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**National communications and greenhouse gas inventory data from Parties
included in Annex I to the Convention**

**Reports on national greenhouse gas inventory data from Parties included in
Annex I to the Convention for the period 1990–2007 and the period 1990–2008**

National greenhouse gas inventory data for the period 1990–2008

Note by the secretariat*

Summary

All 41 Parties included in Annex I to the Convention (Annex I Parties) submitted their greenhouse gas (GHG) inventory common reporting format (CRF) tables and national inventory reports (NIRs) in 2010. Thirty-eight sets of CRF tables and 36 NIRs were received by the deadline of 15 April.

Over the period 1990–2008, total aggregate GHG emissions excluding emissions/removals from land use, land-use change and forestry (LULUCF) for all Annex I Parties decreased by 6.1 per cent, and total GHG emissions/removals including LULUCF decreased by 10.4 per cent. For Annex I Parties with economies in transition (Annex I EIT Parties), GHG emissions excluding and including LULUCF decreased by 36.8 per cent and 48.5 per cent, respectively. For Annex I non-EIT Parties, GHG emissions excluding LULUCF increased by 7.9 per cent and GHG emissions including LULUCF increased by 8.3 per cent.

Information in this document is based on national GHG inventory submissions received as of 18 October 2010. At the time of publication, the annual review process for GHG inventories from Annex I Parties was still ongoing, and therefore the data included in this document may not reflect the latest information provided by Parties. The latest inventory data are available on the secretariat website.

* This document was submitted late in order to take into account the latest submissions from Parties.

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decisions 9/CP.2, 3/CP.5 and 18/CP.8, requested that Parties included in Annex I to the Convention (Annex I Parties) submit national inventory data on greenhouse gas (GHG) emissions by sources and removals by sinks by 15 April each year. Under the UNFCCC “Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention” adopted by the COP in decision 19/CP.8, the secretariat is requested¹ to prepare annually a report on GHG inventory data submitted by Annex I Parties for consideration by the COP and the Subsidiary Body for Implementation (SBI).

B. Scope of the note

2. Information provided in this document is based on the national GHG inventories received from Annex I Parties by 18 October 2010.² This document shows the status of reporting of GHG inventories by Annex I Parties in 2010 (chapter II) and provides a summary of the latest available data on Annex I Parties’ GHG emissions and removals for the period 1990–2008 (chapter III).

3. Data are provided for carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), as well as for hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) taken together. Data are also provided for total³ aggregate⁴ GHG emissions, both including and excluding net GHG emissions/removals from land use, land-use change and forestry (LULUCF).

4. In an effort to increase readability, two minor structural changes were implemented in this document compared with last year’s report. First, the graph showing the completeness of submissions was replaced with a more detailed text (see paras. 11–13 below). Second, the table showing the comparison of estimates reported in the previous and current years’ reports was split between two sections of this document – the comparison of estimates of total aggregate emissions can be found in the section on recalculations (chapter II) and the comparison of the changes in total aggregate emissions over the reported time series can be found in chapter III.

5. Furthermore, this year, for the first time, the European Union (EU) officially submitted a set of common reporting format (CRF) tables containing data on GHG emissions/removals for its 27 member States as a group (EU-27) under the Convention. Tables 5–16 reflect the data included in the GHG inventory submission for the EU-27.⁵

¹ FCCC/CP/2002/8, annex II, paragraphs 42 and 43.

² On 26 October 2010, Malta became an Annex I Party. This report does not include emission estimates for Malta. Such estimates are expected to be included in next year’s report.

³ The term ‘total’ implies that emissions from sectors of the common reporting format are summed; the inclusion of land use, land-use change and forestry into the sum is indicated separately.

⁴ The term ‘aggregate’ implies that GHG emissions/removals are calculated as a weighted sum of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆; the sum is made using the global warming potentials agreed under the Convention (1 for CO₂, 21 for CH₄, 310 for N₂O, and specific values for individual HFCs, PFCs and SF₆).

⁵ The GHG inventory submission of the EU contains data on GHG emissions/removals for all its 27 member States, including Cyprus and Malta, which were Parties not included in Annex I to the Convention at the time of preparation of this report (see also footnote 2).

6. At the time of publication of this document, the annual GHG inventory review process was still ongoing, and therefore the data included here may not reflect the latest information provided by Annex I Parties. The latest inventory data are available on the “National inventory submissions 2010” web page,⁶ as well as on the GHG data interface,⁷ of the secretariat.

C. Possible action by the Subsidiary Body for Implementation and the Conference of the Parties

7. The SBI may wish to take note of the information contained in this document and seek further guidance from the COP, as appropriate.

II. Status of reporting

A. Timeliness and completeness of submissions

8. In accordance with the UNFCCC reporting guidelines on annual inventories,⁸ Annex I Parties are required to submit annually a national inventory report (NIR) and CRF tables containing data from the base year up to two years before the year of submission, that is, from 1990 to 2008 in the submission for 2010.

9. The status of reporting of GHG inventory submissions for 2010 is presented in table 1. All 41 Annex I Parties provided CRF tables, generated using the CRF Reporter software, for all years from 1990⁹ to 2008. Thirty-eight sets of CRF tables were received by the due date of 15 April. All Annex I Parties also submitted their NIR, 36 of which were received by the deadline. All Parties submitted their CRF tables and NIR within six weeks after the submission deadline.

Table 1

Greenhouse gas inventory submissions from Annex I Parties in 2010

<i>Party</i>	<i>CRF submission date^a</i>	<i>Years reported</i>
Australia	26 May 2010	1990–2008
Austria	15 April 2010	1990–2008
Belarus	8 April 2010	1990–2008
Belgium	15 April 2010	1990–2008
Bulgaria	15 April 2010	1988–2008
Canada	15 April 2010	1990–2008
Croatia	14 April 2010	1990–2008
Czech Republic	14 April 2010	1990–2008

⁶ <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php>.

⁷ <http://unfccc.int/ghg_data/items/3800.php>.

⁸ “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”.

⁹ The Parties that may use a base year other than 1990, as stipulated in decisions 9/CP.2 and 11/CP.4, also provided data for their respective base years. These Parties and their base years are Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986).

<i>Party</i>	<i>CRF submission date^a</i>	<i>Years reported</i>
Denmark	15 April 2010	1990–2008
Estonia	15 April 2010	1990–2008
European Union	15 April 2010	1990–2008
Finland	15 April 2010	1990–2008
France	12 April 2010	1990–2008
Germany	15 April 2010	1990–2008
Greece	15 April 2010	1990–2008
Hungary	<i>25 May 2010</i>	Average of 1985–1987, 1985–2008
Iceland	<i>23 April 2010</i>	1990–2008
Ireland	14 April 2010	1990–2008
Italy	14 April 2010	1990–2008
Japan	15 April 2010	1990–2008
Latvia	15 April 2010	1990–2008
Liechtenstein	15 April 2010	1990–2008
Lithuania	14 April 2010	1990–2008
Luxembourg	15 April 2010	1990–2008
Monaco	23 March 2010	1990–2008
Netherlands	14 April 2010	1990–2008
New Zealand	15 April 2010	1990–2008
Norway	15 April 2010	1990–2008
Poland	15 April 2010	1988–2008
Portugal	15 April 2010	1990–2008
Romania	15 April 2010	1989–2008
Russian Federation	15 April 2010	1990–2008
Slovakia	14 April 2010	1990–2008
Slovenia	15 April 2010	1986–2008
Spain	15 April 2010	1990–2008
Sweden	14 April 2010	1990–2008
Switzerland	15 April 2010	1990–2008
Turkey	13 April 2010	1990–2008
Ukraine	13 April 2010	1990–2008
United Kingdom	15 April 2010	1990–2008
United States	15 April 2010	1990–2008

Abbreviations: CRF = common reporting format.

^a The date of submission of the national inventory report may be different. Dates after the submission deadline of 15 April 2010 are shown in italics.

10. After the initial submissions, 22 Parties submitted revised versions of their CRF tables, and 24 Parties resubmitted their NIR.

11. The number of national GHG inventories submitted by Annex I Parties by the deadline has been increasing continuously since 1998. In 1998, only four Parties submitted their CRF tables on time; however, from 2002 onwards, more than half of all Annex I Parties have made their submission by the deadline (e.g. 22 in 2002, 28 in 2005 and 34 in 2009).

12. The total number of sets of CRF tables received from Annex I Parties for the reporting year has also been steadily increasing. Twenty-one sets of CRF tables were received in 1998, whereas, since 2006, all 41 sets of CRF tables have been submitted annually.

13. With regard to NIRs, an increasing trend is also noticeable. From 1998 to 2000, the secretariat did not receive any NIRs. In 2001, 18 NIRs were received, and this number increased continuously until 2006, when all 41 Annex I Parties provided an NIR. In 2007 and 2008, only 40 Parties submitted their NIR, but since last year all 41 Parties have done so.

B. Recalculations

14. In accordance with the UNFCCC reporting guidelines, Parties should conduct recalculations, when necessary, in order to improve the quality of emission estimates and ensure the consistency of the time series. Forty Parties performed recalculations in 2010 reflecting changes in activity data, emission factors and methodologies used.

15. The impact of recalculations on GHG emissions in the base year varied widely (table 2). For total aggregate GHG emissions excluding LULUCF, the change was less than 1 per cent for 28 Parties and more than 2 per cent for four Parties. For total aggregate GHG emissions including LULUCF, the change was less than 1 per cent for 17 Parties and more than 3 per cent for 12 Parties.

Table 2
Inventory recalculations by Annex I Parties in 2010

<i>Party</i>	<i>Impact on base year GHG emissions excluding LULUCF (%)</i>	<i>Impact on base year GHG emissions including LULUCF (%)</i>
Australia	0.52	2.36
Austria	-1.10	-1.26
Belarus	8.73	3.25
Belgium	0.10	-0.83
Bulgaria	-4.29	-11.22
Canada	0.01	0.01
Croatia	0.21	-14.86
Czech Republic	0.24	0.74
Denmark	-0.18	-2.20
Estonia	-2.60	-2.83
European Union	0.05	-0.13
Finland	-0.59	2.58

<i>Party</i>	<i>Impact on base year GHG emissions excluding LULUCF (%)</i>	<i>Impact on base year GHG emissions including LULUCF (%)</i>
France	0.11	1.13
Germany	1.36	2.08
Greece	-1.15	-0.49
Hungary	-1.64	-0.50
Iceland	0.43	17.64
Ireland	-1.03	-1.04
Italy	0.14	0.77
Japan	-0.08	0.83
Latvia	0.43	53.19
Liechtenstein	0.001	0.05
Lithuania	1.32	-10.90
Luxembourg	0.005	1.05
Monaco	–	–
Netherlands	0.005	0.005
New Zealand	-1.06	-31.07
Norway	0.11	2.83
Poland	-0.07	0.73
Portugal	0.04	4.85
Romania	-0.47	-0.53
Russian Federation	0.07	2.36
Slovakia	0.87	0.90
Slovenia	-0.55	-35.35
Spain	-1.05	-7.70
Sweden	0.70	3.80
Switzerland	0.46	-0.75
Turkey	9.98	13.56
Ukraine	0.23	0.79
United Kingdom	0.07	0.07
United States	0.45	-0.76

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

16. In 2009, the secretariat published a similar document to this one containing summary information on Annex I Parties' GHG emissions based on their 2009 submissions.¹⁰ Table 3 presents a comparison of the estimates of total aggregate GHG

¹⁰ FCCC/SBI/2009/12.

emissions in 1990¹¹ reported in that document with those reported in this document, which are based on Parties' 2010 submissions.

Table 3

Comparison of 2010 and 2009 estimates of total aggregate greenhouse gas emissions from Annex I Parties in 1990

	2009 (FCCC/SBI/2009/12)	2010 (FCCC/SBI/2010/18)	Explanation of the difference between 2010 and 2009 estimates
Total aggregate GHG emissions excluding LULUCF (thousands of Tg CO₂ equivalent)			
All Annex I Parties	18.85	18.91	Aggregate impacts of inventory recalculations by individual Annex I Parties
Annex I EIT Parties	5.91	5.91	Increases in emissions resulting from inventory recalculations (for example, in Belarus and the Russian Federation) were offset by decreases in emissions in other countries (for example, in Bulgaria, Hungary and Romania)
Annex I non-EIT Parties	12.94	12.99	Inventory recalculations, in particular for Germany, Turkey and the United States of America
Total aggregate GHG emissions including LULUCF (thousands of Tg CO₂ equivalent)			
All Annex I Parties	17.46	17.52	Aggregate impacts of inventory recalculations by individual Annex I Parties
Annex I EIT Parties	5.73	5.79	Inventory recalculations, in particular for Belarus, the Russian Federation and Ukraine
Annex I non-EIT Parties	11.73	11.73	Increases in emissions resulting from inventory recalculations (in particular for Australia, France and Germany) were offset by decreases in emissions in other countries (in particular for New Zealand, Spain and the United States of America)

Abbreviations: EIT = Parties with economies in transition, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

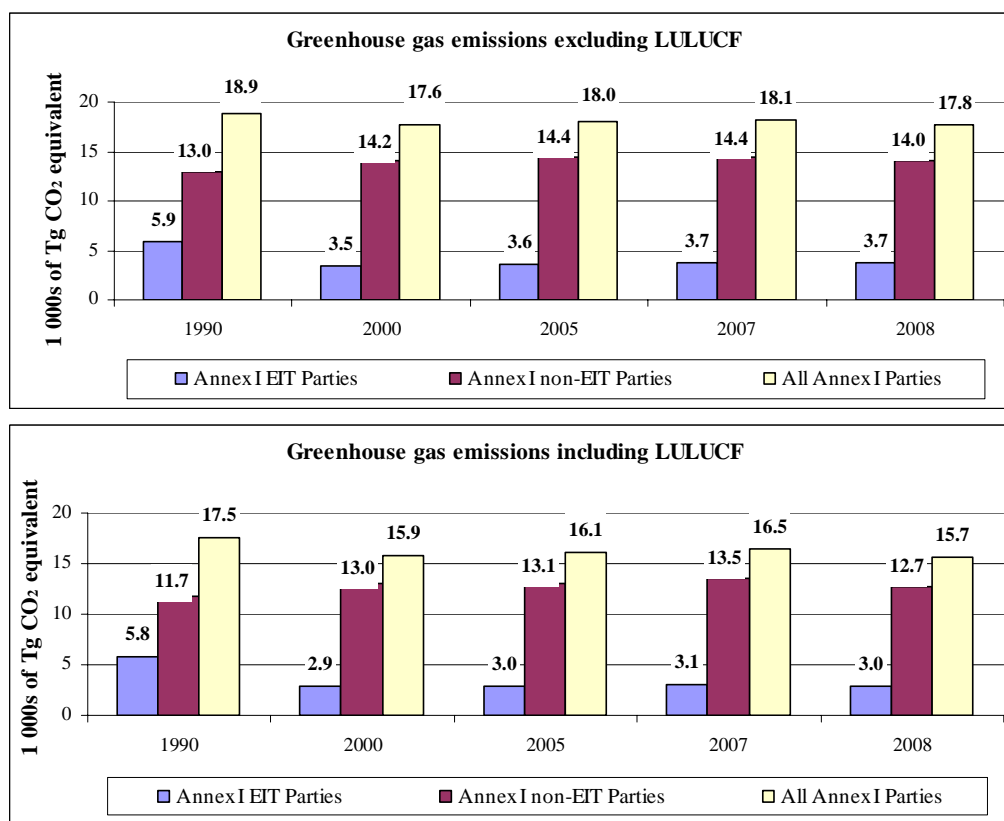
III. Overview of emission trends and sources in Annex I Parties

A. Total aggregate greenhouse gas emissions

17. Figures 1 and 2 show the trends in total aggregate GHG emissions from 1990 to 2008 for all Annex I Parties taken together, for Annex I Parties with economies in transition (Annex I EIT Parties) and for Annex I non-EIT Parties.

¹¹ Unless otherwise specified, base year data are used in totals instead of 1990 data (in accordance with decisions 9/CP.2 and 11/CP.4) for Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986).

Figure 1
Greenhouse gas emissions from Annex I Parties, 1990, 2000, 2005, 2007 and 2008



Abbreviations: EIT = Parties with economies in transition, LULUCF = land use, land-use change and forestry.

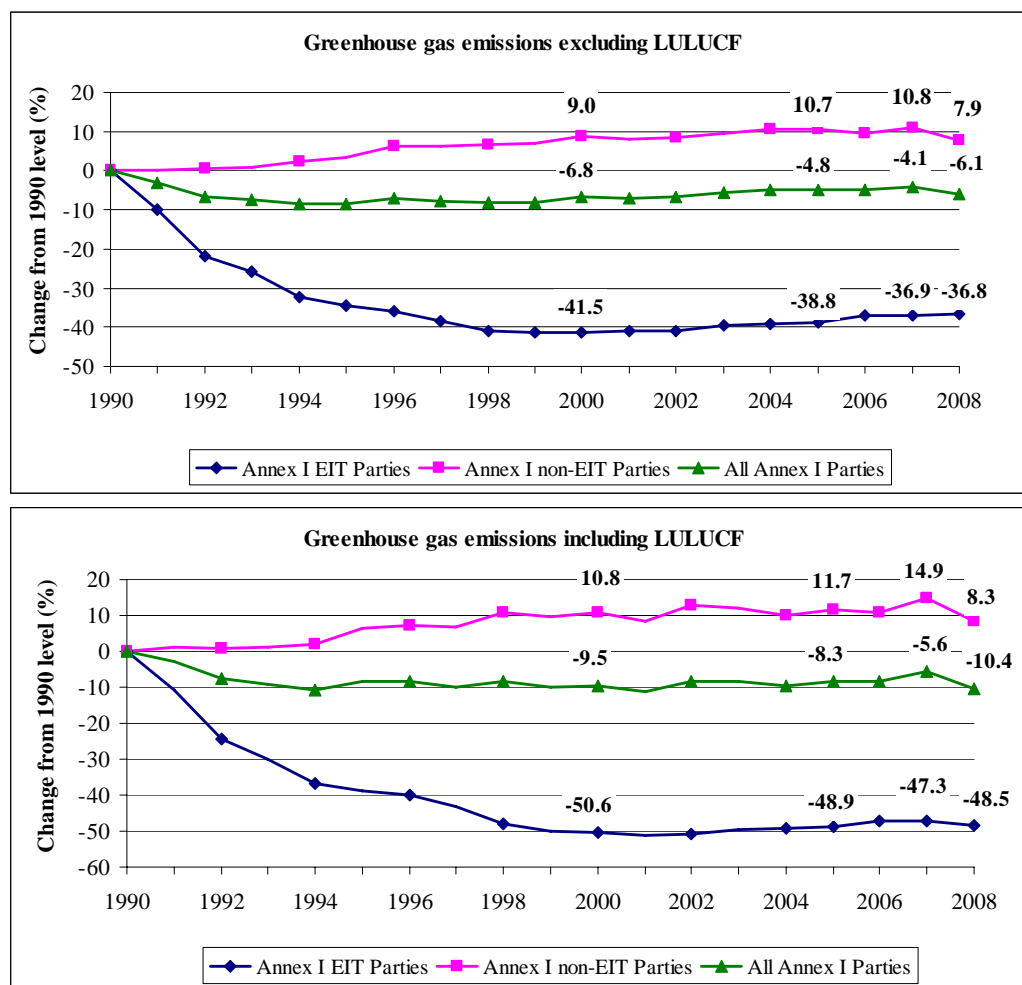
18. From 1990 to 2008, the total aggregate GHG emissions excluding emissions/removals from LULUCF for all Annex I Parties decreased by 6.1 per cent, from 18,908.1 to 17,763.0 Tg¹² CO₂ eq. Total aggregate GHG emissions including LULUCF decreased by 10.4 per cent, from 17,521.7 to 15,691.6 Tg CO₂ eq. From 2000 to 2008, GHG emissions excluding LULUCF increased by 0.8 per cent, while GHG emissions including LULUCF decreased by 1.1 per cent. Between 2007 and 2008, GHG emissions decreased by 2.1 per cent (excluding LULUCF) and by 5.1 per cent (including LULUCF).

19. For Annex I EIT Parties, GHG emissions excluding LULUCF decreased by 36.8 per cent during the period 1990–2008, from 5,909.7 to 3,736.6 Tg CO₂ eq; GHG emissions including LULUCF decreased by 48.5 per cent over the same period. From 2000 to 2008, GHG emissions from these Parties increased by 8.0 per cent excluding LULUCF and by 4.2 per cent including LULUCF. Between 2007 and 2008, emissions excluding LULUCF increased by 0.2 per cent and emissions including LULUCF decreased by 2.3 per cent.

20. For Annex I non-EIT Parties, GHG emissions excluding LULUCF increased from 1990 to 2008 by 7.9 per cent and GHG emissions including LULUCF increased by 8.3 per cent. From 2000 to 2008, GHG emissions decreased by 1.0 per cent excluding LULUCF and by 2.2 per cent including LULUCF. Between 2007 and 2008, GHG emissions also decreased, by 2.6 per cent excluding LULUCF and by 5.7 per cent including LULUCF.

¹² One teragram (Tg) equals one million tonnes.

Figure 2
Changes in greenhouse gas emissions from Annex I Parties, 1990–2008



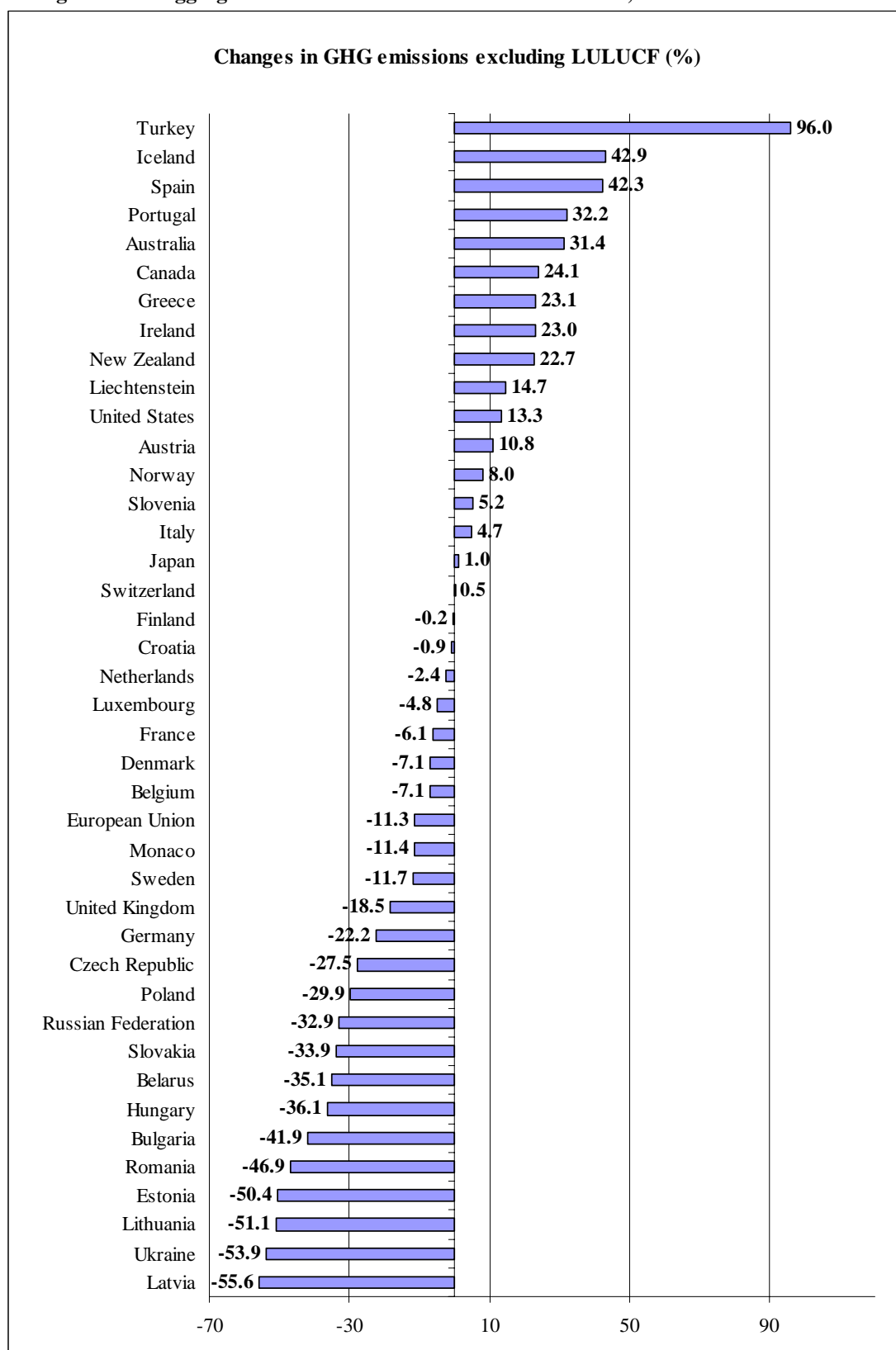
Abbreviations: EIT = Parties with economies in transition, LULUCF = land use, land-use change and forestry.

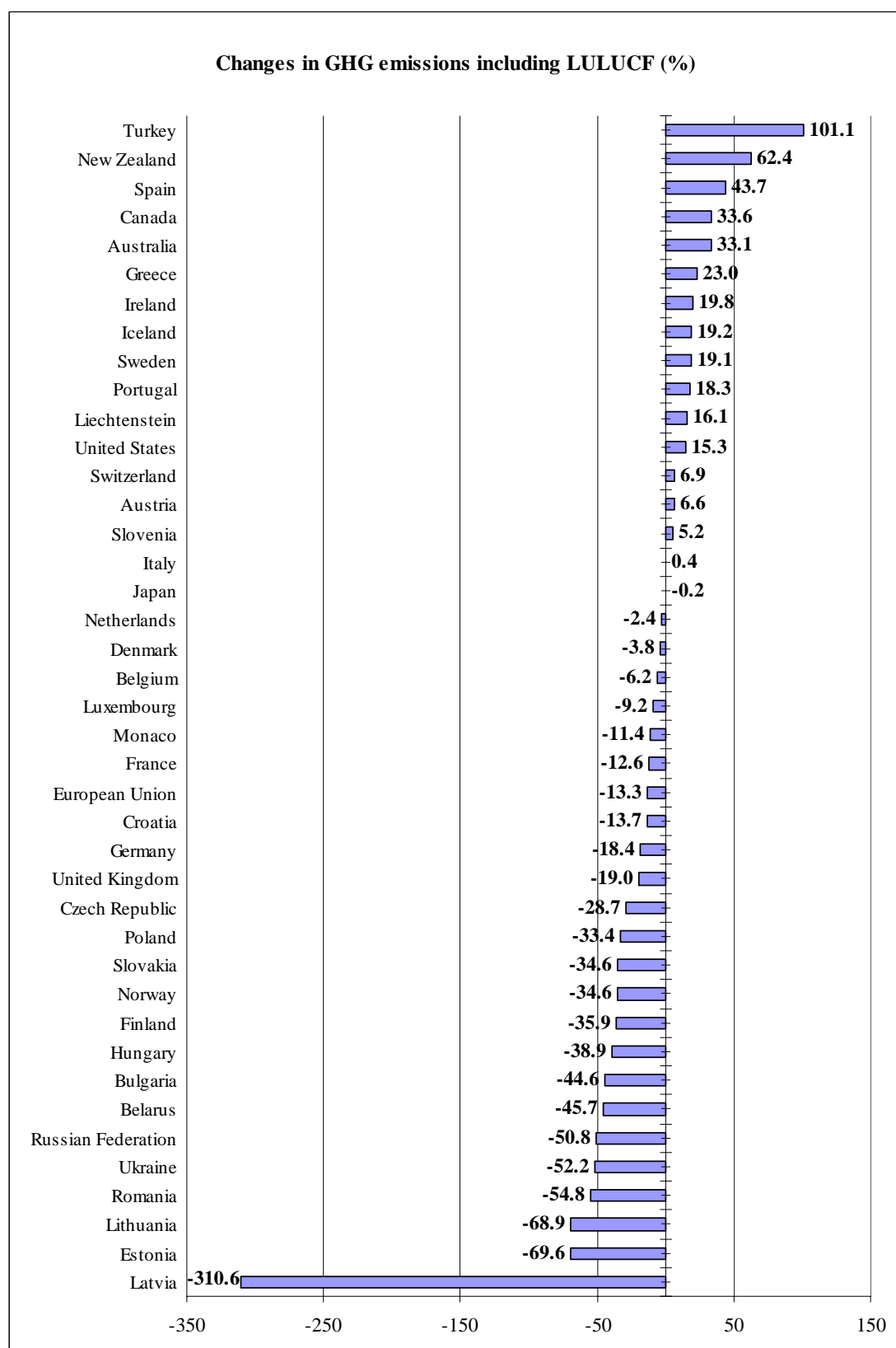
21. The changes in total aggregate GHG emissions over the period 1990–2008 varied considerably among countries (figure 3). Latvia has the largest decrease in emissions: 55.6 per cent for emissions excluding LULUCF and 310.6 per cent for emissions including LULUCF. On the other hand, Turkey has the greatest increase in emissions excluding LULUCF (by 96.0 per cent) and including LULUCF (by 101.1 per cent).

B. Greenhouse gas emissions by gas

22. In both 1990 and 2008, CO₂ accounted for the largest share of total emissions (79.9 per cent in 1990 and 82.4 per cent in 2008). Figure 4 illustrates the share of each GHG in total emissions excluding LULUCF for both years. It also illustrates the changes in total emissions of each GHG from 1990 to 2008. Emissions of CO₂, CH₄ and N₂O decreased, whereas emissions of HFCs, PFCs and SF₆ taken together increased by 15.5 per cent.

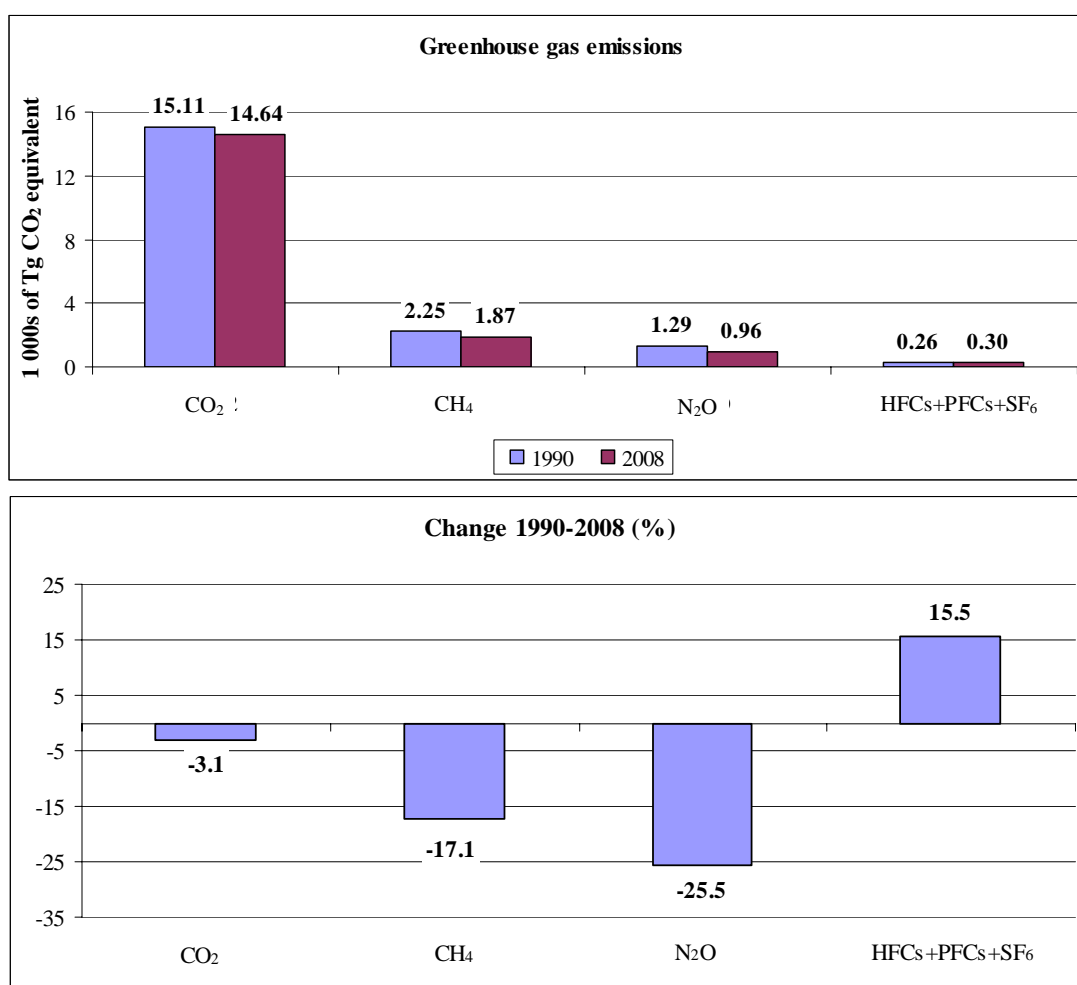
Figure 3

Changes in total aggregate emissions of individual Annex I Parties, 1990–2008



Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

Figure 4

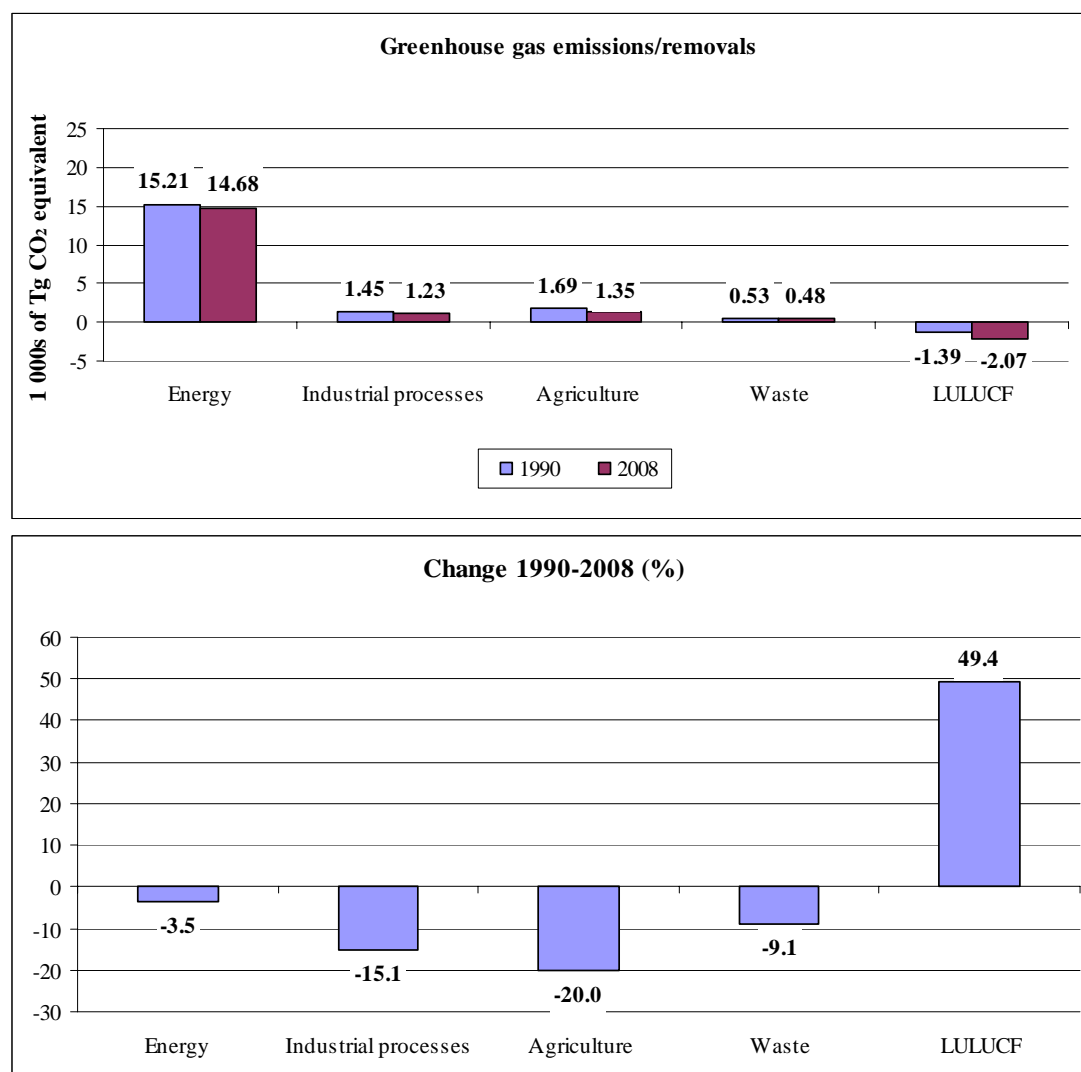
Greenhouse gas emissions from Annex I Parties by gas, 1990 and 2008

23. Between 2007 and 2008, CO₂ emissions decreased by 2.5 per cent and N₂O emissions decreased by 0.01 per cent. Emissions of CH₄, as well as emissions of HFCs, PFCs and SF₆ taken together, slightly increased.

C. Greenhouse gas emissions by sector

24. For all Annex I Parties taken together, emissions from all sectors decreased from 1990 to 2008. Net GHG removals by LULUCF increased by almost 50 per cent in 2008, from -1,386.4 Tg CO₂ eq to -2,071.4 Tg CO₂ eq. Figure 5 shows the trends in Annex I Parties' aggregate GHG emissions by sector.

Figure 5
Greenhouse gas emissions/removals from Annex I Parties by sector, 1990 and 2008^a



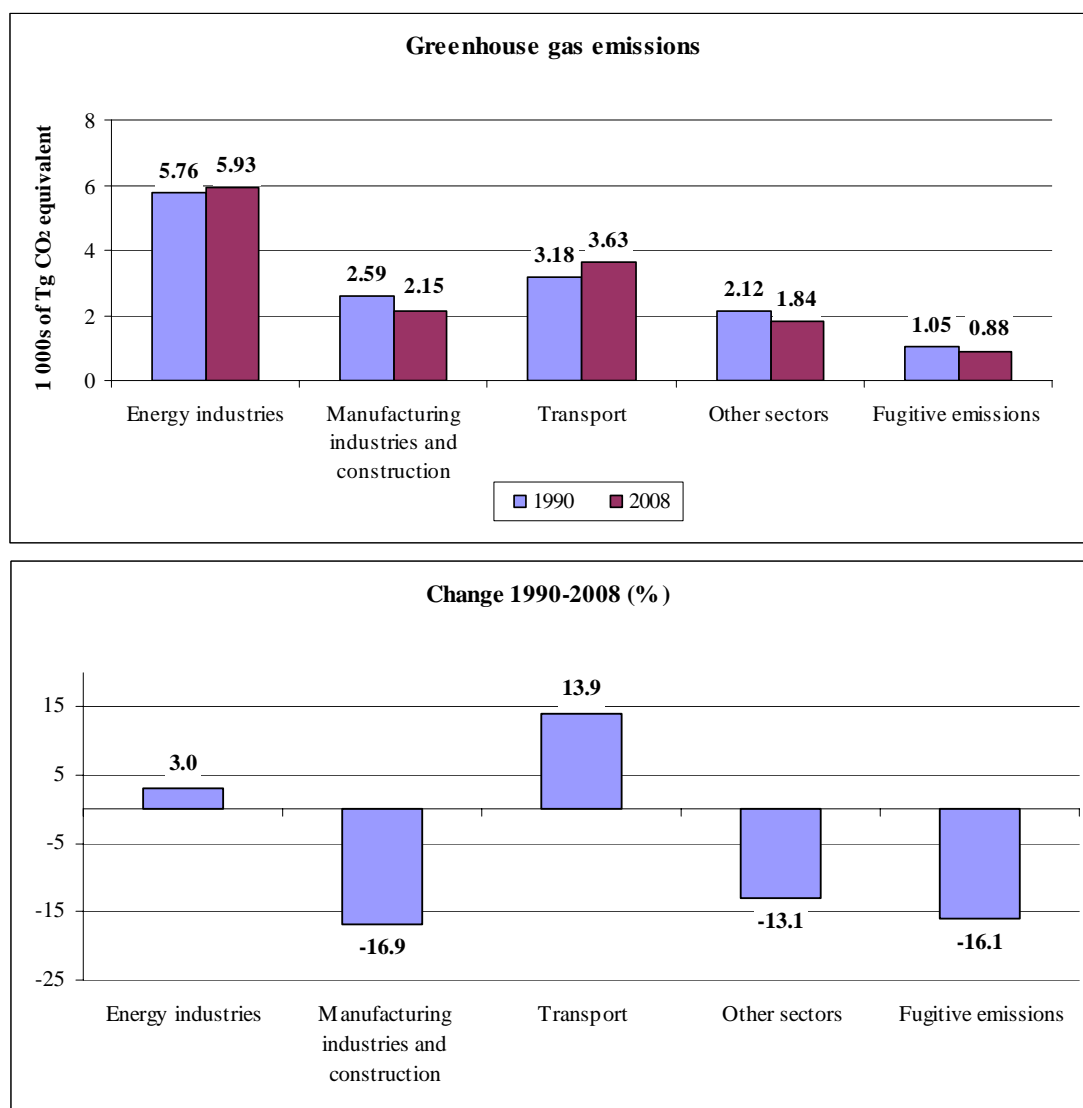
Abbreviation: LULUCF = land use, land-use change and forestry.

^a The sector solvent and other product use is not included in the figure because its contribution to total emissions is very small. Emissions from this sector decreased by 21.1 per cent.

25. Between 2007 and 2008, emissions from the energy, industrial processes and waste sectors decreased by 2.1, 5.0 and 1.0 per cent, respectively. Emissions from the agriculture sector slightly increased, by 0.9 per cent. Net GHG removals by LULUCF increased by 29.2 per cent.

26. Figure 6 shows the profile of, and trends in, emissions within the energy sector from 1990 to 2008. The largest increase in emissions occurred in transport (13.9 per cent) and the largest reduction occurred in manufacturing industries and construction (16.9 per cent). Emissions from energy industries increased, while emissions from other sectors, and fugitive emissions, decreased.

Figure 6

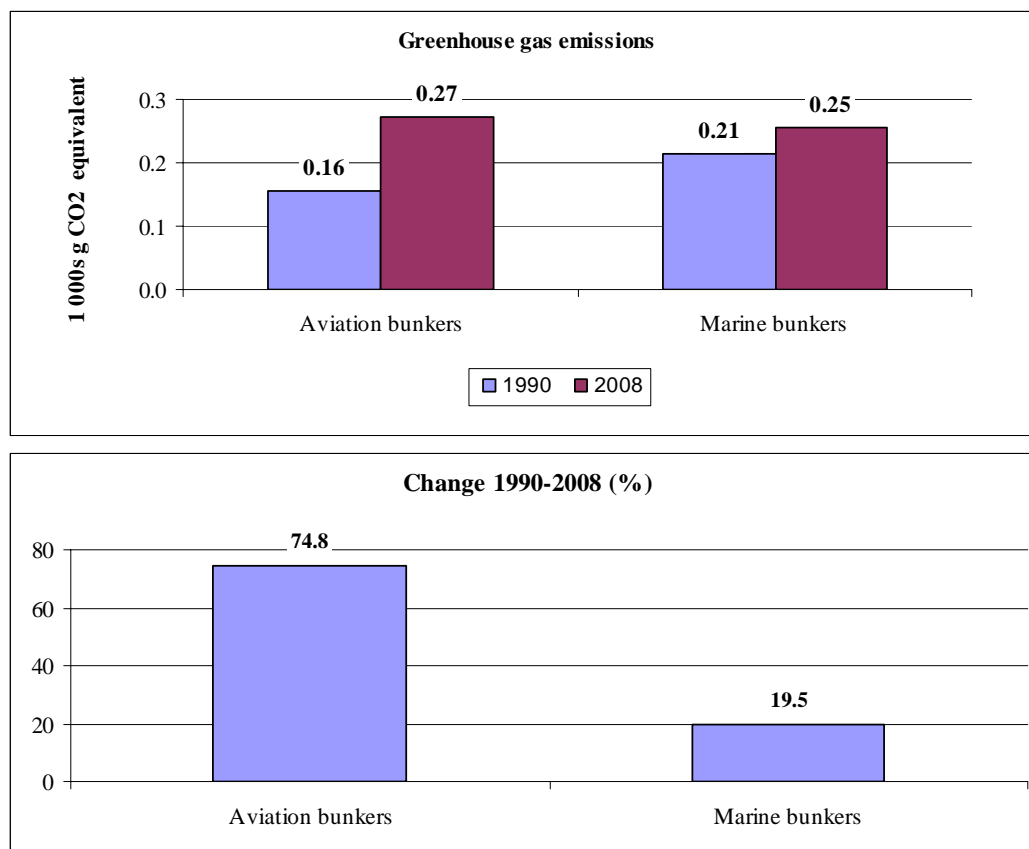
Greenhouse gas emissions from Annex I Parties in the energy sector, 1990 and 2008

27. From 2007 to 2008, emissions from other sectors increased by 3.7 per cent and fugitive emissions increased by 0.1 per cent. The greatest decrease in emissions occurred in manufacturing industries and construction (by 4.3 per cent), followed by transport (by 3.6 per cent) and energy industries (by 2.3 per cent).

28. Increases in emissions over the period 1990–2008 relating to fuels sold for use in international aviation and marine transportation are presented in figure 7. GHG emissions increased by 74.8 per cent for aviation and by 19.5 per cent for marine transportation.

29. Emissions from international bunkers also increased between 2007 and 2008 – by 1.9 per cent for aviation and by 0.1 per cent for marine transportation.

Figure 7

Greenhouse gas emissions from Annex I Parties from international bunker fuels, 1990 and 2008

30. Table 4 shows a comparison of the percentage changes in total aggregate emissions from 1990 to the latest available year reported in the document published in 2009, based on Parties' 2009 submissions, with those reported in the current document, based on Parties' 2010 submissions. The table also provides explanations for the differences in the estimates.

Table 4

Comparison of 2010 and 2009 changes in total aggregate greenhouse gas emissions from Annex I Parties

	2009 (FCCC/SBI/2009/12)	2010 (FCCC/SBI/2010/18)	Explanation of the difference between 2010 and 2009 estimates
Changes in total aggregate GHG emissions excluding LULUCF from 1990 to the latest available year (%)			
All Annex I Parties	-3.9	-6.1	Combined impact of changes for individual Annex I Parties
Annex I EIT Parties	-37.0	-36.8	Increases in emissions between 2007 and 2008 (for example, in Belarus and the Russian Federation)
Annex I non-EIT Parties	11.2	7.9	Inventory recalculations and decreases in emissions (for example, in Canada, Japan and the United States of America)

	2009 (FCCC/SBI/2009/12)	2010 (FCCC/SBI/2010/18)	Explanation of the difference between 2010 and 2009 estimates
Changes in total aggregate GHG emissions including LULUCF from 1990 to the latest available year (%)			
All Annex I Parties	-5.2	-10.4	Combined impact of changes for individual Annex I Parties
Annex I EIT Parties	-42.2	-48.5	Inventory recalculations and decreases in emissions between 2007 and 2008 (for example, in Czech Republic, Romania and the Russian Federation)
Annex I non-EIT Parties	12.8	8.3	Decreases in emissions between 2007 and 2008 (for example, in Australia, Canada and Italy)

Abbreviations: EIT = Parties with economies in transition, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

D. Emissions data for individual Annex I Parties

31. Detailed GHG data for Annex I Parties are presented in tables 5–16. Total aggregate anthropogenic GHG emissions excluding and including emissions/removals from LULUCF are provided in tables 5 and 6; emissions of CO₂, CH₄ and N₂O (excluding and including emissions/removals from LULUCF) in tables 7–12; emissions of HFCs, PFCs and SF₆ taken together in table 13; and emissions/removals from LULUCF in tables 14–16.

32. Blank cells in the tables denote that either data were not available or notation keys, such as “not occurring” (NO), “not estimated” (NE), “not applicable” (NA), “included elsewhere” (IE) or “confidential” (C), were used to report emissions data. Negative values mean removals; positive values mean emissions.

33. The changes in emissions from 1990 to 2008 were calculated using the exact (not rounded) values and they may differ from a ratio calculated with the rounded numbers provided in the tables. In these tables, an en dash (–) has been inserted to denote percentage changes exceeding 10,000 per cent.

Table 5

Total aggregate anthropogenic emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ excluding emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	418 372	496 185	527 743	541 323	549 540	31.4
Austria	78 171	80 296	92 916	86 957	86 640	10.8
Belarus*	140 399	78 831	84 524	87 636	91 113	-35.1
Belgium	143 394	144 643	141 464	130 210	133 253	-7.1
Bulgaria* ^a	128 015	69 354	72 631	77 319	74 318	-41.9
Canada	591 872	717 156	730 990	750 415	734 566	24.1
Croatia*	31 441	25 886	30 392	32 294	31 143	-0.9
Czech Republic*	195 189	147 522	145 385	147 485	141 434	-27.5
Denmark	70 289	69 708	65 283	68 335	65 325	-7.1
Estonia*	40 843	18 188	19 412	22 055	20 254	-50.4
European Union ^b	5 567 026	5 062 303	5 116 735	5 038 775	4 939 738	-11.3
Finland	70 444	69 183	68 505	78 144	70 282	-0.2
France	566 123	560 865	561 094	534 919	531 804	-6.1
Germany	1 231 753	1 024 672	977 585	957 335	958 061	-22.2
Greece	104 349	126 262	134 315	133 363	128 492	23.1
Hungary* ^a	114 545	77 080	79 846	75 714	73 139	-36.1
Iceland	3 415	3 766	3 727	4 508	4 880	42.9
Ireland	54 811	67 757	68 821	67 648	67 439	23.0
Italy	517 049	549 812	572 638	552 629	541 485	4.7
Japan	1 268 675	1 344 290	1 354 553	1 369 037	1 281 884	1.0
Latvia*	26 793	10 221	11 354	12 285	11 905	-55.6
Liechtenstein	230	255	271	243	263	14.7
Lithuania*	49 723	19 388	22 973	25 463	24 327	-51.1
Luxembourg	13 118	9 902	13 276	12 790	12 494	-4.8
Monaco	108	120	104	98	95	-11.4
Netherlands	212 007	214 573	212 362	206 918	206 917	-2.4
New Zealand	61 199	70 064	77 203	75 202	75 120	22.7
Norway	49 747	53 298	53 565	55 145	53 706	8.0
Poland* ^a	564 017	390 207	389 963	399 877	395 558	-29.9
Portugal	59 292	81 301	86 622	79 872	78 381	32.2
Romania* ^a	274 754	136 231	149 525	152 644	145 916	-46.9
Russian Federation*	3 321 718	2 024 848	2 115 407	2 187 781	2 229 565	-32.9
Slovakia*	73 896	49 186	50 077	47 742	48 831	-33.9
Slovenia* ^a	20 228	18 821	20 217	20 571	21 285	5.2
Spain	285 123	380 797	435 112	438 677	405 740	42.3
Sweden	72 438	68 861	67 711	66 163	63 963	-11.7
Switzerland	52 954	51 882	54 011	51 620	53 224	0.5
Turkey**	187 029	297 006	329 867	379 976	366 502	96.0
Ukraine*	928 126	393 130	423 064	440 477	427 843	-53.9
United Kingdom	774 680	675 981	658 088	643 723	631 733	-18.5
United States	6 111 815	7 008 191	7 104 615	7 120 444	6 924 556	13.3
Number of Parties showing decrease in emissions by more than 1 per cent:						22
Number of Parties showing change in emissions within 1 per cent:						3
Number of Parties showing increase in emissions by more than 1 per cent:						16

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.

^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 6

Total aggregate anthropogenic emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ including emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	464 497	493 679	569 893	880 861	618 058	33.1
Austria	65 032	63 143	75 584	69 569	69 303	6.6
Belarus*	110 584	43 544	53 719	56 402	60 078	-45.7
Belgium	140 648	143 016	139 767	128 956	131 978	-6.2
Bulgaria ^a	114 261	59 656	61 796	67 587	63 284	-44.6
Canada	540 306	636 836	772 403	795 868	721 740	33.6
Croatia*	23 148	15 806	19 640	21 123	19 977	-13.7
Czech Republic*	191 559	139 977	138 699	146 755	136 655	-28.7
Denmark	69 402	69 554	63 268	69 224	66 789	-3.8
Estonia*	34 562	16 737	10 938	12 583	10 524	-69.6
European Union ^b	5 223 181	4 663 034	4 716 147	4 681 293	4 529 841	-13.3
Finland	54 459	46 592	35 682	47 492	34 888	-35.9
France	531 401	514 926	491 328	465 550	464 442	-12.6
Germany	1 211 588	1 002 611	1 012 544	996 296	988 246	-18.4
Greece	101 872	123 227	131 166	130 336	125 316	23.0
Hungary ^a	112 296	75 853	75 276	72 838	68 623	-38.9
Iceland	5 771	5 951	5 793	6 529	6 877	19.2
Ireland	55 059	67 899	68 346	66 668	65 969	19.8
Italy	452 292	473 868	480 674	500 361	454 187	0.4
Japan	1 205 317	1 264 028	1 268 430	1 287 234	1 203 076	-0.2
Latvia*	8 059	-11 242	-13 922	-16 522	-16 972	-310.6
Liechtenstein	221	250	265	237	257	16.1
Lithuania*	34 157	5 469	9 062	12 411	10 637	-68.9
Luxembourg	13 466	9 516	12 890	12 517	12 222	-9.2
Monaco	108	120	104	98	95	-11.4
Netherlands	214 604	217 084	214 742	209 456	209 363	-2.4
New Zealand	30 133	38 783	53 410	58 381	48 943	62.4
Norway	38 465	40 748	27 513	27 449	25 150	-34.6
Poland ^a	535 336	365 723	353 694	357 020	356 375	-33.4
Portugal	63 763	79 901	91 881	77 232	75 424	18.3
Romania ^a	242 321	98 231	112 344	116 530	109 501	-54.8
Russian Federation*	3 438 975	1 653 088	1 695 344	1 757 842	1 690 974	-50.8
Slovakia*	71 507	46 800	49 325	44 643	46 755	-34.6
Slovenia ^a	12 121	10 168	11 691	12 061	12 753	5.2
Spain	246 299	334 632	386 459	388 736	353 969	43.7
Sweden	41 396	32 736	47 413	51 349	49 287	19.1
Switzerland	49 992	52 872	53 228	51 765	53 436	6.9
Turkey**	142 159	229 448	260 334	303 702	285 922	101.1
Ukraine*	859 586	341 605	382 977	390 331	411 257	-52.2
United Kingdom	777 634	675 672	656 174	641 871	629 791	-19.0
United States	5 217 347	6 380 232	6 182 798	6 212 669	6 016 408	15.3
Number of Parties showing decrease in emissions by more than 1 per cent:						24
Number of Parties showing change in emissions within 1 per cent:						2
Number of Parties showing increase in emissions by more than 1 per cent:						15

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.

^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 7

Total anthropogenic carbon dioxide emissions excluding emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	277 922	349 271	381 839	393 296	400 378	44.1
Austria	62 068	65 799	79 773	73 972	73 629	18.6
Belarus*	103 807	53 319	56 670	58 280	60 365	-41.8
Belgium	118 688	123 796	123 538	113 948	117 176	-1.3
Bulgaria ^a	94 884	49 904	53 513	58 747	55 465	-41.5
Canada	455 844	559 878	569 068	591 398	573 708	25.9
Croatia*	23 108	19 927	23 378	24 833	23 687	2.5
Czech Republic*	164 336	127 151	125 240	126 407	120 761	-26.5
Denmark	54 142	54 938	52 204	55 292	52 047	-3.9
Estonia*	36 136	15 442	16 687	19 228	17 383	-51.9
European Union ^b	4 400 727	4 111 777	4 238 882	4 177 818	4 088 832	-7.1
Finland	56 624	56 710	56 357	66 102	58 139	2.7
France	397 928	410 447	423 393	399 871	395 258	-0.7
Germany	1 036 716	886 900	853 540	833 926	833 092	-19.6
Greece	83 193	103 212	113 370	114 449	110 036	32.3
Hungary ^a	84 938	58 542	60 940	57 885	56 223	-33.8
Iceland	2 172	2 775	2 877	3 301	3 595	65.5
Ireland	32 377	44 651	47 520	47 305	47 392	46.4
Italy	435 775	463 603	490 477	476 749	468 068	7.4
Japan	1 143 432	1 254 285	1 285 966	1 300 575	1 214 438	6.2
Latvia*	19 271	7 087	7 870	8 722	8 304	-56.9
Liechtenstein	203	228	240	211	230	13.2
Lithuania*	36 091	12 031	14 288	15 863	15 153	-58.0
Luxembourg	12 158	8 891	12 283	11 802	11 478	-5.6
Monaco	105	113	99	92	90	-14.6
Netherlands	159 321	169 722	175 782	172 257	175 685	10.3
New Zealand	24 893	30 939	36 106	35 233	36 063	44.9
Norway	34 802	41 589	42 822	45 087	44 156	26.9
Poland ^a	470 521	320 727	319 286	327 043	323 894	-31.2
Portugal	43 590	63 691	68 285	61 524	59 544	36.6
Romania ^a	193 309	95 307	105 874	110 860	103 706	-46.4
Russian Federation*	2 499 719	1 471 393	1 526 102	1 580 249	1 615 117	-35.4
Slovakia*	62 571	41 098	41 389	38 866	39 764	-36.5
Slovenia ^a	16 287	15 177	16 626	16 930	17 900	9.9
Spain	228 228	307 021	367 182	367 812	337 516	47.9
Sweden	56 615	53 888	53 328	52 291	50 416	-10.9
Switzerland	44 510	43 946	46 030	43 626	45 064	1.2
Turkey ^{**}	141 362	225 432	259 605	307 916	297 124	110.2
Ukraine*	716 361	289 319	322 647	340 735	325 899	-54.5
United Kingdom	591 142	553 047	557 632	547 480	536 705	-9.2
United States	5 092 723	5 968 433	6 099 492	6 110 889	5 912 625	16.1
Number of Parties showing decrease in emissions by more than 1 per cent:						20
Number of Parties showing change in emissions within 1 per cent:						1
Number of Parties showing increase in emissions by more than 1 per cent:						20

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 8

Total anthropogenic carbon dioxide emissions including emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	317 190	342 384	418 281	724 208	464 036	46.3
Austria	48 497	48 359	62 161	56 295	55 974	15.4
Belarus*	73 982	18 017	25 853	27 031	29 315	-60.4
Belgium	115 941	122 169	121 840	112 694	115 900	0.0
Bulgaria ^a	80 966	39 833	42 509	48 694	44 248	-45.3
Canada	398 214	476 945	600 723	626 821	554 227	39.2
Croatia*	14 815	9 847	12 625	13 662	12 521	-15.5
Czech Republic*	160 575	119 495	118 421	125 470	115 818	-27.9
Denmark	53 235	54 765	50 176	56 168	53 498	0.5
Estonia*	29 849	13 986	8 212	9 753	7 650	-74.4
European Union ^b	4 048 199	3 703 794	3 829 393	3 811 659	3 670 898	-9.3
Finland	40 516	33 992	23 398	35 310	22 585	-44.3
France	358 838	360 143	349 964	327 101	324 455	-9.6
Germany	1 016 438	864 733	887 701	871 887	862 488	-15.1
Greece	80 689	100 079	110 216	111 246	106 839	32.4
Hungary ^a	82 659	57 256	56 298	54 941	51 652	-37.5
Iceland	4 228	4 654	4 635	5 010	5 278	24.8
Ireland	32 609	44 769	47 011	46 292	45 878	40.7
Italy	370 777	387 567	398 471	424 265	380 718	2.7
Japan	1 079 972	1 173 985	1 199 820	1 218 760	1 135 599	5.2
Latvia*	365	-14 592	-17 597	-20 271	-20 748	-5 791.0
Liechtenstein	195	223	234	205	224	14.7
Lithuania*	20 503	-1 912	355	2 789	1 440	-93.0
Luxembourg	12 503	8 502	11 895	11 527	11 203	-10.4
Monaco	105	113	99	92	90	-14.6
Netherlands	161 918	172 233	178 162	174 794	178 132	10.0
New Zealand	-6 226	-392	12 262	18 356	9 844	-258.1
Norway	23 504	29 026	16 757	17 378	15 581	-33.7
Poland ^a	441 832	294 004	280 723	281 875	282 375	-36.1
Portugal	47 784	62 049	72 918	58 832	56 546	18.3
Romania ^a	160 876	57 298	68 693	74 739	67 289	-58.2
Russian Federation*	2 612 573	1 095 629	1 103 739	1 147 419	1 070 391	-59.0
Slovakia*	60 165	38 695	40 610	35 744	37 662	-37.4
Slovenia ^a	8 181	6 517	8 093	8 418	9 366	14.5
Spain	189 214	260 679	318 268	317 834	285 721	51.0
Sweden	25 491	17 686	32 928	37 361	35 606	39.7
Switzerland	41 528	44 931	45 242	43 765	45 272	9.0
Turkey ^{**}	96 492	157 875	190 073	231 642	216 544	124.4
Ukraine*	647 810	237 789	282 553	290 457	309 272	-52.3
United Kingdom	594 071	552 707	555 694	545 593	534 731	-10.0
United States	4 191 418	5 312 954	5 158 028	5 164 810	4 980 855	18.8
Number of Parties showing decrease in emissions by more than 1 per cent:						22
Number of Parties showing change in emissions within 1 per cent:						2
Number of Parties showing increase in emissions by more than 1 per cent:						17

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 9

Total anthropogenic methane emissions excluding emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	115 911	116 964	113 084	115 413	115 688	-0.2
Austria	8 306	6 641	6 086	5 861	5 717	-31.2
Belarus*	15 404	11 401	13 249	14 327	14 759	-4.2
Belgium	10 012	8 295	6 822	6 643	6 505	-35.0
Bulgaria ^a	19 788	14 692	13 900	13 660	13 550	-31.5
Canada	73 995	97 663	101 256	100 040	98 731	33.4
Croatia*	3 437	2 670	3 126	3 472	3 372	-1.9
Czech Republic*	18 464	12 088	11 676	11 693	11 546	-37.5
Denmark	5 536	5 655	5 488	5 615	5 591	1.0
Estonia*	2 724	1 652	1 664	1 645	1 612	-40.8
European Union ^b	593 622	475 574	422 793	412 664	407 993	-31.3
Finland	6 315	5 406	4 530	4 466	4 340	-31.3
France	65 887	61 675	55 449	54 434	54 439	-17.4
Germany	103 290	67 956	51 473	48 144	47 742	-53.8
Greece	9 760	9 964	9 017	8 859	8 783	-10.0
Hungary ^a	11 862	9 435	8 891	8 660	8 480	-28.5
Iceland	445	446	432	470	467	5.0
Ireland	13 575	13 336	12 786	12 302	12 165	-10.4
Italy	41 564	43 963	38 542	36 918	35 976	-13.4
Japan	31 901	25 792	22 680	21 764	21 304	-33.2
Latvia*	3 732	1 926	1 987	1 927	1 974	-47.1
Liechtenstein	13	12	14	15	15	11.6
Lithuania*	6 359	3 083	3 301	3 494	3 428	-46.1
Luxembourg	469	478	459	451	451	-3.8
Monaco	0.65	0.80	0.62	0.61	0.58	-9.7
Netherlands	25 549	19 776	17 234	16 848	17 078	-33.2
New Zealand	25 882	27 377	27 683	26 918	26 277	1.5
Norway	4 655	4 738	4 444	4 445	4 314	-7.3
Poland ^a	51 940	38 898	37 578	36 974	36 044	-30.6
Portugal	10 168	11 430	12 411	12 415	12 843	26.3
Romania ^a	46 421	25 127	26 462	25 948	25 703	-44.6
Russian Federation*	575 547	425 260	467 014	483 387	486 152	-15.5
Slovakia*	4 811	4 449	4 652	4 613	4 729	-1.7
Slovenia ^a	2 263	2 187	2 155	2 190	2 069	-8.6
Spain	26 291	33 659	35 394	36 568	36 043	37.1
Sweden	6 732	6 100	5 650	5 339	5 088	-24.4
Switzerland	4 668	3 909	3 793	3 788	3 877	-16.9
Turkey**	33 498	53 300	52 354	55 583	54 295	62.1
Ukraine*	152 240	77 496	74 323	72 459	72 367	-52.5
United Kingdom	104 585	69 669	51 693	49 452	48 898	-53.2
United States	610 202	571 675	543 366	549 194	555 698	-8.9
Number of Parties showing decrease in emissions by more than 1 per cent:						32
Number of Parties showing change in emissions within 1 per cent:						2
Number of Parties showing increase in emissions by more than 1 per cent:						7

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 10

Total anthropogenic methane emissions including emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	120 786	119 956	117 211	121 753	119 026	-1.5
Austria	8 306	6 641	6 086	5 861	5 717	-31.2
Belarus*	15 408	11 406	13 252	14 331	14 763	-4.2
Belgium	10 012	8 295	6 822	6 643	6 505	-35.0
Bulgaria ^a	19 789	14 863	13 904	13 789	13 566	-31.4
Canada	77 739	99 277	107 280	106 230	102 838	32.3
Croatia*	3 437	2 670	3 126	3 472	3 372	-1.9
Czech Republic*	18 564	12 180	11 789	11 875	11 689	-37.0
Denmark	5 536	5 655	5 488	5 615	5 591	1.0
Estonia*	2 728	1 656	1 665	1 646	1 613	-40.9
European Union ^b	597 895	481 083	428 175	417 756	412 652	-31.0
Finland	6 350	5 444	4 569	4 504	4 378	-31.0
France	67 163	63 972	57 442	56 331	56 350	-16.1
Germany	103 299	67 959	51 474	48 146	47 745	-53.8
Greece	9 785	10 053	9 022	9 018	8 802	-10.0
Hungary ^a	11 887	9 462	8 925	8 691	8 501	-28.5
Iceland	447	454	440	484	481	7.7
Ireland	13 576	13 337	12 786	12 303	12 166	-10.4
Italy	41 710	44 047	38 580	37 114	36 022	-13.6
Japan	31 909	25 800	22 689	21 766	21 326	-33.2
Latvia*	3 752	1 985	2 021	1 959	2 003	-46.6
Liechtenstein	13	12	14	15	15	11.6
Lithuania*	6 360	3 085	3 302	3 494	3 429	-46.1
Luxembourg	469	478	459	451	451	-3.8
Monaco	0.65	0.80	0.62	0.61	0.58	-9.7
Netherlands	25 549	19 776	17 234	16 848	17 078	-33.2
New Zealand	25 930	27 422	27 730	26 969	26 316	1.5
Norway	4 657	4 738	4 444	4 445	4 320	-7.2
Poland ^a	51 948	41 127	39 862	39 278	38 372	-26.1
Portugal	10 396	11 626	12 955	12 439	12 855	23.7
Romania ^a	46 421	25 135	26 462	25 955	25 705	-44.6
Russian Federation*	579 179	428 563	468 809	485 724	491 442	-15.1
Slovakia*	4 826	4 463	4 675	4 632	4 750	-1.6
Slovenia ^a	2 263	2 192	2 161	2 192	2 071	-8.5
Spain	26 464	33 819	35 630	36 603	36 064	36.3
Sweden	6 733	6 103	5 655	5 341	5 101	-24.2
Switzerland	4 676	3 909	3 793	3 790	3 877	-17.1
Turkey**	33 498	53 300	52 354	55 583	54 295	62.1
Ukraine*	152 248	77 499	74 328	72 564	72 401	-52.4
United Kingdom	104 601	69 694	51 713	49 483	48 926	-53.2
United States	613 388	585 971	553 171	569 201	567 632	-7.5
Number of Parties showing decrease in emissions by more than 1 per cent:						33
Number of Parties showing change in emissions within 1 per cent:						1
Number of Parties showing increase in emissions by more than 1 per cent:						7

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 11

Total anthropogenic nitrous oxide emissions excluding emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	18 943	26 530	26 169	26 147	26 820	41.6
Austria	6 197	6 275	5 430	5 497	5 681	-8.3
Belarus*	21 188	14 101	14 577	14 995	15 950	-24.7
Belgium	10 859	11 133	9 384	7 590	7 547	-30.5
Bulgaria ^a	13 343	4 723	5 101	4 703	4 994	-62.6
Canada	50 023	47 977	49 610	49 535	52 138	4.2
Croatia*	3 948	3 253	3 524	3 508	3 484	-11.8
Czech Republic*	12 311	7 870	7 779	7 683	7 790	-36.7
Denmark	10 567	8 424	6 736	6 514	6 771	-35.9
Estonia*	1 984	1 021	941	1 041	1 125	-43.3
European Union ^b	513 665	408 885	380 963	368 474	360 130	-29.9
Finland	7 410	6 499	6 712	6 627	6 757	-8.8
France	92 289	77 234	67 340	64 421	65 435	-29.1
Germany	79 886	57 470	56 978	58 029	59 381	-25.7
Greece	10 200	8 658	7 893	7 878	7 101	-30.4
Hungary ^a	17 394	8 540	9 067	8 374	7 498	-56.9
Iceland	377	388	339	388	396	5.1
Ireland	8 823	9 178	7 816	7 341	7 195	-18.5
Italy	37 218	39 421	37 534	31 546	29 434	-20.9
Japan	31 503	28 705	23 863	22 606	22 499	-28.6
Latvia*	3 790	1 202	1 463	1 560	1 536	-59.5
Liechtenstein	13	13	13	13	13	-0.7
Lithuania*	7 273	4 269	5 367	6 081	5 716	-21.4
Luxembourg	474	487	448	446	465	-1.9
Monaco	1.64	3.29	3.02	3.07	2.95	80.3
Netherlands	20 224	19 285	17 312	15 419	11 755	-41.9
New Zealand	9 779	11 369	12 594	12 075	11 913	21.8
Norway	4 719	4 480	4 676	4 150	3 768	-20.2
Poland ^a	41 339	29 715	29 796	32 041	31 698	-23.3
Portugal	5 534	5 865	5 123	4 981	4 944	-10.7
Romania ^a	31 674	14 494	16 563	15 134	15 840	-50.0
Russian Federation*	226 781	109 499	103 639	105 690	111 052	-51.0
Slovakia*	6 242	3 539	3 826	3 994	4 021	-35.6
Slovenia ^a	1 391	1 307	1 206	1 227	1 157	-16.8
Spain	27 251	31 381	27 035	27 880	25 316	-7.1
Sweden	8 603	7 974	7 530	7 264	7 234	-15.9
Switzerland	3 533	3 316	3 219	3 249	3 266	-7.5
Turkey ^{**}	11 566	16 617	14 182	12 351	11 571	0.0
Ukraine*	59 323	26 208	25 888	27 090	29 377	-50.5
United Kingdom	65 136	42 321	36 909	34 768	33 961	-47.9
United States	318 615	332 310	318 473	309 384	306 509	-3.8
Number of Parties showing decrease in emissions by more than 1 per cent:						34
Number of Parties showing change in emissions within 1 per cent:						2
Number of Parties showing increase in emissions by more than 1 per cent:						5

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 12

Total anthropogenic nitrous oxide emissions including emissions/removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	20 924	27 918	27 751	28 433	28 343	35.5
Austria	6 629	6 562	5 710	5 787	5 999	-9.5
Belarus*	21 194	14 111	14 587	15 006	15 961	-24.7
Belgium	10 859	11 133	9 384	7 590	7 547	-30.5
Bulgaria ^a	13 506	4 925	5 265	4 895	5 160	-61.8
Canada	52 343	48 976	53 345	53 375	54 686	4.5
Croatia*	3 948	3 253	3 524	3 508	3 484	-11.8
Czech Republic*	12 342	7 889	7 798	7 708	7 811	-36.7
Denmark	10 586	8 444	6 749	6 527	6 784	-35.9
Estonia*	1 985	1 023	942	1 042	1 126	-43.3
European Union ^b	518 075	412 090	384 483	372 058	363 508	-29.8
Finland	7 499	6 588	6 809	6 729	6 879	-8.3
France	95 382	79 303	69 010	65 924	66 964	-29.8
Germany	79 989	57 572	57 775	59 028	60 166	-24.8
Greece	10 202	8 667	7 894	7 894	7 103	-30.4
Hungary ^a	17 401	8 573	9 105	8 410	7 532	-56.7
Iceland	675	686	639	686	696	3.1
Ireland	8 837	9 201	7 848	7 373	7 237	-18.1
Italy	37 313	39 429	37 538	31 566	29 439	-21.1
Japan	31 596	28 735	23 878	22 615	22 509	-28.8
Latvia*	3 943	1 360	1 618	1 715	1 683	-57.3
Liechtenstein	13	13	13	13	13	-0.7
Lithuania*	7 294	4 291	5 389	6 103	5 738	-21.3
Luxembourg	476	490	450	449	467	-1.9
Monaco	1.64	3.29	3.02	3.07	2.95	80.3
Netherlands	20 224	19 285	17 312	15 419	11 755	-41.9
New Zealand	9 784	11 374	12 598	12 081	11 917	21.8
Norway	4 733	4 493	4 689	4 163	3 781	-20.1
Poland ^a	41 340	29 725	29 805	32 047	31 705	-23.3
Portugal	5 583	5 911	5 204	5 010	4 972	-10.9
Romania ^a	31 674	14 495	16 563	15 135	15 840	-50.0
Russian Federation*	227 551	110 199	104 144	106 244	111 897	-50.8
Slovakia*	6 245	3 542	3 831	3 998	4 025	-35.6
Slovenia ^a	1 391	1 308	1 207	1 228	1 157	-16.8
Spain	27 268	31 397	27 059	27 884	25 318	-7.2
Sweden	8 683	8 049	7 628	7 378	7 355	-15.3
Switzerland	3 544	3 322	3 224	3 254	3 271	-7.7
Turkey ^{**}	11 566	16 617	14 182	12 351	11 571	0.0
Ukraine*	59 325	26 209	25 890	27 117	29 386	-50.5
United Kingdom	65 144	42 326	36 912	34 772	33 965	-47.9
United States	322 266	345 534	328 314	327 681	318 196	-1.3
Number of Parties showing decrease in emissions by more than 1 per cent:						34
Number of Parties showing change in emissions within 1 per cent:						2
Number of Parties showing increase in emissions by more than 1 per cent:						5

* A Party undergoing the process of transition to a market economy.

** Decision 26/CP.7 invited Parties to recognize the special circumstances of Turkey, which place Turkey in a situation different from that of other Annex I Parties.

^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 13

Total aggregate anthropogenic emissions of hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	5 597	3 421	6 651	6 467	6 654	18.9
Austria	1 600	1 582	1 628	1 627	1 613	0.8
Belarus*		10	28	33	38	
Belgium	3 835	1 419	1 721	2 029	2 025	-47.2
Bulgaria ^a		35	118	210	309	
Canada	12 010	11 638	11 055	9 442	9 990	-16.8
Croatia*	948	35	364	480	601	-36.6
Czech Republic*	78	413	690	1 702	1 337	1 621.2
Denmark	44	690	855	914	916	1 961.0
Estonia*		73	120	142	133	
European Union ^b	59 012	66 067	74 097	79 819	82 782	40.3
Finland	94	568	907	948	1 046	1 006.8
France	10 018	11 509	14 912	16 194	16 672	66.4
Germany	11 861	12 347	15 594	17 235	17 846	50.5
Greece	1 196	4 427	4 035	2 179	2 573	115.1
Hungary ^a	350	563	948	795	938	168.3
Iceland	421	158	78	349	422	0.2
Ireland	36	592	701	700	688	1 800.6
Italy	2 492	2 825	6 085	7 416	8 008	221.4
Japan	61 840	35 508	22 043	24 092	23 643	-61.8
Latvia*		6	35	76	90	
Liechtenstein	0.00	2.41	4.68	4.84	5.51	-
Lithuania*		4	16	25	30	
Luxembourg	17	47	86	91	100	484.7
Monaco	0.16	2.69	1.91	2.04	1.95	1 116.3
Netherlands	6 914	5 790	2 034	2 394	2 398	-65.3
New Zealand	645	380	820	975	866	34.2
Norway	5 570	2 491	1 622	1 462	1 468	-73.6
Poland ^a	216	868	3 304	3 820	3 923	1 716.1
Portugal		315	803	951	1 050	
Romania ^a	3 350	1 303	626	702	668	-80.1
Russian Federation*	19 672	18 697	18 653	18 454	17 245	-12.3
Slovakia*	271	100	209	269	318	17.1
Slovenia ^a	287	151	230	224	158	-44.8
Spain	3 353	8 737	5 502	6 416	6 865	104.7
Sweden	488	899	1 203	1 269	1 225	151.0
Switzerland	244	710	969	956	1 017	317.0
Turkey ^{**}	603	1 656	3 725	4 126	3 513	482.1
Ukraine*	203	108	206	194	199	-2.0
United Kingdom	13 817	10 945	11 855	12 022	12 170	-11.9
United States	90 275	135 773	143 284	150 977	149 725	65.9
Number of Parties showing decrease in emissions by more than 1 per cent:						11
Number of Parties showing change in emissions within 1 per cent:						2
Number of Parties showing increase in emissions by more than 1 per cent:						22

* A Party undergoing the process of transition to a market economy.

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^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 14

Net anthropogenic carbon dioxide emissions and removals from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	39 268	-6 886	36 442	330 912	63 658	62.1
Austria	-13 571	-17 440	-17 612	-17 678	-17 655	30.1
Belarus*	-29 825	-35 303	-30 817	-31 249	-31 050	4.1
Belgium	-2 747	-1 627	-1 697	-1 254	-1 275	-53.6
Bulgaria ^a	-13 918	-10 071	-11 003	-10 053	-11 217	-19.4
Canada	-57 630	-82 932	31 655	35 424	-19 481	-66.2
Croatia*	-8 293	-10 080	-10 753	-11 171	-11 167	34.7
Czech Republic*	-3 761	-7 657	-6 819	-937	-4 943	31.4
Denmark	-906	-174	-2 028	876	1 451	-260.1
Estonia*	-6 287	-1 456	-8 475	-9 474	-9 733	54.8
European Union ^b	-352 528	-407 983	-409 489	-366 159	-417 934	18.6
Finland	-16 109	-22 718	-32 959	-30 792	-35 554	120.7
France	-39 091	-50 304	-73 429	-72 770	-70 803	81.1
Germany	-20 277	-22 166	34 161	37 961	29 396	-245.0
Greece	-2 505	-3 133	-3 154	-3 202	-3 197	27.6
Hungary ^a	-2 279	-1 286	-4 642	-2 944	-4 571	100.6
Iceland	2 056	1 879	1 758	1 709	1 683	-18.1
Ireland	232	118	-508	-1 013	-1 513	-751.5
Italy	-64 998	-76 036	-92 006	-52 485	-87 349	34.4
Japan	-63 460	-80 299	-86 147	-81 814	-78 839	24.2
Latvia*	-18 906	-21 680	-25 467	-28 993	-29 052	53.7
Liechtenstein	-8.22	-4.92	-6.33	-6.37	-6.39	-22.2
Lithuania*	-15 588	-13 943	-13 933	-13 075	-13 713	-12.0
Luxembourg	345	-388	-388	-276	-275	-179.7
Monaco	-0.03	-0.04	-0.04	-0.04	-0.04	10.1
Netherlands	2 597	2 512	2 380	2 537	2 447	-5.8
New Zealand	-31 119	-31 332	-23 844	-16 877	-26 219	-15.7
Norway	-11 298	-12 564	-26 066	-27 709	-28 576	152.9
Poland ^a	-28 689	-26 723	-38 563	-45 168	-41 518	44.7
Portugal	4 194	-1 642	4 633	-2 692	-2 998	-171.5
Romania ^a	-32 433	-38 008	-37 182	-36 122	-36 417	12.3
Russian Federation*	112 855	-375 764	-422 363	-432 830	-544 726	-582.7
Slovakia*	-2 407	-2 403	-780	-3 122	-2 101	-12.7
Slovenia ^a	-8 107	-8 660	-8 533	-8 513	-8 533	5.3
Spain	-39 014	-46 342	-48 914	-49 979	-51 795	32.8
Sweden	-31 123	-36 203	-20 401	-14 930	-14 810	-52.4
Switzerland	-2 981	984	-788	138	208	-107.0
Turkey**	-44 871	-67 558	-69 533	-76 274	-80 580	79.6
Ukraine*	-68 551	-51 530	-40 094	-50 278	-16 628	-75.7
United Kingdom	2 929	-339	-1 937	-1 886	-1 974	-167.4
United States	-901 305	-655 479	-941 464	-946 079	-931 770	3.4
Number of Parties showing decrease in emissions by more than 1 per cent:						19
Number of Parties showing change in emissions within 1 per cent:						0
Number of Parties showing increase in emissions by more than 1 per cent:						22

* A Party undergoing the process of transition to a market economy.

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^a Data for the base year defined by decisions 9/CP.2 and 11/CP.4 (Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989), Slovenia (1986)) are used for this Party instead of 1990 data.

^b Emission estimates of the European Union are as reported for the EU-27 and are reported separately from those of its member States.

Table 15

Anthropogenic methane emissions from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	4 875	2 992	4 127	6 341	3 338	-31.5
Austria	0.01	0.00	0.00	0.00	0.00	-75.0
Belarus*	4.10	4.91	3.20	3.56	4.50	9.8
Belgium						
Bulgaria* ^a	1	171	4	128	16	1 077.3
Canada	3 744	1 613	6 023	6 189	4 107	9.7
Croatia*	0.01	0.05	0.00	0.01	0.00	-65.9
Czech Republic*	100	92	113	182	144	43.6
Denmark						
Estonia*	4.76	3.11	0.41	1.28	1.64	-65.6
European Union ^b	4 273	5 509	5 382	5 093	4 659	9.0
Finland	34	38	39	38	38	11.6
France	1 276	2 297	1 992	1 897	1 912	49.8
Germany	9.08	3.42	1.10	1.55	3.28	-63.9
Greece	25	89	5	159	19	-23.8
Hungary* ^a	24	27	34	31	21	-12.5
Iceland	1.81	7.97	7.97	13.92	13.92	668.3
Ireland	1.12	0.93	0.55	0.62	0.77	-31.6
Italy	146	85	39	197	46	-68.4
Japan	8.31	7.75	9.14	2.04	21.52	159.0
Latvia*	19	59	35	31	28	45.5
Liechtenstein						
Lithuania*	0.80	2.04	0.32	0.24	0.73	-9.0
Luxembourg						
Monaco						
Netherlands						
New Zealand	48	45	47	51	38	-20.4
Norway	1.77	0.33	0.65	0.24	6.00	239.1
Poland* ^a	7	2 229	2 285	2 305	2 328	-
Portugal	228	196	544	24	13	-94.4
Romania* ^a	0.21	8.19	0.48	6.69	1.91	807.0
Russian Federation*	3 633	3 304	1 795	2 337	5 291	45.6
Slovakia*	15	14	22	19	21	42.3
Slovenia* ^a		5.15	6.07	2.81	1.71	
Spain	173	160	236	35	22	-87.5
Sweden	1.73	2.95	4.99	2.40	13.27	667.0
Switzerland	8.19	0.27	0.35	1.74	0.27	-96.7
Turkey**	0.04	0.07	0.00	0.04	0.12	213.3
Ukraine*	8.39	3.44	5.25	105.60	33.60	300.5
United Kingdom	17	25	20	30	28	67.6
United States	3 186	14 296	9 806	20 007	11 934	274.5
Number of Parties showing decrease in emissions by more than 1 per cent:						14
Number of Parties showing change in emissions within 1 per cent:						0
Number of Parties showing increase in emissions by more than 1 per cent:						20

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Table 16

Anthropogenic nitrous oxide emissions from land use, land-use change and forestry, 1990, 2000, 2005, 2007 and 2008

Party	Gg CO ₂ equivalent					Change from 1990 to 2008 (%)
	1990	2000	2005	2007	2008	
Australia	1 981	1 388	1 581	2 285	1 523	-23.2
Austria	432	287	280	290	318	-26.3
Belarus*	6	10	10	11	11	83.6
Belgium						
Bulgaria* ^a	163	202	164	192	166	2.1
Canada	2 320	999	3 735	3 840	2 547	9.8
Croatia*	0.00	0.01	0.00	0.00	0.00	-65.9
Czech Republic*	31	19	19	25	21	-32.5
Denmark	19	20	13	13	13	-32.8
Estonia*	1.07	1.29	1.02	1.11	1.15	8.1
European Union ^b	4 410	3 205	3 519	3 584	3 378	-23.4
Finland	89	89	97	102	122	36.8
France	3 093	2 069	1 670	1 503	1 529	-50.6
Germany	103	102	797	998	786	659.4
Greece	2.53	9.05	0.48	16.17	1.93	-23.8
Hungary* ^a	6	32	38	37	35	439.2
Iceland	298	298	300	298	300	0.5
Ireland	14	22	33	33	42	200.0
Italy	94.82	8.58	3.91	19.97	4.69	-95.1
Japan	93	30	14	9	10	-89.8
Latvia*	153	158	156	155	147	-3.8
Liechtenstein		0.02	0.03			
Lithuania*	21	22	22	22	22	6.7
Luxembourg	2.85	2.82	2.70	2.65	2.62	-8.0
Monaco						
Netherlands						
New Zealand	5.15	5.09	4.84	5.57	4.07	-20.8
Norway	14	13	13	13	13	-2.3
Poland* ^a	0.76	9.98	9.70	6.71	7.10	835.1
Portugal	49	46	82	29	28	-44.1
Romania* ^a	0.02	0.83	0.05	0.68	0.19	807.0
Russian Federation*	769	700	505	554	845	9.8
Slovakia*	3.41	3.10	5.34	3.88	4.24	24.4
Slovenia* ^a		0.93	1.10	0.51	0.00	
Spain	18	16	24	4	2	-87.5
Sweden	79	75	98	114	121	52.8
Switzerland	11.05	5.73	5.10	5.59	4.69	-57.5
Turkey**	0.00	0.01	0.00	0.00	0.01	233.3
Ukraine*	2.22	0.91	1.37	27.29	8.69	291.0
United Kingdom	8.11	5.33	3.60	4.31	3.81	-53.0
United States	3 651	13 224	9 841	18 297	11 688	220.1
Number of Parties showing decrease in emissions by more than 1 per cent:						18
Number of Parties showing change in emissions within 1 per cent:						1
Number of Parties showing increase in emissions by more than 1 per cent:						17

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