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Reporting from and review of Parties included in Annex I to the Convention
Reports on national greenhouse gas inventory data from Parties included in Annex I to the Convention

National greenhouse gas inventory data for the period 1990–2020

Report by the secretariat*

Summary

A total of 41 of the 43 Parties included in Annex I to the Convention (Annex I Parties) submitted their greenhouse gas (GHG) inventory common reporting format tables and national inventory reports by the deadline of 15 April 2022. In 1990–2020, total aggregate GHG emissions without emissions and removals from land use, land-use change and forestry (LULUCF) for all Annex I Parties decreased by 20.9 per cent, while total GHG emissions and removals with LULUCF decreased by 25.7 per cent. For Annex I Parties with economies in transition, GHG emissions without and with LULUCF decreased by 43.3 and 53.2 per cent respectively. For Annex I Parties that do not have economies in transition, GHG emissions without and with LULUCF decreased by 11.3 and 13.4 per cent respectively. The information in this document is based on the national GHG inventory submissions of Annex I Parties received as at 19 August 2022.

* This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.

Abbreviations and acronyms

Annex I Party	Party included in Annex I to the Convention
C	confidential
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COP	Conference of the Parties
CRF	common reporting format
EIT Party	Party with economy in transition
F-gas	fluorinated gas
GHG	greenhouse gas
IE	included elsewhere
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NIR	national inventory report
NO	not occurring
non-EIT Party	Party that does not have an economy in transition
UNFCCC Annex I inventory reporting guidelines	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories"

I. Introduction

A. Mandate

1. COP 19 requested Annex I Parties to submit national inventory data on GHG emissions by sources and removals by sinks by 15 April of each year.[1] COP 20 requested the secretariat to compile and summarize information on the GHG inventory data submitted by Annex I Parties, inter alia, for consideration by the COP and the subsidiary bodies.[2]

B. Scope

2. This document shows the status of reporting of GHG inventories by Annex I Parties in 2022 (see chap. II below) and provides a summary of the latest available data on GHG emissions and removals for 1990–2020 (see chap. III below). Data are provided for CO_2, CH_4 and N_2O, as well as for F-gases,[3] and, where Parties have elected to report them, indirect CO_2 emissions from the atmospheric oxidation of CH_4, carbon monoxide and non-methane volatile organic compounds. Data are provided on total[4] aggregate[5] GHG emissions, both without and with net GHG emissions and removals from LULUCF.

3. The information provided in this document is based on the national GHG inventories[6] received from all 43 Annex I Parties (see table 1) as at 19 August 2022.

C. Possible action by the Subsidiary Body for Implementation

4. The Subsidiary Body for Implementation may wish to take note of the information contained in this document and to seek further guidance from the COP, as appropriate.

II. Status of reporting

A. Timeliness and completeness of submissions

5. According to the UNFCCC Annex I inventory reporting guidelines,[7] Annex I Parties are required to submit annually NIRs and CRF tables containing data for the base year up to two years prior to the year of submission. In 2022, all 43 Annex I Parties provided GHG data for 1990[8]–2020.

6. By 15 April 2022, CRF tables and NIRs from 41 Parties had been received. Within six weeks of that date, all 43 Parties had submitted their CRF tables and NIRs. After the initial submissions, 13 Parties submitted revised versions of their CRF tables and 11 Parties resubmitted their NIRs. The dates of the initial submissions of the CRF tables are shown in table 1.

[1] Decision 24/CP.19, para. 3.
[2] Decision 13/CP.20, paras. 8 and 10.
[3] Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, an unspecified mix of hydrofluorocarbons and perfluorocarbons, and nitrogen trifluoride taken together.
[4] The term "total" implies that emissions from the CRF sectors are summed; the inclusion of emissions from LULUCF in the sum is indicated separately; unless stated otherwise, totals do not include indirect CO_2 emissions.
[5] The term "aggregate" implies that GHG emissions and removals are calculated as a weighted sum of CO_2, CH_4, N_2O and F-gases using the global warming potential values agreed under the Convention.
[6] Available at https://unfccc.int/ghg-inventories-annex-i-parties/2022.
[7] Decision 24/CP.19, annex I.
[8] Unless otherwise specified, for certain Parties base-year data are used instead of 1990 data. The Parties that may use a base year other than 1990, as stipulated in decisions 9/CP.2 and 11/CP.4, are Bulgaria (1988), Hungary (average of 1985–1987), Poland (1988), Romania (1989) and Slovenia (1986).

Table 1
Greenhouse gas inventory submissions from Annex I Parties in 2022

Party	*CRF tables submission date*[a]	*Party*	*CRF tables submission date*[a]
Australia	27 May 2022	Liechtenstein	14 April 2022
Austria	15 April 2022	Lithuania	12 April 2022
Belarus	15 April 2022	Luxembourg	14 April 2022
Belgium	14 April 2022	Malta	13 April 2022
Bulgaria	15 April 2022	Monaco	11 April 2022
Canada	14 April 2022	Netherlands	14 April 2022
Croatia	13 April 2022	New Zealand	14 April 2022
Cyprus	24 March 2022	Norway	8 April 2022
Czechia	14 April 2022	Poland	13 April 2022
Denmark	15 April 2022	Portugal	7 April 2022
Estonia	12 April 2022	Romania	14 April 2022
European Union	14 April 2022	Russian Federation	15 April 2022
Finland	14 April 2022	Slovakia	13 April 2022
France	12 April 2022	Slovenia	13 April 2022
Germany	8 April 2022	Spain	12 April 2022
Greece	15 April 2022	Sweden	12 April 2022
Hungary	15 April 2022	Switzerland	14 April 2022
Iceland	12 April 2022	Türkiye	14 April 2022
Ireland	8 April 2022	Ukraine	13 May 2022
Italy	8 April 2022	United Kingdom	14 April 2022
Japan	15 April 2022	United States	15 April 2022
Latvia	14 April 2022		

[a] The dates of submission of NIRs may be different.

B. Recalculations

7. According to the UNFCCC Annex I inventory reporting guidelines, Parties should, where necessary, conduct recalculations in order to improve the quality of their emission estimates and ensure the consistency of the time series.

8. In 2022, all 43 Annex I Parties reported recalculations that had an impact on their GHG emission estimates for 1990 (see table 2). The recalculations resulted from changes in activity data, emission factors and methodologies. For total aggregate GHG emissions without LULUCF, the impact of the change was less than 1 per cent for 39 Parties and more than 2 per cent for 2 Parties. For total aggregate GHG emissions with LULUCF, the impact of the change was less than 1 per cent for 30 Parties and more than 2 per cent for 8 Parties.

Table 2
Impact of inventory recalculations conducted by Annex I Parties in 2022

Party	*Impact on GHG emission estimates for 1990 without LULUCF (%)*	*Impact on GHG emission estimates for 1990 with LULUCF (%)*
Australia	0.46	1.75
Austria	0.003	0.20
Belarus	4.53	7.00
Belgium	–0.02	0.30
Bulgaria	–1.44	–0.48
Canada	–1.13	–2.48
Croatia	0.09	2.02
Cyprus	0.10	–1.50
Czechia	–0.06	–1.10
Denmark	0.47	0.94
Estonia	–2.12	–2.81
European Union	–0.39	–0.53
Finland	–0.08	0.08
France	0.01	–0.41
Germany	–0.53	–0.35
Greece	0.16	0.16
Hungary	0.04	–0.39
Iceland	–0.23	–0.01
Ireland	–0.01	1.77
Italy	0.23	0.20
Japan	0.070	0.08
Latvia	0.0002	0.0003
Liechtenstein	–0.02	0.24
Lithuania	0.14	–0.03
Luxembourg	0.04	0.62
Malta	0.15	–0.46
Monaco	0.01	–0.11
Netherlands	–0.003	–0.14
New Zealand	0.10	6.94
Norway	–0.08	3.50
Poland	0.0009	–0.04
Portugal	–0.71	9.13
Romania	–0.11	1.21
Russian Federation	0.12	0.08
Slovakia	–0.02	–0.75
Slovenia	0.08	0.46
Spain	0.04	0.04
Sweden	0.28	0.40
Switzerland	–0.12	–0.18
Türkiye	0.07	0.12
Ukraine	–0.02	3.03
United Kingdom	0.27	–0.34
United States	0.17	0.92

9. Table 3 presents a comparison of the estimates of total aggregate GHG emissions in 1990 contained in Annex I Parties' 2021 and 2022 GHG inventory submissions.

Table 3
Comparison of estimates reported in 2021 and 2022 of total aggregate greenhouse gas emissions of Annex I Parties in 1990

	Estimate reported in 2021	*Estimate reported in 2022*	*Explanation of the difference between the estimates reported in 2021 and 2022*
Total aggregate GHG emissions without LULUCF (Gt CO_2 eq)			
All Annex I Parties	19.21	19.22	Aggregate impact of inventory recalculations conducted by individual Annex I Parties
Annex I EIT Parties	5.79	5.80	Inventory recalculations (e.g. Belarus, Lithuania and Russian Federation)
Annex I non-EIT Parties	13.42	13.43	Inventory recalculations (e.g. Australia, Denmark and United Kingdom)
Total aggregate GHG emissions with LULUCF (Gt CO_2 eq)			
All Annex I Parties	17.96	18.05	Aggregate impact of inventory recalculations conducted by individual Annex I Parties
Annex I EIT Parties	5.51	5.55	Inventory recalculations (e.g. Belarus, Croatia and Ukraine)
Annex I non-EIT Parties	12.44	12.49	Inventory recalculations (e.g. New Zealand, Norway and Portugal)

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

A. Total aggregate greenhouse gas emissions

10. From 1990 to 2020, total aggregate GHG emissions without LULUCF for all Annex I Parties decreased by 20.9 per cent, from 19,224.98 to 15,198.42 Mt CO_2 eq. During the same period, total aggregate GHG emissions with LULUCF decreased by 25.7 per cent, from 18,045.10 to 13,413.93 Mt CO_2 eq. From 2000 to 2020, GHG emissions without and with LULUCF decreased by 15.4 and 17.1 per cent respectively. Between 2019 and 2020, GHG emissions decreased by 7.1 per cent without LULUCF and by 8.2 per cent with LULUCF.

11. For Annex I EIT Parties, GHG emissions decreased by 43.3 per cent without LULUCF and by 53.2 per cent with LULUCF from 1990 to 2020. From 2000 to 2020, GHG emissions without and with LULUCF decreased by 2.1 and 3.4 per cent respectively. Between 2019 and 2020, GHG emissions without LULUCF decreased by 4.1 per cent, whereas emissions with LULUCF decreased by 6.5 per cent.

12. For Annex I non-EIT Parties, GHG emissions decreased by 11.3 per cent without LULUCF and by 13.4 per cent with LULUCF from 1990 to 2020. From 2000 to 2020, GHG emissions without and with LULUCF decreased by 18.5 and 19.8 per cent respectively. Between 2019 and 2020, GHG emissions without and with LULUCF decreased by 7.9 and 8.6 per cent respectively.

13. Figures 1–2 show the trends in total aggregate GHG emissions from 1990 to 2020 for all Annex I Parties taken together, for Annex I EIT Parties and for Annex I non-EIT Parties.

Figure 1
Greenhouse gas emissions of Annex I Parties, 1990–2020

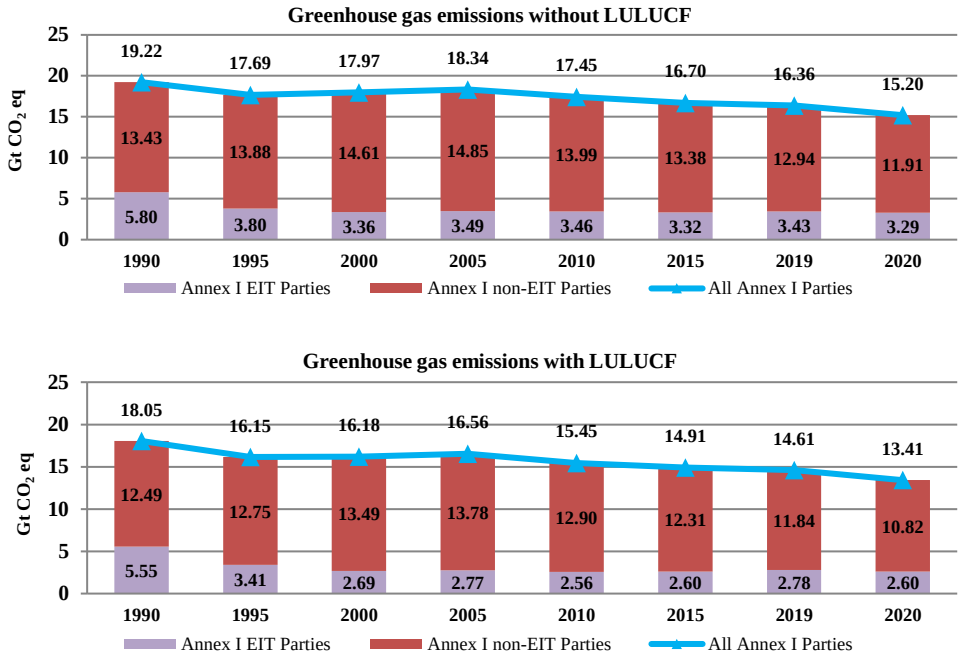
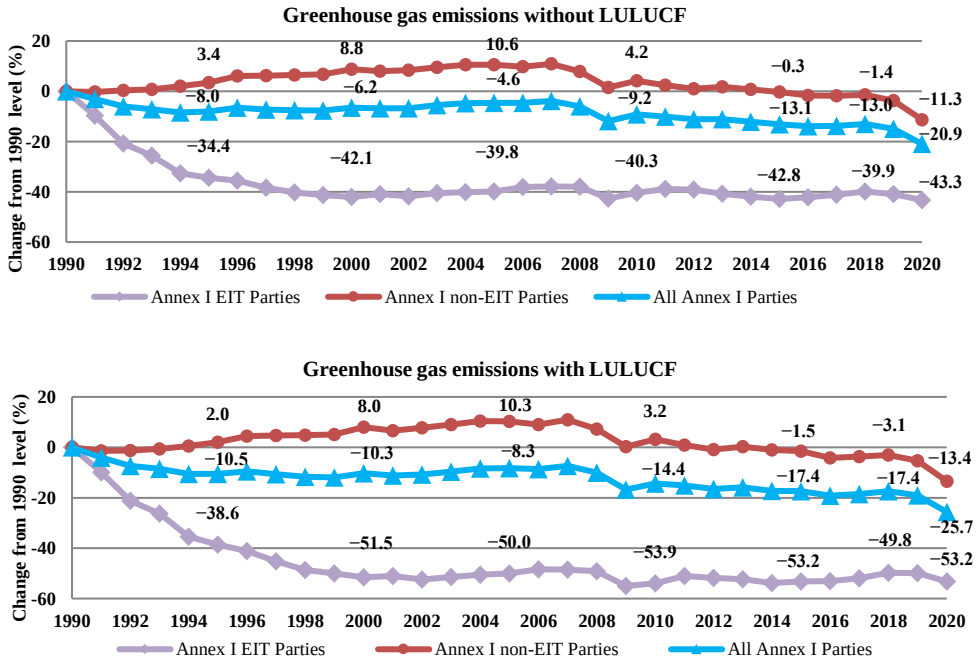


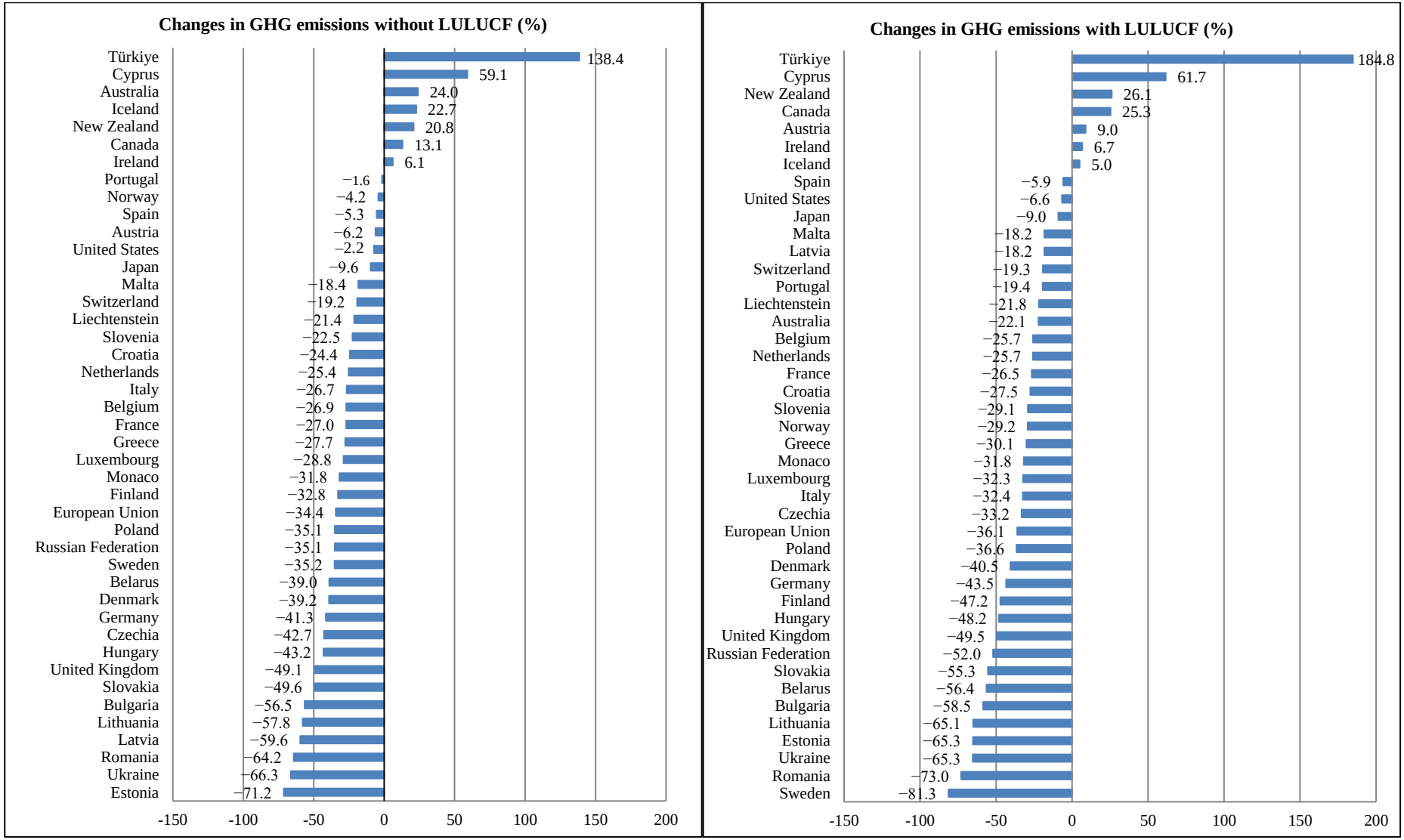
Figure 2
Changes in greenhouse gas emissions of Annex I Parties, 1990–2020



14. The changes in total aggregate GHG emissions in 1990–2020 varied considerably among Parties (see figure 3). The largest decrease in emissions without LULUCF was in Estonia (by 71.2 per cent), while the largest decrease in emissions with LULUCF was in Sweden (by 81.3 per cent). The greatest increases in emissions without and with LULUCF were in Türkiye (by 138.4 and 184.8 per cent respectively).

Figure 3

Changes in total aggregate emissions of individual Annex I Parties, 1990–2020

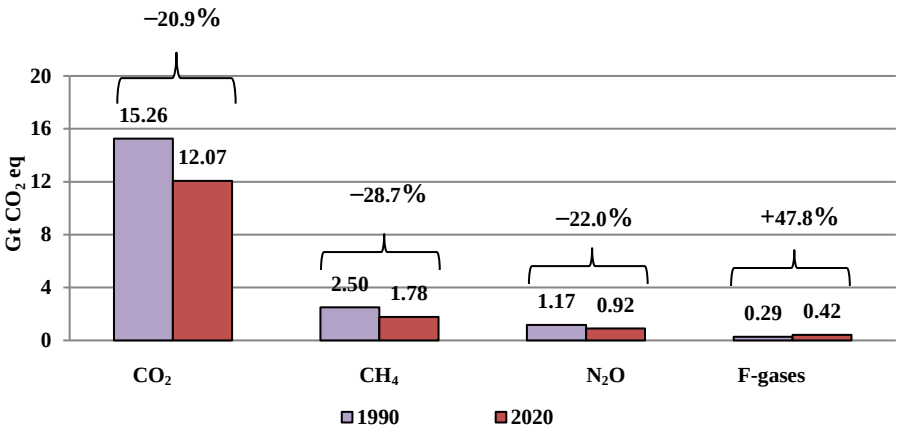


B. Greenhouse gas emissions by gas

15. Throughout 1990–2020, CO_2 accounted for the largest share of total emissions, contributing 79.4 per cent in 1990 and 79.5 per cent in 2020. CH_4 was the second-highest contributor to total GHG emissions (13.0 per cent in 1990 and 11.7 per cent in 2020), followed by N_2O (6.1 per cent in 1990 and 6.0 per cent in 2020). F-gases contributed 1.5 per cent in 1990 and 2.8 per cent in 2020 to the total GHG emissions.

16. Figure 4 shows the contribution of each GHG to the total emissions without LULUCF for 1990 and 2020 and the changes in the total emissions of each GHG in 1990–2020. Emissions of CO_2, CH_4 and N_2O decreased, while emissions of F-gases increased by 47.8 per cent.

Figure 4
Greenhouse gas emissions without land use, land-use change and forestry of Annex I Parties by gas, 1990 and 2020



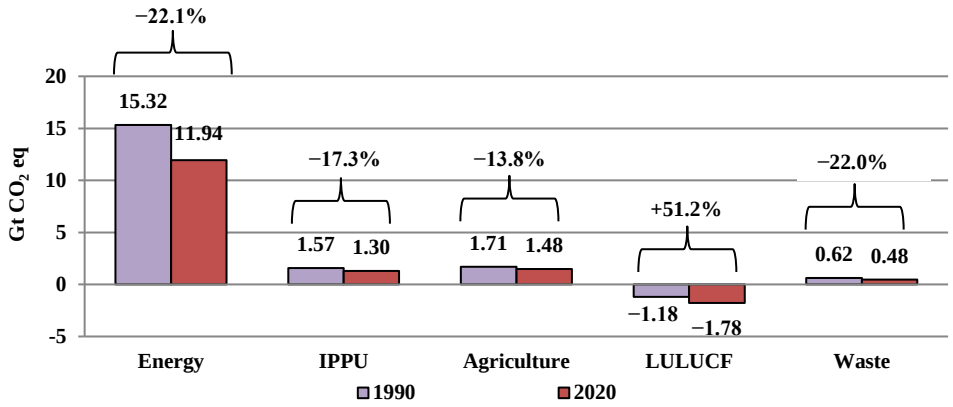
17. Between 2019 and 2020, emissions of CO_2, CH_4, N_2O and F-gases decreased by 8.2, 2.7, 3.1 and 1.3 per cent respectively.

C. Greenhouse gas emissions by sector

18. From 1990 to 2020, emissions from all sectors decreased (see figure 5). The energy sector experienced the largest relative decrease in emissions (by 22.1 per cent), followed by the waste, IPPU and agriculture sectors. Over the same period, net GHG removals from LULUCF increased by 51.2 per cent, from –1,179.87 to –1,784.50 Mt CO_2 eq.

19. Between 2019 and 2020, emissions from the energy, IPPU, agriculture and waste sectors decreased by 8.5, 1.8, 1.6 and 0.8 per cent respectively. Net GHG removals from LULUCF increased by 1.9 per cent.

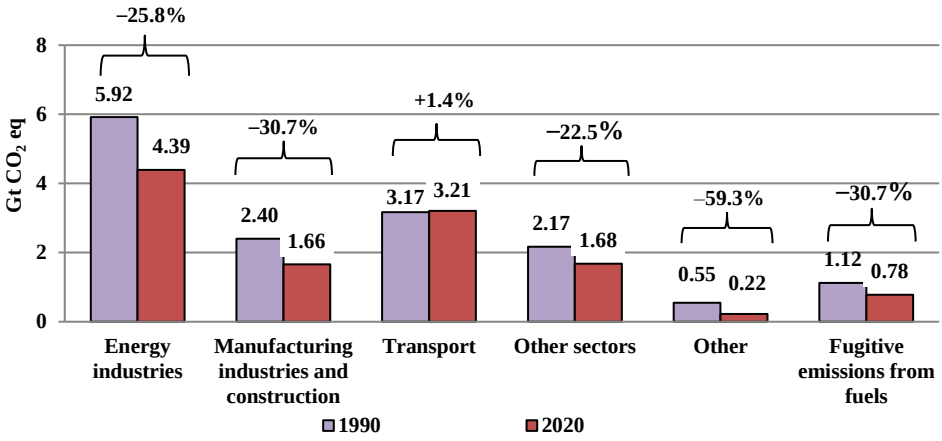
Figure 5
Greenhouse gas emissions and removals of Annex I Parties by sector, 1990 and 2020



Note: The sector other is not included in this figure because its contribution to total GHG emissions was very small. Emissions from that sector increased by 2.7 per cent between 1990 and 2020.

20. Within the energy sector, GHG emissions decreased in all subsectors except transport, where emissions increased by 1.4 per cent, from 1990 to 2020 (see figure 6). The largest relative emission reduction (by 59.3 per cent) occurred in the subsector other.

Figure 6
Greenhouse gas emissions of Annex I Parties in the energy sector, 1990 and 2020

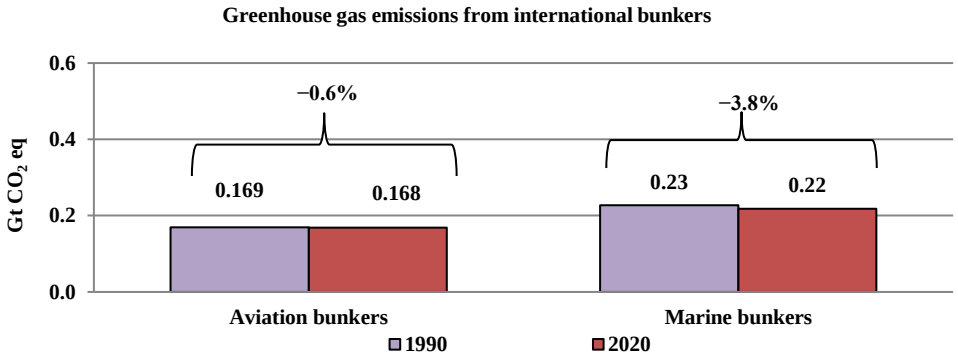


Note: The CO_2 transport and storage subsector is not included in this figure because its contribution to total GHG emissions was very small. Emissions from that subsector increased by 13,131.2 per cent between 1990 and 2020.

21. Between 2019 and 2020, emissions from energy industries, manufacturing industries and construction, transport and other sectors and fugitive emissions from fuels decreased by 7.4, 5.7, 12.9, 6.4 and 8.5 per cent respectively. In the same period, emissions from the subsector other increased by 1.1 per cent.

22. Emissions from international bunkers decreased by 0.6 per cent for aviation and by 3.8 per cent for navigation in 1990–2020 (see figure 7).

Figure 7
Greenhouse gas emissions from international bunker fuels for Annex I Parties, 1990 and 2020



23. Between 2019 and 2020, emissions from international bunkers decreased by 53.1 per cent for aviation and by 23.7 per cent for navigation.

24. A comparison of the percentage changes in total aggregate GHG emissions from 1990 to the latest available year reported in Annex I Parties' 2021 and 2022 inventory submissions is presented in table 4, with explanations for the differences in the estimates.

Table 4
Comparison of the changes in the total aggregate greenhouse gas emissions of Annex I Parties reported in 2021 and 2022

	Estimate reported in 2021	*Estimate reported in 2022*	*Explanation of the difference between the estimates reported in 2021 and 2022*
Change in total aggregate GHG emissions without LULUCF from 1990 to the latest available year (%)			
All Annex I Parties	–14.94	–20.94	Combined impact of changes for individual Annex I Parties
Annex I EIT Parties	–41.03	–43.28	Decreases in emissions between 2019 and 2020 and inventory recalculations (e.g. Czechia, Poland and Russian Federation)
Annex I non-EIT Parties	–3.69	–11.30	Decreases in emissions between 2019 and 2020 and inventory recalculations (e.g. Germany, Japan and United States)
Change in total aggregate GHG emissions with LULUCF from 1990 to the latest available year (%)			
All Annex I Parties	–18.94	–25.66	Combined impact of changes for individual Annex I Parties
Annex I EIT Parties	–49.56	–53.18	Decreases in emissions between 2019 and 2020 and inventory recalculations (e.g. Czechia, Poland and Russian Federation)
Annex I non-EIT Parties	–5.37	–13.44	Decreases in emissions between 2019 and 2020 and inventory recalculations (e.g. Canada, Germany and United States)

D. Emission data for individual Annex I Parties

25. Tables 5–17 show detailed GHG data for individual Annex I Parties. Total aggregate GHG emissions without and with emissions and removals from LULUCF are provided in tables 5–6; emissions of CO_2, CH_4 and N_2O (without and with emissions and removals from LULUCF) are provided in tables 7–12; emissions of F-gases are provided in table 13; emissions and removals from LULUCF are provided in tables 14–16; and indirect CO_2 emissions are provided in table 17.

26. The cells with an en dash (–) in the tables denote that either data were not available or notation keys, such as "NA", "NE", "NO", "IE" or "C", were used to report emission data. Negative values denote removals; positive values denote emissions.

27. The changes in emissions from 1990 to 2020 were calculated using exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the tables.

Table 5

Total aggregate anthropogenic emissions of CO_2, CH_4, N_2O and F-gases without emissions and removals from land use, land-use change and forestry

	kt CO_2 eq					*Change 1990–2020*
Party	*1990*	*2000*	*2010*	*2019*	*2020*	*(%)*
Australia	425 624	489 529	536 894	546 200	527 737	24.0
Austria	78 423	80 085	84 150	79 741	73 592	–6.2
Belarus[a]	145 462	81 364	91 792	92 183	88 802	–39.0
Belgium	145 687	148 879	133 646	116 448	106 433	–26.9
Bulgaria[a, b]	113 147	56 966	59 321	59 473	49 186	–56.5
Canada	594 722	726 987	709 654	738 283	672 354	13.1
Croatia[a]	31 416	25 490	27 931	24 622	23 756	–24.4
Cyprus	5 576	8 297	9 464	8 900	8 872	59.1
Czechia[a]	196 955	149 594	139 550	122 895	112 789	–42.7
Denmark	71 430	72 101	65 011	46 145	43 458	–39.2
Estonia[a]	40 175	17 480	21 181	14 636	11 556	–71.2
European Union[c]	5 635 718	5 151 250	4 778 995	4 044 185	3 698 853	–34.4
Finland	71 016	70 130	75 602	52 735	47 716	–32.8
France	547 183	553 002	512 753	441 488	399 413	–27.0
Germany	1 241 919	1 036 926	935 768	799 734	728 738	–41.3
Greece	103 451	126 532	118 511	85 604	74 836	–27.7
Hungary[a, b]	110 521	74 929	66 021	64 581	62 818	–43.2
Iceland	3 674	4 119	4 865	4 713	4 510	22.7
Ireland	54 395	68 460	61 948	59 855	57 716	6.1
Italy	519 908	557 291	517 804	418 352	381 248	–26.7
Japan	1 269 901	1 374 626	1 301 406	1 210 160	1 148 122	–9.6
Latvia[a]	25 868	10 060	11 802	11 104	10 447	–59.6
Liechtenstein	228	247	228	188	180	–21.4
Lithuania[a]	47 861	19 441	20 750	20 361	20 183	–57.8
Luxembourg	12 733	9 665	12 169	10 733	9 065	–28.8
Malta	2 599	2 790	2 945	2 132	2 122	–18.4
Monaco	103	107	89	83	70	–31.8
Netherlands	219 597	217 505	211 583	179 838	163 915	–25.4
New Zealand	65 197	75 515	78 426	81 617	78 778	20.8
Norway	51 432	54 922	54 939	51 086	49 273	–4.2
Poland[a, b]	579 224	396 680	412 902	390 539	376 038	–35.1
Portugal	58 366	81 403	68 727	63 468	57 454	–1.6
Romania[a, b]	307 046	138 980	122 863	113 939	109 934	–64.2
Russian Federation[a]	3 162 628	1 892 384	2 011 925	2 122 793	2 051 437	–35.1
Slovakia[a]	73 375	48 704	45 624	39 776	37 003	–49.6
Slovenia[a, b]	20 449	18 582	19 644	17 074	15 851	–22.5
Spain	290 104	388 091	358 157	313 828	274 743	–5.3
Sweden	71 442	68 338	64 714	50 811	46 285	–35.2
Switzerland	53 566	52 889	54 670	45 974	43 291	–19.2
Türkiye[d]	219 720	299 010	398 676	508 078	523 897	138.4
Ukraine[a]	942 390	427 558	407 103	333 835	317 696	–66.3
United Kingdom	797 016	714 301	609 399	448 390	405 755	–49.1
United States	6 453 450	7 327 593	7 007 442	6 571 726	5 981 354	–7.3
Number of Parties showing a decrease in emissions of more than 1%:						*36*
Number of Parties showing a change in emissions within 1%:						*0*
Number of Parties showing an increase in emissions of more than 1%:						*7*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 6

Total aggregate anthropogenic emissions of CO_2, CH_4, N_2O and F-gases with emissions and removals from land use, land-use change and forestry

	kt CO_2 eq					*Change 1990–2020*
Party	*1990*	*2000*	*2010*	*2019*	*2020*	*(%)*
Australia	626 254	555 490	603 248	505 804	487 591	–22.1
Austria	66 359	63 524	80 373	77 111	72 339	9.0
Belarus[a]	116 063	46 726	45 645	56 553	50 637	–56.4
Belgium	142 751	147 198	133 288	115 976	106 097	–25.7
Bulgaria[a, b]	95 367	39 209	47 023	49 484	39 580	–58.5
Canada	531 185	690 491	691 336	722 348	665 593	25.3
Croatia[a]	25 444	19 106	21 059	19 269	18 451	–27.5
Cyprus	5 272	8 229	9 169	8 551	8 523	61.7
Czechia[a]	188 019	140 206	132 510	131 131	125 560	–33.2
Denmark	78 338	77 271	67 505	49 075	46 601	–40.5
Estonia[a]	37 015	13 275	16 345	14 302	12 853	–65.3
European Union[c]	5 435 696	4 860 189	4 460 179	3 810 994	3 472 985	–36.1
Finland	57 575	55 082	53 892	39 145	30 413	–47.2
France	523 393	532 343	474 170	431 391	384 792	–26.5
Germany	1 268 922	1 027 337	921 074	784 842	717 473	–43.5
Greece	101 343	124 591	115 468	82 538	70 883	–30.1
Hungary[a, b]	108 160	74 080	61 605	59 674	55 997	–48.2
Iceland	12 873	13 314	14 061	13 733	13 519	5.0
Ireland	60 588	76 065	69 779	66 742	64 642	6.7
Italy	516 260	536 177	476 268	377 672	348 847	–32.4
Japan	1 204 584	1 289 945	1 231 519	1 159 205	1 096 112	–9.0
Latvia[a]	13 567	–1 694	9 922	8 698	11 093	–18.2
Liechtenstein	236	272	249	200	184	–21.8
Lithuania[a]	42 330	10 009	10 327	15 058	14 775	–65.1
Luxembourg	12 891	9 058	12 138	10 469	8 728	–32.3
Malta	2 591	2 785	2 956	2 130	2 119	–18.2
Monaco	103	106	89	83	70	–31.8
Netherlands	225 365	222 678	216 509	183 421	167 446	–25.7
New Zealand	43 968	48 580	49 100	58 582	55 465	26.1
Norway	40 890	36 281	31 223	34 650	28 940	–29.2
Poland[a, b]	559 879	360 077	377 611	370 215	355 062	–36.6
Portugal	65 492	79 395	62 225	59 035	52 807	–19.4
Romania[a, b]	285 590	107 586	94 627	85 463	77 040	–73.0
Russian Federation[a]	3 089 058	1 427 400	1 291 534	1 563 790	1 482 200	–52.0
Slovakia[a]	63 232	38 348	38 973	32 889	28 256	–55.3
Slovenia[a, b]	15 684	12 395	12 485	12 186	11 116	–29.1
Spain	254 107	348 538	321 432	276 723	239 194	–5.9
Sweden	34 850	26 598	21 671	14 074	6 520	–81.3
Switzerland	51 522	58 076	51 737	43 858	41 586	–19.3
Türkiye[d]	163 984	237 444	325 056	424 047	466 950	184.8
Ukraine[a]	910 983	404 646	398 107	359 153	315 941	–65.3
United Kingdom	810 198	722 596	613 137	452 518	409 524	–49.5
United States	5 592 825	6 502 364	6 246 406	5 841 238	5 222 411	–6.6
Number of Parties showing a decrease in emissions of more than 1%:						*36*
Number of Parties showing a change in emissions within 1%:						*0*
Number of Parties showing an increase in emissions of more than 1%:						*7*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 7
Total anthropogenic CO_2 emissions without emissions and removals from land use, land-use change and forestry

	kt					*Change 1990–2020*
Party	*1990*	*2000*	*2010*	*2019*	*2020*	*(%)*
Australia	278 154	349 635	405 103	416 357	399 922	43.8
Austria	62 145	66 150	72 006	67 936	62 037	–0.2
Belarus[a]	108 345	54 906	62 445	62 039	58 592	–45.9
Belgium	120 293	126 720	114 558	99 433	90 368	–24.9
Bulgaria[a, b]	89 611	45 464	47 859	42 256	36 967	–58.7
Canada	458 218	566 690	556 561	584 714	534 864	16.7
Croatia[a]	22 980	19 662	21 016	17 857	16 871	–26.6
Cyprus	4 653	7 122	8 103	7 343	7 270	56.2
Czechia[a]	164 211	127 156	117 482	101 013	91 854	–44.1
Denmark	54 879	55 641	50 732	32 601	29 948	–45.4
Estonia[a]	36 922	15 500	19 003	12 380	9 343	–74.7
European Union[c]	4 470 262	4 176 857	3 952 495	3 279 125	2 955 455	–33.9
Finland	56 914	57 010	64 081	42 382	37 596	–33.9
France	400 965	418 189	391 534	332 962	295 136	–26.4
Germany	1 051 979	899 352	832 541	707 150	639 381	–39.2
Greece	83 438	102 973	97 354	65 756	55 610	–33.4
Hungary[a, b]	85 418	58 365	52 069	49 235	47 284	–44.6
Iceland	2 216	2 923	3 617	3 546	3 329	50.2
Ireland	32 944	45 249	41 794	37 326	35 153	6.7
Italy	439 550	470 487	436 117	339 233	302 279	–31.2
Japan	1 158 129	1 264 595	1 215 058	1 106 015	1 042 224	–10.0
Latvia[a]	19 661	7 081	8 554	7 649	6 994	–64.4
Liechtenstein	199	217	191	149	142	–28.6
Lithuania[a]	35 768	11 876	13 947	13 923	13 653	–61.8
Luxembourg	11 823	8 710	11 202	9 752	8 097	–31.5
Malta	2 394	2 507	2 589	1 649	1 600	–33.2
Monaco	98	100	78	71	61	–38.1
Netherlands	161 807	171 082	181 527	153 033	137 850	–14.8
New Zealand	25 503	32 246	34 811	37 121	34 457	35.1
Norway	35 097	42 149	45 691	42 785	41 197	17.4
Poland[a, b]	472 045	317 719	334 917	318 488	303 523	–35.7
Portugal	45 325	65 686	53 001	47 619	41 800	–7.8
Romania[a, b]	210 971	92 668	84 633	77 031	74 138	–64.9
Russian Federation[a]	2 534 865	1 478 185	1 626 188	1 692 363	1 624 221	–35.9
Slovakia[a]	61 470	41 136	38 404	33 776	31 095	–49.4
Slovenia[a, b]	16 779	15 054	16 460	14 048	12 866	–23.3
Spain	231 328	311 675	284 283	251 825	213 340	–7.8
Sweden	57 580	54 891	53 287	40 982	36 515	–36.6
Switzerland	44 160	43 622	45 046	36 733	34 241	–22.5
Türkiye[d]	151 665	229 858	316 036	401 720	413 433	172.6
Ukraine[a]	705 830	285 322	294 111	222 057	206 941	–70.7
United Kingdom	602 652	569 744	512 736	365 468	326 921	–45.8
United States	5 122 496	6 016 351	5 681 392	5 259 144	4 715 691	–7.9
Number of Parties showing a decrease in emissions of more than 1%:						*34*
Number of Parties showing a change in emissions within 1%:						*1*
Number of Parties showing an increase in emissions of more than 1%:						*8*

[a] EIT Party.
[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.
[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.
[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 8
Total anthropogenic CO_2 emissions with emissions and removals from land use, land-use change and forestry

Party	kt					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	454 228	389 018	446 578	357 678	343 301	–24.4
Austria	49 914	49 446	68 081	65 136	60 611	21.4
Belarus[a]	78 921	20 239	16 277	26 351	20 370	–74.2
Belgium	117 350	124 990	114 090	98 842	89 915	–23.4
Bulgaria[a, b]	71 447	27 280	35 329	31 982	27 079	–62.1
Canada	393 332	528 684	537 068	567 916	527 257	34.0
Croatia[a]	16 959	13 078	14 039	12 378	11 388	–32.8
Cyprus	4 348	7 045	7 806	6 994	6 920	59.1
Czechia[a]	155 180	117 694	110 347	109 199	104 573	–32.6
Denmark	61 453	60 511	52 953	35 248	32 806	–46.6
Estonia[a]	33 435	10 963	13 818	11 681	10 275	–69.3
European Union[c]	4 241 742	3 857 787	3 607 493	3 019 628	2 703 187	–36.3
Finland	39 809	38 466	39 291	26 007	17 505	–56.0
France	372 905	392 633	348 533	318 579	276 517	–25.8
Germany	1 076 570	887 392	814 811	688 886	624 731	–42.0
Greece	81 261	100 797	94 277	62 592	51 623	–36.5
Hungary[a, b]	83 011	57 426	47 595	44 266	40 413	–51.3
Iceland	7 975	8 695	9 439	9 209	8 980	12.6
Ireland	38 465	52 129	48 324	43 200	41 049	6.7
Italy	433 760	447 965	393 802	297 856	269 190	–37.9
Japan	1 092 462	1 179 608	1 144 896	1 054 779	989 933	–9.4
Latvia[a]	6 259	–5 816	5 557	3 845	6 235	–0.4
Liechtenstein	206	242	211	161	146	–29.0
Lithuania[a]	30 106	2 313	3 369	8 434	8 063	–73.2
Luxembourg	11 970	8 092	11 151	9 479	7 750	–35.3
Malta	2 386	2 502	2 600	1 648	1 597	–33.1
Monaco	98	100	78	71	61	–38.1
Netherlands	167 465	176 158	186 350	156 524	141 289	–15.6
New Zealand	3 878	4 831	5 036	13 736	10 791	178.2
Norway	24 148	23 085	21 536	25 903	20 418	–15.4
Poland[a, b]	450 659	279 743	298 596	296 188	280 579	–37.7
Portugal	51 030	62 752	45 414	42 444	36 388	–28.7
Romania[a, b]	189 477	61 238	56 374	48 524	41 207	–78.3
Russian Federation[a]	2 429 584	977 575	871 955	1 090 881	1 019 427	–58.0
Slovakia[a]	51 185	30 687	31 699	26 820	22 285	–56.5
Slovenia[a, b]	11 935	8 794	9 241	9 122	8 095	–32.2
Spain	194 647	271 291	247 142	214 492	177 420	–8.9
Sweden	19 319	11 448	8 595	2 526	–4 961	–125.7
Switzerland	42 032	48 749	42 053	34 555	32 473	–22.7
Türkiye[d]	95 802	167 997	242 298	317 497	356 187	271.8
Ukraine[a]	674 193	262 115	284 880	247 180	204 832	–69.6
United Kingdom	608 633	571 096	509 773	362 879	324 026	–46.8
United States	4 230 482	5 153 722	4 889 969	4 498 324	3 903 515	–7.7
Number of Parties showing a decrease in emissions of more than 1%:						*35*
Number of Parties showing a change in emissions within 1%:						*1*
Number of Parties showing an increase in emissions of more than 1%:						*7*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 9
Total anthropogenic CH_4 emissions without emissions and removals from land use, land-use change and forestry

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	125 133	118 052	104 768	99 368	97 304	–22.2
Austria	10 111	8 225	7 008	5 914	5 819	–42.4
Belarus[a]	20 842	15 225	16 653	17 563	17 237	–17.3
Belgium	11 518	10 217	8 152	7 242	7 099	–38.4
Bulgaria[a, b]	13 561	7 585	6 773	5 825	5 734	–57.7
Canada	91 555	119 492	115 340	108 835	91 665	0.1
Croatia[a]	4 325	3 294	3 879	3 586	3 539	–18.2
Cyprus	674	809	861	933	968	43.6
Czechia[a]	23 372	15 054	13 980	12 091	11 519	–50.7
Denmark	7 954	8 229	7 689	7 148	7 165	–9.9
Estonia[a]	1 913	1 260	1 254	1 098	1 095	–42.7
European Union[c]	710 546	594 304	479 262	424 209	418 341	–41.1
Finland	7 687	6 566	5 350	4 493	4 402	–42.7
France	69 560	69 027	62 091	56 226	55 123	–20.8
Germany	118 555	87 798	58 140	49 944	49 015	–58.7
Greece	11 156	11 802	11 082	9 991	9 685	–13.2
Hungary[a, b]	13 590	10 591	8 894	8 234	8 220	–39.5
Iceland	606	659	656	570	590	–2.8
Ireland	13 753	14 388	12 576	14 745	14 910	8.4
Italy	49 390	51 913	47 341	41 982	42 780	–13.4
Japan	44 059	37 628	31 983	28 474	28 394	–35.6
Latvia[a]	3 624	1 886	1 806	1 743	1 718	–52.6
Liechtenstein	19	17	19	20	19	0.4
Lithuania[a]	6 945	3 843	3 605	2 957	2 864	–58.8
Luxembourg	589	593	588	572	581	–1.4
Malta	125	190	148	192	194	54.8
Monaco	2	1	1	1	1	–67.3
Netherlands	31 835	24 197	19 359	17 219	16 968	–46.7
New Zealand	32 973	35 952	34 764	34 510	34 273	3.9
Norway	6 236	6 176	5 576	4 735	4 712	–24.4
Poland[a, b]	73 520	52 352	50 262	44 531	44 356	–39.7
Portugal	9 152	10 839	10 050	9 109	8 967	–2.0
Romania[a, b]	65 484	31 792	26 120	23 260	22 757	–65.2
Russian Federation[a]	435 938	303 297	295 610	307 777	299 203	–31.4
Slovakia[a]	7 301	4 834	3 908	3 318	3 262	–55.3
Slovenia[a, b]	2 599	2 491	2 170	1 923	1 894	–27.2
Spain	36 642	42 204	39 410	37 828	37 739	3.0
Sweden	7 415	6 836	5 212	4 180	4 110	–44.6
Switzerland	5 792	5 141	5 019	4 633	4 588	–20.8
Türkiye[d]	42 479	43 656	51 612	63 135	63 989	50.6
Ukraine[a]	182 888	118 321	84 838	69 715	71 379	–61.0
United Kingdom	129 825	106 418	62 459	48 833	46 760	–64.0
United States	780 814	718 072	705 312	668 827	650 419	–16.7
Number of Parties showing a decrease in emissions of more than 1%:						*35*
Number of Parties showing a change in emissions within 1%:						*2*
Number of Parties showing an increase in emissions of more than 1%:						*6*

[a] EIT Party.
[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.
[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.
[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 10
Total anthropogenic CH_4 emissions with emissions and removals from land use, land-use change and forestry

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	144 871	139 578	123 938	114 047	110 093	–24.0
Austria	10 135	8 249	7 032	5 938	5 843	–42.3
Belarus[a]	20 850	15 234	16 658	17 589	17 261	–17.2
Belgium	11 518	10 217	8 152	7 242	7 099	–38.4
Bulgaria[a, b]	13 562	7 720	6 788	5 839	5 746	–57.6
Canada	92 448	120 478	116 107	109 381	92 201	–0.3
Croatia[a]	4 326	3 391	3 881	3 589	3 571	–17.5
Cyprus	674	816	862	934	969	43.7
Czechia[a]	23 423	15 095	14 035	12 119	11 549	–50.7
Denmark	8 216	8 472	7 917	7 386	7 403	–9.9
Estonia[a]	1 977	1 326	1 319	1 164	1 162	–41.2
European Union[c]	723 124	607 234	490 967	435 521	429 794	–40.6
Finland	9 219	7 912	6 325	5 258	5 168	–43.9
France	70 557	70 726	63 262	57 528	56 253	–20.3
Germany	119 996	89 232	59 867	51 814	50 889	–57.6
Greece	11 218	12 010	11 099	10 069	9 704	–13.5
Hungary[a, b]	13 614	10 617	8 903	8 250	8 231	–39.5
Iceland	4 046	4 081	4 029	3 927	3 947	–2.4
Ireland	14 209	14 831	13 333	15 285	15 478	8.9
Italy	50 676	52 628	47 691	42 185	43 043	–15.1
Japan	44 164	37 718	32 061	28 546	28 463	–35.6
Latvia[a]	4 179	2 449	2 336	2 519	2 500	–40.2
Liechtenstein	19	17	19	20	19	0.4
Lithuania[a]	6 948	3 846	3 606	2 958	2 864	–58.8
Luxembourg	589	593	588	572	581	–1.4
Malta	125	190	148	192	194	54.8
Monaco	2	1	1	1	1	–67.3
Netherlands	31 835	24 197	19 360	17 220	16 968	–46.7
New Zealand	33 041	36 022	34 857	34 594	34 355	4.0
Norway	6 405	6 351	5 757	4 922	4 899	–23.5
Poland[a, b]	73 569	52 391	50 275	44 555	44 375	–39.7
Portugal	9 882	11 115	10 313	9 179	9 072	–8.2
Romania[a, b]	65 485	31 798	26 120	23 264	22 765	–65.2
Russian Federation[a]	457 023	322 829	317 442	333 158	321 346	–29.7
Slovakia[a]	7 311	4 859	3 926	3 343	3 284	–55.1
Slovenia[a, b]	2 601	2 492	2 170	1 923	1 894	–27.2
Spain	36 956	42 496	39 497	37 882	37 875	2.5
Sweden	7 878	7 303	5 650	4 627	4 553	–42.2
Switzerland	5 820	5 155	5 031	4 645	4 599	–21.0
Türkiye[d]	42 555	43 815	51 635	63 183	64 098	50.6
Ukraine[a]	182 925	118 338	84 875	69 734	71 491	–60.9
United Kingdom	134 568	111 136	67 242	53 736	51 637	–61.6
United States	808 006	747 427	730 727	694 373	688 474	–14.8
Number of Parties showing a decrease in emissions of more than 1%:						*35*
Number of Parties showing a change in emissions within 1%:						*2*
Number of Parties showing an increase in emissions of more than 1%:						*6*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 11
Total anthropogenic N_2O emissions without emissions and removals from land use, land-use change and forestry

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	16 085	19 089	19 538	18 751	18 586	15.5
Austria	4 511	4 355	3 389	3 551	3 498	–22.5
Belarus[a]	16 275	11 190	12 582	12 362	12 745	–21.7
Belgium	10 063	10 200	7 529	5 556	5 381	–46.5
Bulgaria[a, b]	9 972	3 876	4 008	4 905	4 761	–52.3
Canada	33 195	30 163	27 715	31 564	32 763	–1.3
Croatia[a]	2 861	2 468	2 433	1 620	1 658	–42.0
Cyprus	246	296	274	251	258	4.7
Czechia[a]	9 288	6 404	5 348	5 607	5 328	–42.6
Denmark	8 555	7 378	5 684	5 858	5 816	–32.0
Estonia[a]	1 340	637	746	928	930	–30.6
European Union[c]	383 119	302 549	237 725	229 859	226 934	–40.8
Finland	6 362	5 809	4 784	4 829	4 722	–25.8
France	64 879	53 832	40 616	38 212	36 431	–43.8
Germany	57 989	36 483	30 841	28 948	28 182	–51.4
Greece	7 481	6 369	5 472	4 250	4 264	–43.0
Hungary[a, b]	11 135	5 405	3 714	4 850	5 013	–55.0
Iceland	356	342	305	295	295	–17.3
Ireland	7 663	8 055	6 451	6 867	6 868	–10.4
Italy	27 209	30 270	20 331	18 757	19 471	–28.4
Japan	32 359	30 346	22 841	20 252	19 987	–38.2
Latvia[a]	2 583	1 027	1 221	1 443	1 474	–43.0
Liechtenstein	10	9	9	9	9	–10.5
Lithuania[a]	5 148	3 699	2 936	2 942	3 148	–38.8
Luxembourg	320	328	318	340	322	0.7
Malta	80	84	65	55	55	–30.6
Monaco	2	3	4	3	3	23.5
Netherlands	17 479	15 487	8 150	7 916	7 754	–55.6
New Zealand	5 792	6 997	7 680	8 399	8 464	46.1
Norway	4 106	3 819	2 471	2 390	2 319	–43.5
Poland[a, b]	33 512	25 343	22 068	22 007	22 839	–31.8
Portugal	3 889	4 474	3 576	3 319	3 307	–15.0
Romania[a, b]	26 144	12 763	11 038	11 651	10 965	–58.1
Russian Federation[a]	139 337	73 500	72 078	83 933	86 180	–38.1
Slovakia[a]	4 289	2 601	2 671	1 947	1 945	–54.7
Slovenia[a, b]	827	846	729	779	771	–6.8
Spain	17 865	21 189	17 703	17 920	18 234	2.1
Sweden	5 770	5 346	4 829	4 574	4 617	–20.0
Switzerland	3 361	3 276	3 085	2 994	2 903	–13.6
Türkiye[d]	24 951	24 766	27 446	36 981	40 468	62.2
Ukraine[a]	53 436	23 783	27 375	40 385	37 631	–29.6
United Kingdom	47 289	27 969	21 195	20 368	19 298	–59.2
United States	450 473	442 316	452 709	456 809	426 054	–5.4
Number of Parties showing a decrease in emissions of more than 1%:						*36*
Number of Parties showing a change in emissions within 1%:						*1*
Number of Parties showing an increase in emissions of more than 1%:						*6*

[a] EIT Party.
[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.
[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.
[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 12
Total anthropogenic N_2O emissions with emissions and removals from land use, land-use change and forestry

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	20 903	24 142	25 247	22 353	22 271	6.5
Austria	4 653	4 474	3 513	3 698	3 647	–21.6
Belarus[a]	16 292	11 210	12 598	12 395	12 778	–21.6
Belgium	10 070	10 248	7 639	5 675	5 498	–45.4
Bulgaria[a, b]	10 355	4 169	4 223	5 176	5 031	–51.4
Canada	33 651	30 687	28 123	31 880	33 074	–1.7
Croatia[a]	2 909	2 572	2 537	1 743	1 802	–38.0
Cyprus	246	298	275	252	258	4.8
Czechia[a]	9 332	6 437	5 389	5 628	5 351	–42.7
Denmark	8 626	7 435	5 728	5 903	5 864	–32.0
Estonia[a]	1 603	904	1 030	1 227	1 228	–23.4
European Union[c]	399 040	317 628	252 206	244 853	241 880	–39.4
Finland	8 494	7 959	6 888	6 849	6 744	–20.6
France	68 152	57 029	43 862	41 196	39 299	–42.3
Germany	58 960	37 419	32 150	30 450	29 694	–49.6
Greece	7 488	6 395	5 489	4 271	4 280	–42.8
Hungary[a, b]	11 156	5 469	3 763	4 896	5 052	–54.7
Iceland	356	343	306	296	296	–17.0
Ireland	7 879	8 336	6 994	7 340	7 330	–7.0
Italy	28 065	30 965	20 761	19 251	19 896	–29.1
Japan	32 604	30 561	23 038	20 462	20 199	–38.0
Latvia[a]	3 129	1 607	1 808	2 065	2 097	–33.0
Liechtenstein	11	10	10	10	10	–9.4
Lithuania[a]	5 275	3 826	3 090	3 128	3 331	–36.9
Luxembourg	331	340	338	350	332	0.2
Malta	80	84	65	55	56	–30.6
Monaco	2	3	4	3	3	23.0
Netherlands	17 589	15 583	8 252	8 008	7 846	–55.4
New Zealand	6 118	7 407	8 036	8 666	8 735	42.8
Norway	4 343	4 067	2 729	2 648	2 578	–40.6
Poland[a, b]	35 503	26 677	23 086	23 958	24 788	–30.2
Portugal	4 580	5 124	4 398	3 992	3 968	–13.4
Romania[a, b]	26 182	12 794	11 060	11 677	10 995	–58.0
Russian Federation[a]	149 964	89 594	84 088	101 031	99 594	–33.6
Slovakia[a]	4 421	2 669	2 706	1 991	1 985	–55.1
Slovenia[a, b]	904	918	789	816	806	–10.9
Spain	18 236	21 727	18 031	18 094	18 469	1.3
Sweden	6 976	6 583	6 040	5 846	5 885	–15.6
Switzerland	3 416	3 323	3 134	3 044	2 953	–13.6
Türkiye[d]	25 001	24 901	27 541	37 124	40 658	62.6
Ukraine[a]	53 629	24 060	27 571	40 560	37 873	–29.4
United Kingdom	49 747	30 194	23 115	22 183	21 084	–57.6
United States	454 670	450 362	457 681	461 594	441 232	–3.0
Number of Parties showing a decrease in emissions of more than 1%:						*36*
Number of Parties showing a change in emissions within 1%:						*1*
Number of Parties showing an increase in emissions of more than 1%:						*6*

[a] EIT Party.
[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.
[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.
[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 13
Total aggregate anthropogenic emissions of F-gases

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	6 252	2 752	7 484	11 725	11 926	90.7
Austria	1 656	1 355	1 747	2 339	2 237	35.1
Belarus[a]	–	43	112	218	228	–
Belgium	3 813	1 742	3 407	4 218	3 585	–6.0
Bulgaria[a, b]	3	40	682	6 487	1 724	–
Canada	11 755	10 643	10 038	13 170	13 062	11.1
Croatia[a]	1 251	65	603	1 559	1 689	35.0
Cyprus	3	69	227	372	376	–
Czechia[a]	84	981	2 739	4 184	4 088	4 752.5
Denmark	42	853	907	538	529	1 147.2
Estonia[a]	–	82	178	229	188	–
European Union[c]	71 790	77 541	109 513	110 992	98 124	36.7
Finland	53	745	1 388	1 031	997	1 790.9
France	11 779	11 954	18 513	14 088	12 722	8.0
Germany	13 395	13 293	14 246	13 692	12 159	–9.2
Greece	1 376	5 388	4 603	5 607	5 276	283.4
Hungary[a, b]	378	568	1 345	2 263	2 301	508.2
Iceland	496	195	288	302	297	–40.2
Ireland	35	769	1 128	917	784	2 167.4
Italy	3 759	4 620	14 015	18 380	16 718	344.7
Japan	35 354	42 058	31 524	55 418	57 517	62.7
Latvia[a]	–	65	221	269	261	–
Liechtenstein	0.0001	4	9	10	9	–
Lithuania[a]	–	23	262	539	518	–
Luxembourg	1	33	61	69	66	7 385.0
Malta	0.01	8	143	235	273	–
Monaco	0.1	2	6	8	6	6 934.4
Netherlands	8 476	6 739	2 547	1 670	1 344	–84.1
New Zealand	930	321	1 171	1 586	1 585	70.4
Norway	5 993	2 779	1 201	1 177	1 045	–82.6
Poland[a, b]	147	1 267	5 655	5 514	5 321	3 513.2
Portugal	–	404	2 100	3 421	3 380	–
Romania[a, b]	4 447	1 756	1 072	1 998	2 074	–53.4
Russian Federation[a]	52 487	37 402	18 049	38 720	41 832	–20.3
Slovakia[a]	315	133	642	735	702	122.8
Slovenia[a, b]	243	191	285	324	321	31.9
Spain	4 268	13 024	16 762	6 255	5 431	27.2
Sweden	677	1 264	1 385	1 075	1 043	54.0
Switzerland	254	849	1 520	1 614	1 560	515.2
Türkiye[d]	625	730	3 582	6 242	6 007	860.6
Ukraine[a]	236	132	780	1 679	1 745	639.7
United Kingdom	17 250	10 170	13 007	13 720	12 776	–25.9
United States	99 666	150 854	168 029	186 946	189 190	89.8
Number of Parties showing a decrease in emissions of more than 1%:						*8*
Number of Parties showing a change in emissions within 1%:						*0*
Number of Parties showing an increase in emissions of more than 1%:						*26*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 14
Net anthropogenic CO_2 emissions and removals from land use, land-use change and forestry

Party	kt					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	176 073	39 383	41 475	–58 679	–56 621	–132.2
Austria	–12 231	–16 704	–3 926	–2 800	–1 426	–88.3
Belarus[a]	–29 424	–34 667	–46 168	–35 689	–38 222	29.9
Belgium	–2 943	–1 729	–468	–591	–453	–84.6
Bulgaria[a,b]	–18 164	–18 184	–12 529	–10 273	–9 888	–45.6
Canada	–64 887	–38 006	–19 492	–16 798	–7 607	–88.3
Croatia[a]	–6 021	–6 585	–6 978	–5 479	–5 482	–9.0
Cyprus	–305	–77	–297	–350	–350	14.6
Czechia[a]	–9 031	–9 462	–7 135	8 186	12 719	–240.8
Denmark	6 574	4 870	2 221	2 647	2 857	–56.5
Estonia[a]	–3 487	–4 537	–5 184	–699	932	–126.7
European Union[c]	–228 520	–319 070	–345 002	–259 497	–252 269	10.4
Finland	–17 105	–18 544	–24 790	–16 375	–20 091	17.5
France	–28 060	–25 556	–43 001	–14 384	–18 619	–33.6
Germany	24 591	–11 959	–17 730	–18 264	–14 650	–159.6
Greece	–2 177	–2 176	–3 077	–3 164	–3 988	83.2
Hungary[a, b]	–2 407	–939	–4 474	–4 969	–6 872	185.5
Iceland	5 759	5 771	5 822	5 662	5 651	–1.9
Ireland	5 520	6 880	6 530	5 874	5 896	6.8
Italy	–5 790	–22 522	–42 316	–41 377	–33 089	471.5
Japan	–65 667	–84 987	–70 162	–51 237	–52 291	–20.4
Latvia[a]	–13 402	–12 897	–2 997	–3 804	–759	–94.3
Liechtenstein	7	25	21	12	4	–38.8
Lithuania[a]	–5 661	–9 563	–10 578	–5 489	–5 590	–1.3
Luxembourg	147	–618	–51	–273	–346	–336.0
Malta	–8	–5	11	–1	–2	–72.5
Monaco	–0.1	–0.1	–0.1	0.05	–0.1	–38.7
Netherlands	5 658	5 076	4 823	3 491	3 439	–39.2
New Zealand	–21 624	–27 415	–29 775	–23 385	–23 666	9.4
Norway	–10 948	–19 064	–24 155	–16 882	–20 779	89.8
Poland[a, b]	–21 386	–37 976	–36 321	–22 299	–22 945	7.3
Portugal	5 705	–2 934	–7 587	–5 175	–5 412	–194.9
Romania[a, b]	–21 494	–31 430	–28 259	–28 507	–32 931	53.2
Russian Federation[a]	–105 281	–500 610	–754 232	–601 483	–604 794	474.5
Slovakia[a]	–10 285	–10 449	–6 705	–6 956	–8 809	–14.3
Slovenia[a, b]	–4 844	–6 259	–7 218	–4 926	–4 772	–1.5
Spain	–36 682	–40 384	–37 140	–37 333	–35 920	–2.1
Sweden	–38 261	–43 443	–44 692	–38 456	–41 476	8.4
Switzerland	–2 128	5 127	–2 993	–2 178	–1 768	–16.9
Türkiye[d]	–55 862	–61 861	–73 738	–84 223	–57 246	2.5
Ukraine[a]	–31 637	–23 206	–9 231	25 124	–2 109	–93.3
United Kingdom	5 981	1 352	–2 963	–2 589	–2 894	–148.4
United States	–892 014	–862 629	–791 423	–760 820	–812 176	–9.0
Number of Parties showing a decrease in emissions of more than 1%:						*28*
Number of Parties showing a change in emissions within 1%:						*0*
Number of Parties showing an increase in emissions of more than 1%:						*15*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 15
Anthropogenic CH_4 emissions from land use, land-use change and forestry

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	19 737	21 525	19 170	14 679	12 790	–35.2
Austria	24	24	24	24	24	–0.9
Belarus[a]	8	9	5	26	24	205.3
Belgium	0.1	0.0005	–	–	–	–
Bulgaria[a,b]	1	135	15	13	12	1 038.1
Canada	893	986	767	547	536	–40.0
Croatia[a]	1	97	2	3	33	2 543.9
Cyprus	0.1	7	1	1	1	1 120.3
Czechia[a]	51	41	54	28	30	–41.1
Denmark	263	243	229	237	238	–9.2
Estonia[a]	64	66	65	66	66	3.3
European Union[c]	12 578	12 930	11 705	11 313	11 454	–8.9
Finland	1 532	1 346	975	765	766	–50.0
France	997	1 699	1 171	1 302	1 130	13.3
Germany	1 441	1 434	1 727	1 870	1 873	30.0
Greece	63	208	16	78	19	–70.1
Hungary[a, b]	25	26	9	16	11	–56.3
Iceland	3 439	3 422	3 373	3 357	3 357	–2.4
Ireland	456	443	757	540	568	24.5
Italy	1 286	714	350	203	263	–79.6
Japan	105	90	79	72	69	–34.7
Latvia[a]	555	563	530	776	782	40.9
Liechtenstein	–	–	–	–	–	–
Lithuania[a]	3	4	1	1	0.3	–88.4
Luxembourg	–	–	–	–	–	–
Malta	0.02	0.02	–	–	–	–
Monaco	–	–	–	–	–	–
Netherlands	0.4	0.4	0.5	0.5	0.5	39.8
New Zealand	69	70	92	84	82	18.8
Norway	169	175	181	187	187	10.4
Poland[a, b]	49	39	13	25	19	–60.9
Portugal	730	276	263	70	105	–85.6
Romania[a, b]	0.1	6	0.3	4	8	5 298.8
Russian Federation[a]	21 085	19 532	21 832	25 381	22 143	5.0
Slovakia[a]	10	25	18	25	22	119.6
Slovenia[a, b]	2	1	0.3	1	1	–74.0
Spain	314	292	88	54	136	–56.6
Sweden	464	466	438	448	442	–4.5
Switzerland	28	14	12	12	12	–58.0
Türkiye[d]	76	160	23	48	109	42.8
Ukraine[a]	38	16	38	20	112	197.1
United Kingdom	4 743	4 719	4 783	4 903	4 877	2.8
United States	27 192	29 354	25 415	25 546	38 055	39.9
Number of Parties showing a decrease in emissions by more than 1%:						*18*
Number of Parties showing a change in emissions within 1%:						*1*
Number of Parties showing an increase in emissions by more than 1%:						*19*

[a] EIT Party.
[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.
[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.
[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 16
Anthropogenic N_2O emissions from land use, land-use change and forestry

Party	kt CO_2 eq					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	4 819	5 053	5 710	3 603	3 686	–23.5
Austria	142	119	124	147	149	5.1
Belarus[a]	17	20	16	32	33	93.2
Belgium	7	48	110	119	117	1 648.7
Bulgaria[a, b]	383	292	216	272	271	–29.3
Canada	456	524	408	316	310	–31.9
Croatia[a]	48	104	104	123	144	199.5
Cyprus	0.02	3	0.4	0.2	0.2	1 120.3
Czechia[a]	44	33	41	21	23	–49.2
Denmark	71	57	44	45	48	–33.2
Estonia[a]	263	267	284	298	299	13.6
European Union[c]	15 921	15 079	14 480	14 994	14 946	–6.1
Finland	2 132	2 150	2 104	2 021	2 022	–5.1
France	3 272	3 197	3 246	2 985	2 868	–12.4
Germany	971	936	1 309	1 502	1 512	55.8
Greece	6	27	17	21	16	145.1
Hungary[a, b]	21	64	49	46	40	86.5
Iceland	0.2	1	1	1	1	417.3
Ireland	216	282	544	473	462	113.9
Italy	856	695	430	494	425	–50.3
Japan	245	215	196	210	212	–13.6
Latvia[a]	546	580	587	622	623	14.1
Liechtenstein	0.3	0.3	0.4	0.4	0.4	30.3
Lithuania[a]	127	127	153	186	183	43.9
Luxembourg	11	11	20	10	10	–16.1
Malta	0.2	0.2	0.2	0.1	0.1	–26.5
Monaco	0.01	0.01	0.01	0.01	0.004	–67.9
Netherlands	110	96	102	92	91	–17.1
New Zealand	326	410	356	266	271	–16.8
Norway	237	248	258	259	260	9.4
Poland[a, b]	1 991	1 334	1 018	1 951	1 949	–2.1
Portugal	692	650	823	673	661	–4.4
Romania[a, b]	38	31	23	26	29	–22.5
Russian Federation[a]	10 627	16 094	12 010	17 098	13 414	26.2
Slovakia[a]	132	68	36	44	41	–69.3
Slovenia[a, b]	77	72	60	38	35	–54.4
Spain	371	538	328	174	235	–36.7
Sweden	1 206	1 237	1 211	1 272	1 269	5.2
Switzerland	55	47	48	50	50	–8.7
Türkiye[d]	50	135	95	143	190	278.4
Ukraine[a]	193	278	196	175	242	25.4
United Kingdom	2 458	2 225	1 919	1 815	1 786	–27.3
United States	4 197	8 046	4 972	4 786	15 178	261.7
Number of Parties showing a decrease in emissions of more than 1%:						*23*
Number of Parties showing a change in emissions within 1%:						*0*
Number of Parties showing an increase in emissions of more than 1%:						*20*

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.

Table 17
Indirect CO_2 emissions

Party	kt					Change 1990–2020 (%)
	1990	2000	2010	2019	2020	
Australia	–	–	–	–	–	–
Austria	–	–	–	–	–	–
Belarus[a]	–	–	–	–	–	–
Belgium	–	–	–	–	–	–
Bulgaria[a, b]	–	–	–	–	–	–
Canada	825	825	744	989	1 137	–42.5
Croatia[a]	–	–	–	–	–	–
Cyprus	6.49	6.49	5.84	6.09	6.11	5.8
Czechia[a]	1 893	1 893	1 684	1 589	1 556	–70.9
Denmark	1 120	1 120	1 171	1 141	1 124	–78.9
Estonia[a]	–	–	–	–	–	–
European Union[c]	4 317	4 317	4 111	3 900	3 806	–66.0
Finland	166	166	156	150	143	–60.4
France	–	–	–	–	–	–
Germany	–	–	–	–	–	–
Greece	–	–	–	–	–	–
Hungary[a, b]	–	–	–	–	–	–
Iceland	–	–	–	–	–	–
Ireland	–	–	–	–	–	–
Italy	–	–	–	–	–	–
Japan	5 548	5 548	5 372	5 097	4 876	–64.6
Latvia[a]	40	40	38	36	34	–67.6
Liechtenstein	–	–	–	–	–	–
Lithuania[a]	–	–	–	–	–	–
Luxembourg	–	–	–	–	–	–
Malta	–	–	–	–	–	–
Monaco	–	–	–	–	–	–
Netherlands	917	917	886	803	770	–54.3
New Zealand	–	–	–	–	–	–
Norway	–	–	–	–	–	–
Poland[a, b]	–	–	–	–	–	–
Portugal	86	86	84	90	89	53.2
Romania[a, b]	–	–	–	–	–	–
Russian Federation[a]	–	–	–	–	–	–
Slovakia[a]	88	88	87	85	84	–47.7
Slovenia[a, b]	–	–	–	–	–	–
Spain	–	–	–	–	–	–
Sweden	–	–	–	–	–	–
Switzerland	414	414	401	373	344	–70.9
Türkiye[d]	–	–	–	–	–	–
Ukraine[a]	–	–	–	–	–	–
United Kingdom	–	–	–	–	–	–
United States	–	–	–	–	–	–
Number of Parties showing a decrease in emissions of more than 1%:						*10*
Number of Parties showing a change in emissions within 1%:						*0*
Number of Parties showing an increase in emissions of more than 1%:						*2*

Note: According to the UNFCCC Annex I inventory reporting guidelines, Annex I Parties may report indirect CO_2 from the atmospheric oxidation of CH_4, carbon monoxide and non-methane volatile organic compounds. In total, 12 Parties voluntarily reported indirect CO_2 emissions in their 2022 GHG inventory submission.

[a] EIT Party.

[b] 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) and Slovenia (1986)) are used for this Party instead of 1990 data.

[c] Emission estimates of the European Union are as reported for its 27 member States and the United Kingdom as a group and are reported separately from those of each individual Party.

[d] Decision 26/CP.7 invited Parties to recognize the special circumstances of Türkiye, which place it in a situation different from that of other Annex I Parties.