 600	700	1 900	850
Sweden		200	200	200	800	300	900	350	900	350		
UK	1 366	1 366	1 366	2 051	2 390	75	(2 095 - 3 771)	(53 - 176)	(2 263 - 4 578)	(66 - 235)		

\* Finland, Germany, New Zealand and the United Kingdom only reported aggregated data for HFC. The secretariat therefore assumed that all these emissions were HFC-134a. Finland, New Zealand and Sweden used 1995 as base level for the HFC projections.

<sup>b</sup> Australia, Italy and the USA reported emissions based on 1994 GWPs, as given in their first national communications, whilst all other parties presented in the table reported on the basis of 1995 GWPs, as given in their second national communications. The assumed time-horizon = 100 years.

<sup>c</sup> The figures are rounded.

<sup>d</sup> All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.

**Comment**

With the exception of Canada, the Netherlands and the United Kingdom, parties did not express clearly whether emissions for other greenhouse gases reported included also potential emissions or only actual emissions.

Table C.5.2. Projected emissions of PFCs until 2020\* (Gigagrams, CO<sub>2</sub> equivalent)<sup>b</sup>

	Base level (1990)		Last reported inventory <sup>d</sup> (Gg)	Projection and percentage deviation relative to the projection base level, base year = 100 per cent							
	Inventory (Gg)	Projection <sup>e</sup> (Gg)		2000		2005		2010		2020	
				(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)
Canada	5 936	7 144	6 019	7 420	4	7 420	4	7 420	4	7 420	4
Finland		271		339	25	339	150	677	150	677	150
Germany	2 694	2 694	1 665	799	-70	784	-71	784	-71	784	-71
Netherlands	2 459	2 234	2 391	2 512	12	2 640	18	2 776	24	3 033	36
New Zealand	601	601	196	230	-62	237	-61	237	-61	251	-58
Norway	2 545	2 500	1 441	1 300	-48	1 200	-52	1 200	-52	1 200	-52
Sweden	400	400	390	500	25	500	25	600	50		
UK	2 085	2 085	474	575	-72	745	-64	894	-57		

Finland, New Zealand and the United Kingdom reported only aggregated PFC figures. In order to estimate the CQ equivalent, the secretariat assumed that approximately 90 per cent was CFC and 10 per cent was C<sub>2</sub>F<sub>6</sub>. Finland and Sweden used 1995 as base level for the PFC projections.

Australia, Italy and the USA reported emissions based on 1994 GWPs, as given in their first national communications, whilst all other parties presented in the table reported on the basis of 1995 GWPs as given in their second national communications. The assumed time-horizon = 100 years.

The figures are rounded.

All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.



Table C.5.3. Projected emissions of SF<sub>6</sub> until 2020\* (Gigagrams CO<sub>2</sub> equivalent)<sup>b</sup>

	Base level (1990)		Last reported inventory <sup>d</sup> (Gg)	Projection and percentage deviation relative to the projection base level, base year = 100 per cent							
	Inventory (Gg)	Projection <sup>c</sup> (Gg)		2000		2005		2010		2020	
				(Gg)	(%)	(Gg)	(%)	(Gg)	(%)	(Gg)	(%)
Canada	2 868	2 868	1 888	1 912	-33	1 912	-33	1 912	-33	1 912	-33
Finland		96		120	25	143	49	143	49	143	49
Germany	3 896	3 896	5 999	4 971	28	4 445	14	5 401	39	6 979	79
Netherlands	1 386	1 386	1 458	1 625	17	1 793	29	1 960	41	2 271	64
New Zealand	550	550	4 374	5 067	821	5 879	969	6 812	1 139	9 154	1 564
Norway	2 200	2 200	574	525	-76	525	-76	600	-72	700	-68
Sweden	956	1 000	1 243	1 200	20	1 200	20	1 200	20	1 200	20
UK	574	574	621	1 028	79	1 028	79	1 052	83	1 052	83

\* Finland, New Zealand and Sweden used 1995 as base level for the SF<sub>6</sub> projections.

<sup>b</sup> Australia, Italy and the USA reported emissions based on 1994 GWPs, as given in their first national communications, whilst all other parties presented in the table reported on the basis of 1995 GWPs as given in their second national communications. The assumed time-horizon = 100 years. The figures are rounded.

<sup>c</sup> All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.

**Table C.6. Projected anthropogenic emissions of all greenhouse gases, excluding land-use change and forestry until 2020\* (Gigagrams, CO<sub>2</sub> equivalent)<sup>b</sup>**

	Base level (1990)		Last reported inventory <sup>d</sup> (Gg)	Projection and percentage deviation relative to the projection base level, base year = 100 per cent							
	Inventory (Gg)	Projection <sup>c</sup> (Gg)		2000		2005		2010		2020	
				(Gg)	(%)	(Gg)	(%)	(Gg)	(%)		(Gg)
Canada	566 664	566 480	619 723	609 118	8	635 513	12	669 252	8	766 544	35
Finland	64 546	65 546	67 137	70 000	9	68 466	-68 576	6	60 904	-61 824	(-6) - (-4)
Germany	1 210 387	1 210 232	1 070 691	1 038 058	-14	994 991	-18	979 403	-19	968 083	-20
Ireland	56 864	56 864	59 043	60 625	7	64 486	13	66 454	17		
Netherlands	215 341	223 313	236 139	213 660	-4	215 670	-3	217 642	-3	225 628	1
New Zealand	77 184	77 178	80 932	83 211	8	86 661	12	90 784	18	101 399	31
Norway	54 011	54 515	54 284	60 279	11	63 057	16	63 611	17	62 112	14
Sweden <sup>d</sup>	66 457	68 225	69 009	71 447	5	73 919	8	74 996	10	90 439	33
Switzerland	53 759	55 789	53 806	52 336	-6	52 727	-6	53 235	-5		
UK	711 579	711 094	664 470	639 072	-10	679 608	-4	674 849	-5	754 593	6

\* Figures from tables C.1, C.3, C.4, C.5.1, C.5.2, and C.5.3 have been used as the starting point for these projections. Only gases and sources that were projected are included.

<sup>b</sup> Using 1995 GWPs, time-horizon = 100 years.

<sup>c</sup> Differences in 1990 levels between inventories and projections are, for example, due to revisions of inventories, rounding, and temperature adjustments for the projection base level (Netherlands, Sweden and Switzerland).

<sup>d</sup> All parties reported their last inventory for 1995, with the exception of the United Kingdom which last inventory was reported for 1994.

<sup>e</sup> Sweden reported 1995 rather than 1990 as the base level for projections. All variations from the base level are thus given in relation to 1995.