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EXECUTIVE BODY FOR THE CONVENTION ON
LONG-RANGE TRANSBOUNDARY AIR POLLUTION

Steering Body to the Cooperative Programme for Monitoring and Evaluation
of the Long-range Transmission of Air Pollutants in Europe (EMEP)
(Twenty-sixth session, Geneva, 2-4 September 2002)
Item 5 (f) of the provisional agenda

PRESENT STATE OF EMISSION DATA

Note by the Meteorological Synthesizing Centre-West
prepared in consultation with the secretariat

Summary

This document summarizes the emission data officially submitted to the secretariat of anthropogenic emissions of SO₂, NO_x, NH₃, NMVOC, CO, particulate matter (TSP, PM₁₀, PM_{2.5}), heavy metals and selected persistent organic pollutants for 1980-2000 and projections for 2010 and 2020. One major task this year has been the revision of the Convention's Guidelines for Estimating and Reporting Emissions Data, to be presented for adoption at the twenty-sixth session of the Steering Body. For reporting of 2000 data, Parties were encouraged to report according to the draft guidelines, adopted in principle by the Steering Body at its twenty-fifth session. Another major achievement is the development of WebDaB, the web version of the UNECE/EMEP emission database. The database is accessible at: <http://webdab.emep.int/> and will be updated annually beginning in autumn 2002. The level of reporting remained relatively constant in 2002 compared to previous years, but more Parties than ever submitted data in time for inclusion in the EMEP assessments. Sulphur dioxide emissions continued to decline (down 60% in the EMEP area between 1980 and 2000). For the other major components, downward trends were less pronounced.

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I. REPORTING EMISSIONS TO UNECE

1. High-quality emission data are essential for assessing the state of air pollution in Europe and for ascertaining progress made toward environmental goals set out in the protocols to the Convention. According to the EMEP emission reporting programme for 2001/2002, as adopted by the Executive Body at its nineteenth session, Parties were to submit their official emission data and related information to the UNECE secretariat by 31 January 2002. The secretariat verified for each submission that data had been submitted by the designated emissions expert and thus constituted an official submission. The data were thereafter forwarded to the Meteorological Synthesizing Centre-West (MSC-W) for storage, management and consistency analysis. MSC-W is also working on developing methods for validating emission data in cooperation with relevant emission experts of each Party. At the beginning of the year 2002, MSC-W revised the data in cooperation with Parties, which then had the possibility to correct and finalize their data by the end of March, in order to have them included in the MSC-W modelling assessments.

2. The goal established during the seventh phase programme for EMEP (EB.AIR/GE.1/1998/3) was for all gaps in the time series of national annual total and sector (level 1) emissions from protocol base years and onwards to be filled using harmonized emission inventory methodologies as early as possible, and at the latest during the 2005 inventory. Moreover, EMEP aims to have a full set of gridded data for national total and sectoral emissions for every five years with updates for the intervening years, if necessary.

3. The Guidelines for Estimating and Reporting Emissions Data were intensively revised over the past two years, to facilitate emission reporting procedures that would maintain the high quality of reported emissions as well as improve the content of reporting. In order not to increase the reporting burden on Parties, harmonization with other international groups concerned with the collection of emission data and clear specifications in reporting requirements have been paramount in the revision. The Guidelines, were accepted by the Steering Body in 2001 on a pilot basis. The Task Force on Emission Inventories and Projections has proposed further revisions for consideration at the twenty-sixth session of the Steering Body (EB.AIR/GE.1/2002/7).

II. OFFICIAL SUBMISSIONS OF YEAR 2000 DATA TO UNECE

4. In November 2001, Parties were instructed to submit 2000 data by accessing country-specific pre-filled tables and reporting templates on the EMEP web page <http://www.emep.int/>. Submissions were to be made according to the emission reporting programme approved as part of the EMEP work-plan, and in line with the new reporting

formats reflected in the draft reporting guidelines, although reporting according to the old formats was also acceptable. The deadline for submitting 2000 data, updates for the previous years and projected data was 31 January 2002, one month later than was required the previous year. Parties were invited to apply the Atmospheric Emission Inventory Guidebook, while further guidance on the reporting procedure was made available on the EMEP internet homepage. From February to the end of March, the secretariat and MSC-W communicated with Parties to provide further guidance and to ensure that gaps in data were filled and inconsistencies corrected. Despite difficulties complying with the time schedule, 37 of the 48 Parties (77 percent) submitted new or updated data for this reporting round by 31 March 2002.

5. Nearly 40 per cent of the 48 Parties to the Convention managed to report in the new reporting format; 23 per cent reported in the old format, while 15 per cent reported in their own format. All Parties submitted data electronically. Except for a drop in the reporting of POPs compared to last year, reporting remained relatively constant. For the main pollutants (SO₂, NO_x, NH₃, NMVOC, CO), annual totals and sector totals (at sector level 1) for 2000 were reported by approximately 63 per cent of Parties to the Convention. The corresponding figures for heavy metals (HMs) and persistent organic pollutants (POPs) were 52 per cent and 35 per cent, respectively. Approximately 35 per cent of the Parties submitted sector emission data at a more disaggregated level. This represents an increase of 13 Parties compared to the last reporting round.

III. GRIDDED DATA AND DATA FROM LARGE POINT SOURCES

6. Approximately 33 per cent of Parties reported gridded national total emissions for 2000, and 17 per cent reported gridded sector data for the main pollutants. Ten Parties reported gridded HMs and POPs emissions for 2000, while four parties reported gridded particulate matter (PM) emissions. Seven Parties submitted large point source (LPS) 2000 emission data. The level of reporting of gridded data is about half that of the national total and 27 per cent of sector level 1 data for the main pollutants. One third of Parties within the EMEP area have never reported any data for the 50x50 km² EMEP grid. The modelling assessments under the Convention require input of emission data in gridded form, and the reporting of gridded data and LPS clearly needs to be strengthened to further improve the results of these assessments.

7. The 2002 reporting also concerned for the first time reporting of PM emissions and activity data. Twenty-three per cent of the Parties submitted national total and sector level 1 PM emissions. The reporting of the finer fraction was somewhat lower (17 per cent). Five Parties reported PM data at sector level 2. Twenty-one per cent of Parties submitted some activity data.

8. The official emission data are presented in tables 1-10 below. Emission data and corrections received by 31 March 2002 are included. Emission data, maps and bar charts are available from WebDaB, the web version of the UNECE/EMEP database, at <http://webdab.emep.int/>.

9. To facilitate the verification of compliance with the major requirements of the 1999 Gothenburg Protocol, table 11 and the associated figures I - IV give information on SO₂, NO_x, NH₃ and NMVOC emission reductions as percentages of 1990 (Gothenburg Protocol base year). Both Signatories and non-Signatories to the Protocol are listed in table 11 and in figures I - IV.

IV. EMISSION TRENDS IN THE EMEP AREA

10. Provided that all gaps are filled in the time series of reported emission data, it is possible to calculate the development of total emissions over the EMEP area since 1980. Figures V-VIII illustrate the emission trends for SO₂, NO_x, NH₃, and NMVOC, respectively.

11. European sulphur dioxide emissions (fig. V) show a clear downward trend. Total SO₂ emissions declined 60 per cent between 1980 and 2000. Emissions of NO_x (fig. VI) were relatively constant in the early 1980s, then slightly increased in the late 1980s, and steadily decreased throughout the 1990s. The reduction was 25 per cent between 1990 and 2000. European emissions of ammonia (fig. VII) dropped by 18 per cent between 1990 and 2000; the almost constant emission trend before 1990 was mainly the result of assumptions made to fill in missing data for most countries. NMVOC emissions (fig. VIII) refer to anthropogenic releases only. There was a downward trend in the 1990s, leading to a drop of 30 per cent between 1990 and 2000.

12. For the EMEP modelling activities, missing annual figures are interpolated from the values in adjoining years. When official information is not available, emissions are replaced by estimates based on information from available sources and often in collaboration with the Centre for Integrated Assessment Modelling. Wherever possible, figures reported under the CORINAIR Programme (1985, 1990 and 1994) substitute missing values. Projections for 2010, shown in figures V - VIII, are based on the ceilings from the Gothenburg Protocol for Signatories to the Protocol, on reported projections, and on the Centre for Integrated Assessment Modelling's current legislation scenario (CLE). When none of the above sources of information is available, the latest reported value is used. All data used in the MSC-W model runs will be presented and analysed in the technical report to the Steering Body at its twenty-sixth session (EMEP/MSC-W Note 1/02).

Table 1: Anthropogenic emissions of sulphur (1980-1992) in the ECE region (Gg SO₂ per year)

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia	141.0	110.7	101.3	110.3	96.9	100.2	111.2	110.6	104.1	62.7	72.00	59.5	44.1
Austria	384.6	334.2	316.3	237.4	211.7	190.1	171.5	153.0	115.0	101.8	90.74	81.83	63.00
Belarus	740	730.0	710.0	710.0	690.0	690	690	761	720	668	637	652	458
Belgium	828	712	694	560	500	400	377	367	354	325	357.0	329.9	315.3
Bosnia and Herzegovina											480.0		
Bulgaria	2050							2420	2228	2180	2008	1665	1115
Canada	4643	4291	3612	3625	3955	3692	3627	3762	3838	3695	3236	3245	3117
Croatia ^{abc}	150.0										180.0	108.0	106.7
Cyprus	28	28	33	30	33	35	38	39	42	42	46	33	39
Czech Republic	2257	2341	2387	2338	2305	2277	2177	2164	2066	1998	1876	1776	1538
Denmark ^d	452.1	370.4	378.7	322.9	305.5	339.6	287.8	254.9	250.0	196.7	180.6	239.0	186.3
Estonia ^e	287					254	256	255	254	254	252.1	245.6	187.4
Finland	584	534	484	372	368	382	331	328	302	244	260	194	141
France ^{ff}	3249	2554	2442	2009	1791	1493	1364	1349	1241	1401	1341	1450	1275
Georgia ^g	230.2	242.1	250.1	267.3	266.6	273.2	255.3	258.3	255.3	249.1	248.3	194.0	135.2
Germany ^{hi}	7514	7441	7440	7346	7633	7732	7641	7396	6487	6165	5321	3996	3307
Greece	400					500					479	520	534
Hungary	1633	1580	1545	1480	1440	1404	1362	1285	1218	1102	1010	913.0	827.3
Iceland ^{jk}	17.8	17.8	17.8	18.2	18.8	18.1	18.4	16.2	17.5	17.3	24.0	23.1	23.9
Ireland	222	192	158	142	142	140	162	174	152	162	185.7	180.2	171.5
Italy	3757	3330	2850	2463	2114	1901	1929	2029	1963	1854	1651	1539	1394
Kazakhstan											1156	1296	1296
Kyrgyzstan												52.1	40.8
Latvia											119.2	90.37	79.33
Liechtenstein	.31	.29	.27	.25	.23	.2	.18	.17	.15	.13	.113	.1075	.101
Lithuania	311	312	304	310	303	304	316	316	300	298	222	234	139
Luxembourg	24			14		16					15		
Malta													
Monaco											.063	.091	.094
Netherlands	490	464	404	323	299	258	264	263	250	204	202.4	173	172
Norway	136.8	128.0	110.7	103.8	95.8	98.2	91.4	72.61	67.6	57.90	52.55	44.17	36.37
Poland	4100					4300	4200	4200	4180	3910	3210	2995	2820
Portugal ^l	266			306.0		198	234.0	218.0	204.0		359.4	345.6	409.0
Republic of Moldova ^{mmo}	308	305	287	284	270	282	297	317	273	238	265	259.8	168.2
Romania	1055	1095	1104	1229	1223	1255	1293	1305	1469	1517	1311	1041	951.0
Russian Federation ⁿⁿ	7323	7110	7252	7095	6663	6350	5880	5806	5333	4875	4671	4603	4033
Slovakia	780					613	604	614	589	573	542	445	380
Slovenia	234	254	256	274	250	241	247	222	210	211	196	180	186
Spain ^d	3013	2937	2902	2920	2671	2526	2396	2262	1900	2247	2167	2161	2127
Sweden	491.0	431.0	371.0	305.0	296.0	266.0	272.0	228.0	224.0	160.0	111.1	101.5	89.15
Switzerland	116	108	100	92	84	76	68	62	56	49	41.96	41	38
The FYR of Macedonia													
Turkey ^r	204.5	218.0	236.7	299.1	360.8	519.8	674.4	606.4	443.1	740.7	764.6	840.6	821.3
Ukraine	3849	3492	3427	3498	3470	3463	3393	3264	3211	3073	3782	2538	2376
United Kingdom	4859	4401	4190	3851	3702	3720	3880	3875	3812	3698	3721	3534	3462
United States	23501	22251	20993	20449	21292	21463	20795	20580	21005	21132	21478	20901	20687
Yugoslavia	406	408	409	440	456	478	470	484	502	506	508	446	396
European Community ^s											16325	14801	13590

^a 1990-1998: Distributed according to SNAP90.

^b 1999: Distributed according to SNAP97.

^c Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^d Data include those emissions located within the EMEP area only.

^e National totals include overseas areas.

^f National totals do not include international air traffic and international sea traffic.

^g Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^h Emissions from 1980-1986 are not updated.

ⁱ Emissions from international air traffic, marine bunkers and managed forests are not included.

^j 2/3 of the SO₂ emissions are emitted as H₂S.

^k Emissions in 1980 and 1981 are assumed to be similar to 1982 due to lack of data.

^l Emissions from 1990 onwards are calculated using the categories of SNAP97.

^m Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldovan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

ⁿ For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions.

^o SO_x emissions 1980-1989 do not include mobile sources.

^p Figures apply to the European part within EMEP except for CO₂.

^q Since 1980 the SO₂ emission data have been updated taking into account emissions from mobile sources (agricultural engineering, road-building machinery and railway transport).

^r SO₂ emissions from all sectors in fuel combustion were calculated for 1999 only.

^s The EC inventory relies on the availability and submission of Member States' data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the United Nations Framework Convention on Climate Change (UNFCCC) (SO_x, NO_x, CO and NMVOC) have been used (see the latest EC submission to the UNFCCC as compiled by EEA and ETC/ACC 'Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 1, continued: Anthropogenic emissions of sulphur (1993-2000, 2010, 2020) in the ECE region (Gg SO₂ per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia	5.5	4.2	2.5	1.5	.400	3.310	.84 ^a	8.403		
Austria	60.40	56.32	53.82	52.80	50.67	45.77	41.43	40.75	39.0	
Belarus	382	324	275	246.3	208.5	190	163.7	142.8	480	
Belgium	293.9	252.2	245.4	240.3	219.2	212.5	180.8		106	
Bosnia and Herzegovina										
Bulgaria	1426	1480	1476	1420	1365	1251	943	982.0 ^b	856	702
Canada	3008	2651	2681	2722	2749	2766	2499	2534	2914	3086
Croatia ^{cde}	113.7	89.3	70.4	66.2	80.4	89.5	90.7		70	
Cyprus	43	42	41	45	47	49	50	50	39	
Czech Republic	1419	1270	1091	946	701	443	269	264.7	283	
Denmark ^f	152.5	156.6	149.0	179.4	109.7	75.36	54.68	27.50	50	
Estonia	153.8 ^e	149.1 ^e	118.5 ^e	125.2 ^e	119.0 ^e	110.0 ^e	102.5 ^e	95.46	57.4	
Finland	123	114	96	105	99	90	87	73.5	110	
France ^h	1110	1054	995	970	824	862	735	659	375 ⁱ	
Georgia ^j	71.4	46.9	20.3	30.1	33.1	20.18	8.61			
Germany ^{kl}	2945	2473	1994	1405	1127	899	831		550	
Greece	533	505	528	518	511	518	531		546	
Hungary	757.3	741.0	705.0	673.2	658.5	591.8	590.1	485.3 ^m	550	480
Iceland ^{no}	24.5	23.8	23.9	24.1	24.5	26.8			29.4	
Ireland	160.8	175.0	161.2	147.4	166.0	176.0	157.4	131.5	42	
Italy	1333	1271	1322	1250 ^p	1075 ^p	1039 ^p	923 ^p		842	
Kazakhstan	1285	1093	1083	804.5	937.9	961.2	881.0	948.0		
Kyrgyzstan	31.6	21.0	15.7	14.0	9.9	10.8	8.72			
Latvia	73.81	86.30	58.98	59.27	43.85	39.84	30.91	18.06	29.03	46.22
Liechtenstein	.0938	.0844	.0789	.0743	.0689	.0642	.06	.0534	.05	.05
Lithuania	125	117	94	93	77	94	70	43.1	145	
Luxembourg	15.00	13	9	8	6	4	3.822	3.092	4	
Malta										
Monaco	.100	.089	.085	.076	.073	.071	.075	.067		
Netherlands	164	146	141.4	135	118	108.0	102.9	91.2 ^m	50	
Norway	35.03	34.58	33.57	32.78	30.02	29.57	28.46	26.21	29.50	
Poland	2725	2605	2376	2368	2181	1897	1719	1511	1397	
Portugal ^q	360.0	338.9	365.6	323.4	341.3	374.9				
Republic of Moldova ^{rst}	156.4	108.5	64.06	67.03	36.13	32.08	12.05		135	
Romania	928.0	912.0								
Russian Federation ^{uv}	3637	3131	2969	2774	2524	2275	2062	1997	2400	
Slovakia	325	238	239	227	202	179	171	120 ^m	210	
Slovenia	183	177	125	112	118	123	104	96	27	
Spain ^f	1998	1952	1808	1577	1716	1601	1621	1535		
Sweden	79.75	80.78	68.56	74.34	65.61	63.41	53.71	57.65	67 ^{wx}	
Switzerland	34	31	33.55	30	26	27.6	25.5	19.26	26	17.7
The FYR of Macedonia					17.00	105.0 ^y		105.2		
Turkey ^z	767.8	991.5	1007	1165	1225	1354	2104	1347	995.0	
Ukraine	2194	1715	1639	1293	1132				2310	
United Kingdom	3115	2676	2363	2025	1665	1588	1210	1165	586	447
United States	20387	19840	17406	17621	18068	18182	17533	16483	15167	14351
Yugoslavia	401	424	462	434	522	521	355	387	1135	
European Community ^A	12351	11198	10138	8840	7969	7549	6803			

^a Reduction of emissions from 1993 onwards is explained by the blockade of communications in Armenia followed by a drop in energy production. The reduction in SO₂ in 1999 can be explained by the fact that in 1999 all heating enterprises used natural gas as fuel.

^b Emissions are calculated on the basis of the total quality of the fuels used.

^c 1990-1998: Distributed according to SNAP90.

^d 1999: Distributed according to SNAP97.

^e Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^f Data include those emissions located within the EMEP area only.

^g National totals include overseas areas.

^h National totals do not include international air traffic and international sea traffic.

ⁱ Emissions correspond to the National Emission Ceilings (NEC).

^j Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^k Emissions from 1980-1986 are not updated.

^l Emissions from international air traffic, marine bunkers and managed forests are not included.

^m Preliminary data.

ⁿ 2/3 of the SO₂ emissions are emitted as H₂S.

^o Emissions in 1980 and 1981 are assumed to be similar to 1982 due to lack of data.

^p Emissions for 1996-1999 estimated according to SNAP97.

^q Emissions from 1990 onwards are calculated using the categories of SNAP97.

^r Since 1993 emissions located on the left side of Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

^s For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions.

^t SO_x emissions 1980-1989 do not include mobile sources.

^u Figures apply to the European part within EMEP except for CO₂.

^v Since 1980 the SO₂ emission data have been updated taking into account emissions from mobile sources (agricultural engineering, road-building machinery and railway transport).

^w International transport (ie aviation and navigation) is not included in national totals except for the CO₂ figure for 1980.

^x Emissions of SO₂ and NO_x from domestic navigation/coastal shipping, for the years 1980-1993, are assumed to account for 30% of the total emissions from shipping in Sweden.

^y Data are for sectors 1-6 only. Data for sectors 7-11 are not yet ready.

^z SO₂ emissions from all sectors in the fuel combustion were calculated for 1999 only.

^A The EC inventory relies on the availability and submission of Member States' data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the UNFCCC (SO_x, NO_x, CO and NMVOC) have been used (see the latest EC submission to the UNFCCC as compiled by EEA and ETC/ACC '*Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001*').

Table 2: Anthropogenic emissions of nitrogen oxides (1980-1992) in the ECE region (Gg NO₂ per year)

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia		15.4	17.2	16.6	15.7	44.8	53.0	51.5	55.5	51.2	46.20	40.0	21.8
Austria	227.3	219.6	217.6	214.8	213.8	215.8	211.9	208.3	200.7	192.9	201.8	205.4	196.7
Belarus	234	235.0	235.0	237.0	240.0	238	258	263	262	263	285	281	224
Belgium	442					325	317	338	345	357	320.6	325.5	334.3
Bosnia and Herzegovina													
Bulgaria								416	415	411	361	256	230
Canada	1959	1907	1897	1884	1871	2038	2043	2131	2204	2188	2104	2003	1997
Croatia ^{abc}	60.00										87.6	65.0	56.2
Cyprus	13	13	14	14	14	14	15	16	17	17	18	16	19
Czech Republic	937	819	818	830	844	831	826	816	858	920	742	725	698
Denmark ^d	273.2	243.2	264.1	257.0	270.3	295.1	314.8	307.7	299.9	283.3	276.9	319.5	273.9
Estonia ^e								70	70	69	67.7	63.33	39.35
Finland	295	276	271	261	257	275	277	288	293	301	300	290	284
France ^{df}	2011	1906	1890	1871	1862	1834	1796	1823	1833	1890	1899	1963	1918
Georgia ^e	121.0	125.6	130.0	137.6	137.3	140.4	133.8	134.1	134.6	130.6	129.5	112.5	47.8
Germany ^{hi}	3334	3259	3219	3258	3305	3276	3286	3327	3208	2989	2706	2493	2303
Greece						306		320.0 ⁱ	304		311	310	304
Hungary	272.9	270	268	266	264	262.5	264.2	264.9	257.8	246.8	238.0	203.1	183.3
Iceland	21.2	21.2	21.2	21.8	21.7	20.5	22.3	24.0	24.9	25.3	26.3	26.7	28.4
Ireland	73	86	86	85	84	91	100	115	122	127	118.1	119.5	130.4
Italy	1638	1604	1605	1583	1596	1614	1690	1811	1854	1917	1938	1984	2010
Kazakhstan											355.7	400.5	377.9
Kyrgyzstan												20.0	8.9
Latvia											92.28	74.20	62.91
Liechtenstein	.58	.59	.59	.6	.6	.6	.6	.59	.59	.58	.525	.5029	.4788
Lithuania	152	154	156	158	162	166	169	171	172	173	158	166	98
Luxembourg	23			21		21		19.77			23		
Malta													
Monaco											.530	.636	.684
Netherlands	583	575	562	555	573	589	587	599	602	584	573.8	568	556
Norway	194.0	177.7	182.0	186.7	201.0	212.8	227.9	233.9	224.0	228.9	226.5	215.2	213.9
Poland	1229					1500	1510	1530	1550	1480	1280	1205	1130
Portugal ^k	166.0			192.0		96	110.0	116.0	122.0		317.0	332.7	354.4
Republic of Moldova ^{lmn}	58	57	50	42	44	66	72	71	74	70	100	97	67.3
Romania	523.0	528.0	516.0	542.0	546.0	542.0	559.0	580.0	590.0	579.0	546.0	464.0	357.0
Russian Federation ^{opq}	1734	1915	2002	1976	1879	1903	1871	3411	3287	3335	3600	3435	3123
Slovakia								197		227	215	194	181
Slovenia	51	52	52	51	52	53	58	57	59	58	63	58	58
Spain ^d	1138	1043	1033	1056	1069	1038	1062	1121	1156	1257	1279	1379	1354
Sweden	404.0	417.0	412.0	401.0	411.0	426.0	432.0	437.0	432.0	418.0	348.9	340.2	328.3
Switzerland	170	172	174	175	177	179	176	174	172	169	153.7	146	138
The FYR of Macedonia													
Turkey	363.9	377.1	407.5	433.0	459.4	483.0	528.3	569.6	570.7	609.2	643.7	649.1	667.3
Ukraine	1145	1145	1153	1153	1102	1059	1112	1094	1090	1065	1097	989.0	830.0
United Kingdom	2580	2497	2486	2498	2458	2540	2624	2736	2791	2791	2763	2637	2558
United States ^r	22121	22397	21819	21704	22581	21045	20480	20654	21517	21676	21747	21979	22367
Yugoslavia	47	50	50	53	58	58	58	60	63	62	66	57	49
European Community^s								13446	13464	13563	13292	13195	12882

^a 1990-1998: Distributed according to SNAP90.

^b 1999: Distributed according to SNAP97.

^c Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^d Data include those emissions located within the EMEP area only.

^e National totals include overseas areas.

^f National totals do not include international air traffic and international sea traffic.

^g Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^h Emissions from 1980-1986 are not updated.

ⁱ Emissions from international air traffic, marine bunkers and managed forests are not included.

^j Emissions reported for 1980-1985 are to be regarded as indicative only, and are not comparable to the emissions reported after 1985.

^k Emissions from 1990 onwards are calculated using the categories of SNAP97.

^l Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

^m For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions.

ⁿ NO_x emissions 1980-1984 do not include mobile sources.

^o Figures apply to the European part within EMEP except for CO₂.

^p NO₂ figures for 1980-1987 refer to stationary and road vehicles only. NO₂ emission data from 1987 to 1989 were updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.

^q Since 1987 the NO_x emissions have been updated according to the instruction of the Ministry of Natural Resources for such sources as road transport, other mobile sources etc. NO_x emissions data for earlier periods (before 1987) have not been corrected.

^r The NO₂ emissions for the base year, 1978, is 21830 Gg.

^s For the time series 1987-1989, data as submitted under the Environmental Information and Observation Network (EIONET) have been used. As no officially agreed data gap filling procedure exists, data gaps were filled by EMEP data and EEA interpolations. For the time series 1990-1999, data as compiled for the EC UNFCCC submission were used ('Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 2, continued: Anthropogenic emissions of nitrogen oxides (1993-2000, 2010, 2020) in the ECE region (Gg NO₂ per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia	12.1	11.9	14.9	11.4	15.10	10.95	10.61	9.97		
Austria	190.8	193.8	182.7	180.9	184.7	181.5	181.9	183.6	107.0	
Belarus	207	203	195	172.7	188.5	164	142	134.8	180	
Belgium	330.3	333.2	324.9	314.8	305.8	312.1	288.9		181	
Bosnia and Herzegovina										
Bulgaria	242	230	266	259	225	223	202	184.4 ^a	266	195
Canada	2006	2026	2032	2011	2068	2051	2056	2058	2085	1589
Croatia ^{bcd}	59.3	65.5	65.7	68.6	73.3	76.0	72.1		87	
Cyprus	20	20	19	21	21	22	22	23	23	
Czech Republic	574	435	412	432	423	413	390	397.7	286	
Denmark ^e	273.7	277.9	261.4	305.6	266.0	239.7	220.9	207.2	133	
Estonia	38.05 ^f	41.08 ^f	42.06 ^f	44.36 ^f	44.75 ^f	46.01 ^f	39.62 ^f	41.40		
Finland	282	282	258	268	260	252	247	235.8	170	
France ^g	1797	1746	1709	1686	1611	1584	1515	1432	810 ^h	
Georgia ⁱ	32.5	20.8	26.6	49.6	54.5	42.35	30.14			
Germany ^{jk}	2189	2038	1967	1877	1781	1709	1637		1081	
Greece	306	312	309	318	326	351	340		344	
Hungary	184.0	187.4	190.1	195.8	199.5	202.6	200.7	187.2 ^l	198	198
Iceland	29.3	29.2	28.4	29.6	28.6	27.7			30.0	
Ireland	119.1	115.3	115.3	119.9	118.5	121.8	118.5	125.1	65	
Italy	1990	1789	1768	1744 ^m	1662 ^m	1594 ^m	1485 ^m		1436	
Kazakhstan	372.2	296.6	282.7	252.0	213.2	228.0	205.2	200.9		
Kyrgyzstan	6.5	3.3	3.4	3.5	3.5	3.6	2.38			
Latvia	56.54	48.04	41.76	34.57	44.78	42.11	35.65	33.63	39.58	49.29
Liechtenstein	.4549	.4398	.4188	.404	.3912	.3763	.3618	.3549	.3	.25
Lithuania	78	77	65	65	57	60	54	47.5	110	
Luxembourg	25.00	23	21	22	18	17	16.09	17.03	11	
Malta										
Monaco	.634	.623	.579	.557	.553	.518	.551	.590		
Netherlands	535	510	483.5	501	453	428.5	421.7	421.0 ⁿ	260	
Norway	223.4	221.7	222.7	232.2	235.1	236.5	239.5	223.2	193.9	
Poland	1120	1105	1120	1154	1114	991	951	838	879	
Portugal ^o	341.8	344.9	357.8	354.4	360.9	369.3				
Republic of Moldova ^{opq}	53	46.2	38.2	38	36.5	21.7	16.91		90	
Romania	318.0	319.0								
Russian Federation ^{rst}	3054	2667	2570	2467	2379	2488	2494	2357	3300	
Slovakia	174	165	174	132	125	130	118	106 ^l		
Slovenia	63	66	67	70	71	64	58	58	45	
Spain ^e	1312	1344	1355	1298	1330	1325	1379	1419		
Sweden	319.1	334.2	309.2	309.4	291.4	277.2	267.2	246.6	148 ^{uv}	
Switzerland	129	124	120	113	107	104	99	95.69	79	66
The FYR of Macedonia					6.000	15.22 ^w		30.4		
Turkey	747.7	730.9	800.5	873.0	879.3	862.7	952.1	951.1	2044 ^x	
Ukraine	700.0	568.0	531.0	467.0	455.2				1094	
United Kingdom	2361	2263	2088	2014	1844	1732	1604	1512	1084	973
United States	22741	22925	22675	23071	23332	23114	22437	21713	17498	14362
Yugoslavia	54	52	59	57	66	66	46	50	147	
European Community^y	12246	11872	11509	11326	10872	10499	10136			

^a Emissions are calculated on the basis of the total quality of the fuels used.

^b 1990-1998: Distributed according to SNAP90.

^c 1999: Distributed according to SNAP97.

^d Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^e Data include those emissions located within the EMEP area only.

^f National totals include overseas areas.

^g National totals do not include international air traffic and international sea traffic.

^h Emissions correspond to the National Emission Ceilings (NEC).

ⁱ Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^j Emissions from 1980-1986 are not updated.

^k Emissions from international air traffic, marine bunkers and managed forests are not included.

^l Preliminary data.

^m Emissions for 1996-1999 estimated according to SNAP97.

ⁿ Emissions from 1990 onwards are calculated using the categories of SNAP97.

^o Since 1993 emissions located on the left side of Diester River have not been included, except for emissions from the Moldovan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

^p For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas inventory Reporting Instructions.

^q NOx emissions 1980-1984 do not include mobile sources.

^r Figures apply to the European part within EMEP except for CO₂.

^s NO₂ figures for 1980-1987 refer to stationary and road vehicles only. NO₂ emission data from 1987 to 1989 were updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.

^t Since 1987 the NOx emissions have been updated according to the instruction of the Ministry of Natural Resources for such sources as road transport, other mobile sources etc. NOx emissions data for earlier periods (before 1987) have not been corrected.

^u International transport (ie aviation and navigation) is not included in national totals except for the CO₂ figure for 1980.

^v Emissions of SO₂ and NOx from domestic navigation/coastal shipping, for the years 1980-1993, are assumed to account for 30% of the total emissions from shipping in Sweden.

^w Data are for sectors 1-6 only. Data for sectors 7-11 are not yet ready.

^x Sum of reported sector data.

^y For the time series 1987-1989, data as submitted under the Environmental Information and Observation Network (EIONET) have been used. As no officially agreed data gap filling procedure exists, data gaps were filled by EMEP data and EEA interpolations.

For the time series 1990-1999, data as compiled for the EC UNFCCC submission were used ('Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 3: Anthropogenic emissions of ammonia (1980-1992) in the ECE region (Gg NH₃ per year)

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia ^a		3.1	3.1	3.0	2.8	2.0	1.7	1.7	2.0	.2	25.00	.11	.05
Austria	78.36	79.34	79.45	81.17	82.01	81.40	81.04	80.18	78.99	79.88	79.86	79.15	76.40
Belarus ^b											4		
Belgium						89					107.3	93.12	92.64
Bosnia and Herzegovina													
Bulgaria											144	124	111
Canada													
Croatia ^{cd}											37.1	31.7	26.8
Cyprus													
Czech Republic											156	134	115
Denmark ^f	125	123	120	119	115	137.3	137.8	134.4	131.3	132.0	132.2	128.4	126.4
Estonia ^g											24.25	22.24	18.47
Finland	39					43	41	45			38		41
France ^h	777	786	789	793	780	780	787	784	765	768	763	764	752
Georgia													
Germany ^{ij}	835	821	817	841	853	857	846	845	835	823	765	673	649
Greece											79	78	75
Hungary	157.0					150.0	170.0	150.0		170.0	124.0	93.00	84.00
Iceland													
Ireland											112.4	114.5	117.0
Italy	479	475	464	504	481	487	495	497	499	481	466	451	440
Kazakhstan											.49	.42	.69
Kyrgyzstan													
Latvia											43.85	41.77	32.94
Liechtenstein	.22				.17						.2047	.205	.2049
Lithuania	85	86	86	87	88	89	89	90	89	86	84	85	81
Luxembourg											7		
Malta													
Monaco											.001	.001	.001
Netherlands	234	240	244	244	246	248	258	258	237	232	226.8 ^k	228	180
Norway	22.57	23.00	23.00	23.00	23.00	23.00	23.00	23.11	21.3	22.90	22.73	23.23	24.98
Poland	550					550	550	550	550	550	512	443	420
Portugal ^l											104.6	100.1	106.6
Republic of Moldova ^{mm}	52.7					57.9					49	49	44
Romania	340.0	332.0	327.0	311.0	359.0	343.0	350.0	329.0	339.0	341.0	300.0	267.0	255.0
Russian Federation ^{op}	1189	1192	1214	1245	1247	1239	1286	1277	1269	1258	1191	1161	1084
Slovakia											63.0	56.3	47.0
Slovenia											24	23	24
Spain ^f	396	383	409	411	417	420	435	474	475	487	472	468	468
Sweden									54.00		51	51	61
Switzerland	77				60	73.7					71.5	71	71
The FYR of Macedonia													
Turkey													
Ukraine											23.00		
United Kingdom											341	343	327
United States											3925	3977	4028
Yugoslavia													
European Community											3795		

^a Without emissions from agriculture, except NH₃ emission figure for 1990.

^b Without emissions from agriculture.

^c 1990-1998: Distributed according to SNAP90.

^d 1999: Distributed according to SNAP97.

^e Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^f Data include those emissions located within the EMEP area only.

^g National totals include overseas areas.

^h National totals do not include international air traffic and international sea traffic.

ⁱ Emissions from 1980-1986 are not updated.

^j Emissions from international air traffic, marine bunkers and managed forests are not included.

^k NFR 11 emissions are from human (p)respiration.

^l Emissions from 1990 onwards are calculated using the categories of SNAP97.

^m Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

ⁿ For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions.

^o Figures apply to the European part within EMEP except for CO₂.

^p NH₃ figures for 1980-1986 refer to agricultural sector only. Since 1987 NH₃ figures have included emissions from industrial sources.

Table 3, continued: Anthropogenic emissions of ammonia (1993-2000, 2010, 2020) in the ECE region (Gg NH₃ per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia ^a	.01	.006	.006	.004	.004	.002	.003	.002		
Austria	76.23	75.84	74.13	72.56	72.02	71.76	70.13	67.68	66.0	
Belarus ^b		4	4.6	4.4	4.05	4.4	4.16	142.1	4.0	
Belgium	97.38	96.31	97.30	98.91	98.83	102.3	99.74		74	
Bosnia and Herzegovina										
Bulgaria	109	101	99	83	77	66	60	56.23 ^c	108	100.5
Canada			554							
Croatia ^{def}	25.5	24.2	24.9	23.4	23.0	23.3	24.4		30	
Cyprus										
Czech Republic	99	91	86	81	81	80	75	74.48	101	
Denmark ^e	122.8	118.7	112.2	108.3	108.0	109.2	104.1	101.1		
Estonia	13.36 ^f	12.59 ^h	10.97 ^h	9.55 ^h	9.74 ^h	9.76 ^h	8.47 ^h	8.764		
Finland			35.2	35	38	37.8	35.2	33.1	31	
France ^g	745	750	758	771	778	787	784	788	780 ^j	
Georgia										
Germany ^{kl}	638	639	635	635	625	632	624		550	
Greece	75	73	85	73	71	74	73		73	
Hungary	77.00	76.00	77.00	78.00	76.00	73.53	71.09	70.81 ^m	90	90
Iceland										
Ireland	116.9	118.6	119.6	121.9	123.4	127.4	127.0	122.4	116	
Italy	449	459	461	430 ⁿ	443 ⁿ	438 ⁿ	448 ⁿ		449	
Kazakhstan	.61	.39	.32	.07	.07	.26	.27	.27		
Kyrgyzstan ^b							59.11			
Latvia	19.72	16.75	16.82	15.54	14.51	13.36	11.95	11.61	11.78	13.82
Liechtenstein	.2048	.2057	.3864	.2058	.2061	.3884	.2066	.2066	.19	
Lithuania	80	80	38	36	35	35	29	25.2	84	
Luxembourg	7.000	7	7	7	7	7	7.288	7.233	7	
Malta										
Monaco	.002	.003	.003	.004	.005	.005	.006	.006		
Netherlands	191	166	186.2 ^o	146	188	165.7 ^o	159.2 ^o	152.6 ^{oo}	128	
Norway	24.87	24.99	25.99	26.46	25.91	25.92	25.49	25.32	25.30	
Poland	382	384	380	364	350	371	341	322	468.0	
Portugal ^p	99.3	92.7	101.7	99.1	100.5	103.0				
Republic of Moldova ^{qr}	37	35	33	31	25	25	24.8		42	
Romania	223.0	221.0								
Russian Federation st	903	772	824	749	730	675	657	650	800	
Slovakia	41.6	38.7	39.6	38.0	36.1	32.1	30.2	29.6 ^m		
Slovenia	23	22	22	22	19	20	20	19	20	
Spain ^e	448	470	467	517						
Sweden	61	61	61	61	58.5	56.96	55.43	55.87	57	
Switzerland	71	70	69.2	69	69	68.3	68.3	68.29	63	
The FYR of Macedonia										
Turkey ^b			.009	.008	.006	.007	.007	.007		
Ukraine ^b			9.100	7.7	7.000				23.00	
United Kingdom	327	328	318	321	325	319	316	297	311	312
United States	4093	4157	4225	4258	4342	4433	4458	4503	4506	4704
Yugoslavia										
European Community			3517		3598					

^a Agriculture not included. Only sector 4, Production Processes, is included in year 2000.

^b Agriculture not included except for Belarus in year 2000.

^c Emissions are calculated on the basis of the total quality of the fuels used.

^d 1990-1998: Distributed according to SNAP90.

^e 1999: Distributed according to SNAP97.

^f Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^g Data include those emissions located within the EMEP area only.

^h National totals include overseas areas.

ⁱ National totals do not include international air traffic and international sea traffic.

^j Emissions correspond to the National Emission Ceilings (NEC).

^k Emissions from 1980-1986 are not updated.

^l Emissions from international air traffic, marine bunkers and managed forests are not included.

^m Preliminary data.

ⁿ Emissions for 1996-1999 estimated according to SNAP97.

^o NFR 11 emissions are from human (p)respiration.

^p Emissions from 1990 onwards are calculated using the categories of SNAP97.

^q Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in national economy.

^r For 1990-1999, emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions.

^s Figures apply to the European part within EMEP except for CO₂.

^t NH₃ figures for 1980-1986 refer to agricultural sector only. Since 1987 NH₃ figures have included emissions from industrial sources.

Table 4: Anthropogenic emissions of non-methane volatile organic compounds (1980-1992) in the ECE region (Gg NMVOC per year)

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia		25.7	24.3	23.8	21.7	92.7	98.1	104.3	92.5	90.2	81.00	69.9	30.9
Austria	353.1	351.9	350.3	354.0	361.2	359.7	373.1	376.0	378.2	367.7	359.7	329.7	296.1
Belarus	549	546.0	543.0	543.0	540.0	516	506	509	535	511	533	546	412
Belgium						688 ^a					303.0	267.4	266.5
Bosnia and Herzegovina													
Bulgaria									309.2		217	178	179
Canada	2099					2851	2859	2897	2964	2906	2880	2792	2730
Croatia ^{bcd}											105.0	86.5	63.7
Cyprus													
Czech Republic						275					435	398	359
Denmark ^c	203	199	199	202	206	196.0	196.2	198.2	197.0	197.5	170.5	167.4	162.9
Estonia ^f						81	83	83	84	87	88.4	81.9	45.4
Finland								210 ^g	222.1	226.3	224.4	210.9	203.7
France ^{ch}									261.3	2576	2385	2366	2314
Georgia ⁱ	45.5	46.8	47.8	49.8	49.3	48.5	47.6	48.2	47.8	46.0	46.4	8.2	3.9
Germany ^{jk}	3224	3152	3134	3152	3191	3190	3218	3273	3255	3202	3221	2796	2539
Greece						614 ^a					317	319	326
Hungary	215					232	263	228	215.0	205	205.0	149.6	141.8
Iceland	7.7	7.7	7.7	7.6	7.7	8.0	8.4	11.9	12.6	12.6	12.8	14.3	14.1
Ireland											111.1	111.1	114.3
Italy	2179	2119	2074	2045	2007	1992	2019	2088	2124	2215	2213	2293	2338
Kazakhstan ^l											.394	.465	.558
Kyrgyzstan												8.0	6.9
Latvia											152.4	116.1	84.52
Liechtenstein	1.14	1.15	1.15	1.15	1.15	1.15	1.13	1.1	1.08	1.06	.9879	.9322	.868
Lithuania	100	102	104	105	106	112	108	108	109	109	108	111	66
Luxembourg						15					19		
Malta													
Monaco											.702	.806	.928
Netherlands	579.0	555.0	543.0	526.0	513.0	502	489.0	485.0	538.0	468.0	503.5	462	438
Norway	175.4	181.7	188.6	201.3	212.3	231.4	249.4	255.2	249.0	275.0	300.5	293.7	322.3
Poland	1036	912	889	954	985	1011	1029	1014	1026	1016	831	833	805
Portugal ^m						199					379.9	408.7	436.3
Republic of Moldova ^{no}						105	101	102	102	96	157	151.2	99
Romania	829.0	810.0	772.0	796.0	812.0	787.0	830.0	884.0	846.0	812.0	772.0	678.0	627.0
Russian Federation ^{pa}	2843	2843	2582	2444	2390	2496	2338	3410	3396	3444	3668	3361	3297
Slovakia											262		124.0
Slovenia									39		44	41	40
Spain ^c	1407	1387	1365	1393	1386	1409	1435	1490	1526	1560	1610	1644	1624
Sweden						600.0 ^f			555.0		516.7	512.6	490.1
Switzerland	323				324	324	318	311	305	298	278.8	261	242
The FYR of Macedonia													
Turkey	359.0	361.0	379.3	387.4	383.9	379.0	403.0	430.3	449.8	453.0	462.9	457.2	478.6
Ukraine						1626	1660	1687	1604	1512	1369	1302	1171
United Kingdom	2232	2208	2243	2264	2321	2335	2391	2454	2521	2552	2508	2438	2338
United States	23221	21786	20943	21865	22957	21904	20953	20726	20965	20120	18421	18878	18777
Yugoslavia													
European Community^s											16633	16071	15549

^a The NMVOC figure for 1985 includes CH₄ emissions.

^b 1990-1998: Distributed according to SNAP90.

^c 1999: Distributed according to SNAP97.

^d Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^e Data include those emissions located within the EMEP area only.

^f National totals include overseas areas.

^g Time series will be updated.

^h National totals do not include international air traffic and international sea traffic.

ⁱ Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^j Emissions from 1980-1986 are not updated.

^k Emissions from international air traffic, marine bunkers and managed forests are not included.

^l CH₄ included.

^m Emissions from 1990 onwards are calculated using the categories of SNAP97.

ⁿ Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

^o For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas inventory Reporting Instructions.

^p Figures apply to the European part within EMEP except for CO₂.

^q Natural sources not included. Since 1987 NMVOCs emission data have been updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.

^r International transport (ie aviation and navigation) is not included in national totals except for the CO₂ figure for 1980.

^s The EC inventory relies on the availability and submission of Member States' data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the UNFCCC (SO_x, NO_x, CO and NMVOC) have been used (see the latest EC submission to the UNFCCC as compiled by EEA and ETC/ACC 'Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 4, continued: Anthropogenic emissions of non-methane volatile organic compounds (1993-2000, 2010, 2020) in the ECE region (Gg NMVOC per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia	19.9	17.1	23.4	17.8	35.10	16.94	17.47	15.96		
Austria	285.9	274.5	275.7	265.4	260.4	250.6	245.1	238.7	159.0	
Belarus	372	366	367	327.7	344.7	294.0	239.9		321	
Belgium	264.6	257.9	250.3	241.7	248.5	269.1	248.0		144	
Bosnia and Herzegovina										
Bulgaria	208	175	173	147	120	132	118	120.4 ^a	185	161.9
Canada	2763	2752	2742	2760	2768	2736	2777	2790	2927	3130
Croatia ^{bcd}	69.3	74.7	74.1	81.5	79.5	78.5	72.9		90	
Cyprus										
Czech Republic	338	310	286	284	272	269	248	246.7	220	
Denmark ^c	160.7	157.6	152.8	150.6	142.7	136.4	131.5	131.9	73	
Estonia	41.6 ^f	44.65 ^f	47.5 ^f	50.2 ^f	53.92 ^f	53.7 ^f	42.33 ^f	33.69	44.2	
Finland	196.7	194.4	189.0	182.8	177.7	173.9	169.9	159.9	130	
France ^{ce}	2193	2059	1979	1915	1830	1779	1705	1659	1050 ^h	
Georgia ⁱ	2.2	1.7	1.5	2.4	2.8	10.84	18.63			
Germany ^{jk}	2326	2158	2024	1896	1805	1723	1653		995	
Greece	329	334	329	344	346	361	350		261	
Hungary	149.0	142.4	150.3	150.1	145.4	140.6	169.8	172.0 ^l	137	137
Iceland	13.6	14.2	12.0	12.0	9.8	10.0			6.6	
Ireland	108.5	107.5	105.4	111.9	115.7	117.6	98.41	90.27	55	
Italy	2344	2349	2368	1934 ^m	1861 ^m	1764 ^m	1671 ^m		1440	
Kazakhstan ⁿ	.565	.7	1.222	.132	.083	.026	.041	.22		
Kyrgyzstan	4.0	2.5	2.8	2.4	2.4	2.4	2.32			
Latvia	113.3	98.52	64.04	48.34	74.07	66.67	113.3	95.61	336.8	400.4
Liechtenstein	.8108	.7606	.7103	.672	.6346	.5963	.5568	.5274	.48	.41
Lithuania	52	52	77	82	81	79	68	60.8	84	
Luxembourg	18.00	18	16	16	15	13	14.92	14.92	9	
Malta										
Monaco	.829	.823	.751	.696	.636	.578	.562	.518		
Netherlands	405	389	369.6	362	317	301.5	289.9	280.7 ^l	185	
Norway	338.3	352.9	367.8	372.0	367.3	349.2	348.7	363.0	171.8	
Poland	756	819	769	766	774	730	731	599	804.0	
Portugal ^o	444.0	442.7	461.6	437.3	498.8	483.7				
Republic of Moldova ^{pa}	74.5	65.6	61.7	64.4	68.8	42.9	22.14		100	
Romania	634.0	638.0								
Russian Federation ^{rs}	3062	2924	2857	2622	2386	2376	2451	2450	3500	
Slovakia	151	108.0	159	161	138	132	130	89 ^j		
Slovenia	42	44	44	49	48	42	40	40	40	
Spain ^c	1527	1584	1536	1582	1577	1616	1629	1584		
Sweden	480.6	476.2	471.5	471.0	447.4	438.9	430.9	417.8	245 ^t	
Switzerland	226	213	199.4	191	182	173	165	158.8	144	122
The FYR of Macedonia										
Turkey	527.1	515.5	677.3	754.5	784.3	803.3	785.4	725.6	1925 ^u	
Ukraine	972.0	1024	811.0	718.0	665.0				1369	
United Kingdom	2233	2184	2054	1992	1919	1784	1600	1498	1095	1118
United States	18948	19327	18824	17700	17680	17180	16572	16252	12606	12486
Yugoslavia										
European Community ^v	14865	14745	14313	13831	13232	12398	12004			

^a Emissions are calculated on the basis of the total quality of the fuels used.

^b 1990-1998: Distributed according to SNAP90.

^c 1999: Distributed according to SNAP97.

^d Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^e Data include those emissions located within the EMEP area only.

^f National totals include overseas areas.

^g National totals do not include international air traffic and international sea traffic.

^h Emissions corresponds to the National Emission Ceilings (NEC).

ⁱ Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^j Emissions from 1980-1986 are not updated.

^k Emissions from international air traffic, marine bunkers and managed forests are not included.

^l Preliminary data.

^m Emissions for 1996-1999 estimated according to SNAP97.

ⁿ CH4 included.

^o Emissions from 1990 onwards are calculated using the categories of SNAP97.

^p Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in national economy.

^q For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas inventory Reporting Instructions.

^r Figures apply to the European part within EMEP except for CO2.

^s Natural sources not included. Since 1987 NMVOCs emission data have been updated taking into account emissions from railway transport, agricultural engineering and road-building machinery.

^t International transport (ie aviation and navigation) is not included in national totals except for the CO2 figure for 1980.

^u Sum of reported sector data.

^v The EC inventory relies on the availability and submission of Member States' data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the UNFCCC (SO_x, NO_x, CO and NMVOC) have been used (see the latest EC submission to the UNFCCC as compiled by EEA and ETC/ACC 'Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 5: Anthropogenic emissions of carbon monoxide (1980-1992) in the ECE region (Gg CO per year)

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia		26.6	30.0	30.4	30.9	404.9	405.1	416.5	417.1	398.9	304.3	377.2	195.1
Austria	1711	1643	1582	1547	1601	1548	1643	1602	1552	1485	1353	1333	1254
Belarus						1654	1605	1601	1590	1615	1722	1717	1381
Belgium											1097	1103	1123
Bosnia and Herzegovina													
Bulgaria								997	995	985	891	608	768
Canada	10273					9685					10596	10153	9855
Croatia ^{abc}											655.2	565.3	416.5
Cyprus													
Czech Republic	894		906		895	899	740	738	737	884	1055	1102	1045
Denmark ^d	956.3	1075	1123	950.6	1060	1021	1011	1042	965.6	1033	729.2	742.2	716.2
Estonia ^e						400	417	423	419	448	434.1	399.2	207.8
Finland	660										559	552	478
France ^{df}	15638	14870	14408	13953	14018	13840	13454	13215	12800	12247	10781	10681	10241
Georgia ^g	648.3	617.3	632.2	647.8	651.3	636.5	642.9	638.9	647.7	597.3	526.4	441.4	129.5
Germany ^{hi}	14046	13027	12438	11980	12176	12134	12135	12438	12080	11430	11213	9515	8351
Greece											1356	1368	1382
Hungary	1019					931.1			963.1		997.0	913.4	835.8
Iceland	44.2	44.2	44.2	43.2	44.1	45.5	48.2	53.6	57.1	57.0	58.2	59.2	60.7
Ireland											400.9	394.4	394.6
Italy	7588	7478	7527	7432	7590	7692	7607	7674	7581	7735	7824	8003	7961
Kazakhstan											1640	1975	1959
Kyrgyzstan												26.2	21.3
Latvia											387.7	823.0	554.5
Liechtenstein	5.02	4.79	4.56	4.34	4.11	3.88	3.66	3.44	3.21	3	2.637	2.498	2.325
Lithuania	541	548	543	550	550	545	554	564	578	568	519	577	350
Luxembourg						193					175		
Malta													
Monaco											3.025	3.477	3.942
Netherlands	1530	1418	1374	1354	1357	1381	1252	1192	1179	1131	1164	1025	983
Norway	880.5	815.1	823.7	815.8	842.0	844.2	872.3	889.2	868.9	871.7	875.5	805.8	788.4
Poland											7406		7083
Portugal ^j											1114	1189	1284
Republic of Moldova ^{kl}	55	53	56	49	48	483	478	474	496	476	453.2	468.4	279.2
Romania	3245	3217	3152	3030	3463	3307	3378	3196	3317	3314	3186	2695	2506
Russian Federation ^m	13520	15005	13617	13696	13672	14122	13142	13270	13144	12210	13329	13000	11703
Slovakia										491	533	478	426
Slovenia	68	66	63	61	64	68	78	79	75	75	81	78	78
Spain ^d	3776	3649	3616	3636	3596	3549	3605	3705	3898	4096	3986	4118	4187
Sweden											1113	1069	1065
Switzerland	1280	1222	1164	1106	1048	990	933	877	820	764	672.6	629	581
The FYR of Macedonia													
Turkey	2934	2961	3110	3141	3141	3121	3305	3477	3610	3505	3585	3579	3662
Ukraine						9832	9722	9269	9085	8794	8141	7406	5496
United Kingdom	7677	7597	7621	7391	7428	7222	7212	7247	7307	7548	7208	7002	6707
United States	101641	97724	96799	100470	100999	103472	97183	94855	95593	93832	84544	89239	88301
Yugoslavia													
European Community ⁿ											49817	47964	46046

^a 1990-1998: Distributed according to SNAP90.

^b 1999: Distributed according to SNAP97.

^c Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^d Data include those located within the EMEP area only.

^e National totals include overseas areas.

^f National totals do not include international air traffic and international sea traffic.

^g Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

^h Emissions from 1980-1986 are not updated.

ⁱ Emissions from international air traffic, marine bunkers and managed forests are not included.

^j Emissions from 1990 onwards are calculated using the categories of SNAP97.

^k Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldavan electric station. The drop in emissions between 1991 and 1992 is due to a decline in the national economy.

^l For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas inventory Reporting Instructions.

^m Figures apply to the European part within EMEP except for CO₂.

ⁿ The EC inventory relies on the availability and submission of Member States' data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the UNFCCC (SO_x, NO_x, CO and NMVOC) have been used (see the latest EC submission to the UNFCCC as compiled by EEA and ETC/ACC 'Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 5, continued: Anthropogenic emissions of carbon monoxide (1993-2000, 2010, 2020) in the ECE region (Gg CO per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia	145.1	128.0	173.6	125.5	223.6	124.4	123.7	109.7		
Austria	1229	1199	1098	1073	1070	1015	969.7	906.5		
Belarus	1201	1241	1253	1242	1223	1034	786.4	717.5	1404	
Belgium	1088	1044	1013	1000	938.3	1114	1017			
Bosnia and Herzegovina										
Bulgaria	820	855	846	613	515	650	617	667.3 ^a	750	666
Canada	9851	9747	9653	9595	9476	9302	9425	9522	10550	10360
Croatia ^{bcd}	375.4	369.4	345.8	388.8	365.6	344.9	334.3		660	
Cyprus										
Czech Republic	967	1026	874	886	877	767	686	649.3		
Denmark ^c	716.2	690.2	688.3	707.7	663.2	665.0	616.8	632.1	331	
Estonia	210.2 ^f	241.1 ^f	242.3 ^f	267.7 ^f	282.8 ^f	280.7 ^f	215.3 ^f	201.7		
Finland	457	444	436	461	474	452	547	526.3		
France ^{ce}	9684	9016	8880	8315	7850	7641	7140	6626		
Georgia ^h	142.5	148.5	249.5	390.2	429.2	353.3	222.5			
Germany ⁱ	7704	7065	6667	6234	5832	5341	4952			
Greece	1345	1327	1316	1404	1414	1546	1440			
Hungary	796.1	774.3	761.3	726.9	733.4	736.9	721.6	646.9 ^k	600	700
Iceland	59.9	60.3	49.4	49.9	38.9	39.8			19.41	
Ireland	350.3	329.2	304.4	306.8	312.1	317.7	285.1	279.6	322.0	
Italy	7755	7549	7755	6971 ^l	6681 ^l	6318 ^l	6051 ^l		4213	
Kazakhstan	1801	1426	1422	1451	1379	1345	1187	1114		
Kyrgyzstan	13.2	9.5	7.5	5.5	4.6	5.0	3.68			
Latvia	612.0	306.8	436.5	175.2	354.0	325.3	293.6	250.1	304.7	335.7
Liechtenstein	2.182	2.081	1.986	1.896	1.818	1.731	1.652	1.636	1.5	1.21
Lithuania	292	303	286	312	358	358	320	281.5	400	
Luxembourg	219.0	145	107	103	80	51	49.80	48.94	33	
Malta										
Monaco	3.469	3.407	3.072	2.751	2.661	2.264	2.214	2.108		
Netherlands	960	907	894.0	903	749	739.5	711.8	701 ^k		
Norway	789.9	781.6	746.6	718.8	684.0	641.8	605.9	569.5		
Poland	8655	5115	4547	4837	4700	4301	4363	3463		
Portugal ^m	1269	1234	1201	1178	1143	1095				
Republic of Moldova ^{no}	218.4	170.9	192	170.3	210.2	153.4	100.2		150	
Romania	2434	2325								
Russian Federation ^p	11320	10603	9945	9401	10332	10383	10804	10811	16650	
Slovakia	454	413	404	348	352	318	310	290 ^k		
Slovenia	87	93	91	95	93	77	70	68	53	
Spain ^c	3967	3990	3569	3518	3359	3342	3097	3008		
Sweden	1025	1006	993.6	966.2	883.2	956.9	910.7	830.3	426 ^q	
Switzerland	544	516	490.9	467	443	422	399	393.9	370	292
The FYR of Macedonia					23.00	25.80 ^r		76.94		
Turkey	3936	3769	3987	4135	4179	4156	4047	3778	10986 ^s	
Ukraine	4218	3375	2906	2567	2516				8141	
United Kingdom	6210	5877	5522	5487	5201	4934	4718	4167	2838	
United States	89091	90353	83993	90741	90054	89456	85240	82939	83482	92593
Yugoslavia										
European Community^t	43746	41862	40513	39231	37470	35497	33602			

^a Emissions are calculated on the base of the total quality of the fuels used.

^b 1990-1998: Distributed according to SNAP90.

^c 1999: Distributed according to SNAP97.

^d Values for the period 1980-1989 are missing because air emission inventories were not prepared for that period.

^e Data include those emissions located within the EMEP area only.

^f National totals include overseas areas.

^g National totals do not include international air traffic and international sea traffic.

^h Calculations are based on official statistical data. Due to economic and social difficulties the collection of statistical data within the country is inadequate. Therefore it is assumable that data provided here are not reliable.

ⁱ Emissions from 1980-1986 are not updated.

^j Emissions from international air traffic, marine bunkers and managed forests are not included.

^k Preliminary data.

^l Emissions for 1996-1999 estimated according to SNAP97.

^m Emissions from 1990 onwards are calculated using the categories of SNAP97.

ⁿ Since 1993 emissions located on the left side of the Diester River have not been included, except for emissions from the Moldovan electric station. The drop in emissions between 1991 and 1992 are due to a decline in the national economy.

^o For 1990-1999 emissions have been calculated according to the EMEP/CORINAIR Emission Inventory Guidebook and the Greenhouse Gas Inventory Reporting Instructions.

^p Figures apply to the European part within EMEP except for CO₂.

^q International transport (ie aviation and navigation) is not included in national totals except for the CO₂ figure for 1980.

^r Data are for sectors 1-6 only. Data for sectors 7-11 are not yet ready.

^s Sum of reported sector data.

^t The EC inventory relies on the availability and submission of Member States' data. However, in order to provide a more complete picture, the emissions of air pollutants reported by the EC and its Member States under the UNFCCC (SO_x, NO_x, CO and NMVOC) have been used (see the latest EC submission to the UNFCCC as compiled by EEA and ETC/ACC 'Annual European Community Greenhouse Gas Inventory 1990-1999, EEA Technical Report 60, April 2001').

Table 6: Anthropogenic emissions of total suspended particulates (1980-1992) in the ECE region (Mg TSP per year)

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia													
Austria										75587.12			
Belarus													
Belgium													
Bosnia and Herzegovina													
Bulgaria													
Canada													
Croatia													
Cyprus													
Czech Republic													
Denmark													
Estonia ^{ab}						334000	294100	300500	278500	262000	268500	277800	240728
Finland													
France ^{cd}											1698000	1737000	1648000
Georgia													
Germany													
Greece													
Hungary											197000	191750	154200
Iceland													
Ireland													
Italy													
Kazakhstan											1268121	1218987	1163744
Kyrgyzstan													
Latvia													
Liechtenstein													
Lithuania													
Luxembourg													
Malta													
Monaco											10.046	11.121	12.714
Netherlands											102822		
Norway													
Poland													
Portugal													
Republic of Moldova													
Romania													
Russian Federation													
Slovakia													
Slovenia													
Spain													
Sweden													
Switzerland													
The FYR of Macedonia													
Turkey													
Ukraine													
United Kingdom													
United States													
Yugoslavia													
European Community													

^a National totals include overseas areas.

^b The TSP emissions are dust only.

^c Data include those emissions located within the EMEP area only.

^d National totals do not include international air traffic and international sea traffic.

Table 6, continued: Anthropogenic emissions of total suspended particulates (1993-2000, 2010, 2020) in the ECE region (Mg TSP per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia										
Austria			75805.1				77905.2	77097.09		
Belarus										
Belgium										
Bosnia and Herzegovina										
Bulgaria										
Canada										
Croatia										
Cyprus										
Czech Republic			201031	179362	128363	86178	67018	57973		
Denmark ^{ab}								28139.7		
Estonia ^c	189022 ^d	161492 ^d	113144 ^{de}	98930 ^d	78277 ^d	69851 ^d	70463 ^d	78538.70		
Finland			50043 ^e					73587		
France ^{bc}	1561000	1531000	1525000	1610000	1611000	1637000	1639000	1604000		
Georgia										
Germany										
Greece										
Hungary	150300	149570	154500	140650	136530	127410	127610	126070 ^f	108000	106000
Iceland										
Ireland										
Italy										
Kazakhstan	1070343	8864037	9123768	7828796	6662028	617602	5860106	5859673		
Kyrgyzstan										
Latvia								9500		
Liechtenstein										
Lithuania								12719		
Luxembourg										
Malta										
Monaco	11.583	10.548	9.473	8.921	8.345	7.422	6.737	6.181		
Netherlands			75015			63190				
Norway										
Poland								463923		
Portugal										
Republic of Moldova										
Romania										
Russian Federation										
Slovakia										
Slovenia										
Spain										
Sweden										
Switzerland			41976							
The FYR of Macedonia										
Turkey										
Ukraine										
United Kingdom										
United States										
Yugoslavia										
European Community										

^a For road traffic the emissions of particulate matter include both exhaust, brake and tyre wear, and road abrasion. The road abrasion source is significant and contributes around half of the total emissions of TSP and PM10.

^b Data include those emissions located within the EMEP area only.

^c The TSP emissions are dust only.

^d National totals include overseas areas.

^e National totals do not include international air traffic and international sea traffic.

^f Preliminary data.

^g Emissions reported for 1995 are identical to the emissions estimated by TNO in the Co-ordinated European Programme on Particulate Matter Emission Inventories, Projections and Guidance (CEPMEIP).

**Table 7: Anthropogenic emissions of particulate matter (1980-1992) in the ECE region
(Mg PM10 per year)**

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia													
Austria											48290		
Belarus													
Belgium													
Bosnia and Herzegovina													
Bulgaria													
Canada													
Croatia													
Cyprus													
Czech Republic													
Denmark													
Estonia													
Finland													
France ^{ab}											640000	676000	646000
Georgia													
Germany													
Greece													
Hungary													
Iceland													
Ireland													
Italy													
Kazakhstan													
Kyrgyzstan													
Latvia													
Liechtenstein											89.2		
Lithuania													
Luxembourg													
Malta													
Monaco													
Netherlands ^c											81562		
Norway													
Poland													
Portugal													
Republic of Moldova													
Romania													
Russian Federation													
Slovakia													
Slovenia													
Spain													
Sweden													
Switzerland											32130		
The FYR of Macedonia													
Turkey													
Ukraine													
United Kingdom	364763	348477	340977	337155	297149	335391	349414	346527	341893	326559	313360	310618	299179
United States													
Yugoslavia													
European Community													

^a Data include those emissions located within the EMEP area only.

^b National totals do not include international air traffic and international sea traffic.

^c The Pollutant Emission Register does not include PM10 emission totals for industrial building venting and for agricultural sources. Emissions for these categories have been added based on the results of the National Aerosol Programme.

Table 7, continued: Anthropogenic emissions of particulate matter (1993-2000, 2010, 2020) in the ECE region (Mg PM10 per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia										
Austria			46806				46738	46117		
Belarus										
Belgium										
Bosnia and Herzegovina										
Bulgaria										
Canada										
Croatia										
Cyprus										
Czech Republic										
Denmark ^{ab}								27069.7		
Estonia ^c			33268 ^g							
Finland			30028 ^g					48240		
France ^{bd}	617000	589000	588000	609000	592000	598000	587000	566000		
Georgia										
Germany										
Greece										
Hungary			60240	53000	50830	48140	46410	45810 ^e		
Iceland										
Ireland								13573		
Italy										
Kazakhstan										
Kyrgyzstan										
Latvia										
Liechtenstein			80					73.7	69	
Lithuania										
Luxembourg										
Malta										
Monaco										
Netherlands ^f			60903			53352				
Norway										
Poland								281885		
Portugal										
Republic of Moldova										
Romania										
Russian Federation										
Slovakia										
Slovenia										
Spain										
Sweden										
Switzerland			28222					26402	24686	
The FYR of Macedonia										
Turkey										
Ukraine										
United Kingdom	285463	270015	237860	230130	209403	200779	188111	171606		
United States								21050669		
Yugoslavia										
European Community										

^a For road traffic the emissions of particulate matter include both exhaust, brake and tyre wear, and road abrasion. The road abrasion source is significant and contributes around half of the total emissions of TSP and PM10.

^b Data include those emissions located within the EMEP area only.

^c National totals include overseas areas.

^d National totals do not include international air traffic and international sea traffic.

^e Preliminary data.

^f The Pollutant Emission Register does not include PM10 emission totals for industrial building venting and for agricultural sources. Emissions for these categories have been added based on the results of the National Aerosol Programme.

^g Emissions reported for 1995 are identical to the emissions estimated by TNO in CEPMEIP.

**Table 8: Anthropogenic emissions of particulate matter (1980-1992) in the ECE region
(Mg PM_{2.5} per year)**

Party/Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Armenia													
Austria											29337		
Belarus													
Belgium													
Bosnia and Herzegovina													
Bulgaria													
Canada													
Croatia													
Cyprus													
Czech Republic													
Denmark													
Estonia													
Finland													
France ^{ab}											369000	401000	380000
Georgia													
Germany													
Greece													
Hungary													
Iceland													
Ireland													
Italy													
Kazakhstan													
Kyrgyzstan													
Latvia													
Liechtenstein													
Lithuania													
Luxembourg													
Malta													
Monaco													
Netherlands													
Norway													
Poland													
Portugal													
Republic of Moldova													
Romania													
Russian Federation													
Slovakia													
Slovenia													
Spain													
Sweden													
Switzerland													
The FYR of Macedonia													
Turkey													
Ukraine													
United Kingdom	186286	179119	176034	174390	159430	174358	181762	181757	182483	174275	167682	167327	162421
United States													
Yugoslavia													
European Community													

^a Data include those emissions located within the EMEP area only.

^b National totals do not include international air traffic and international sea traffic.

Table 8, continued: Anthropogenic emissions of particulate matter (1993-2000, 2010, 2020) in the ECE region (Mg PM2.5 per year)

Party/Year	1993	1994	1995	1996	1997	1998	1999	2000	2010	2020
Armenia										
Austria			27642.3				26475.2	26099.1		
Belarus										
Belgium										
Bosnia and Herzegovina										
Bulgaria										
Canada										
Croatia										
Cyprus										
Czech Republic										
Denmark ^{ab}								12104.2		
Estonia ^c			13693 ^f							
Finland			22016 ^f					37663		
France ^{bd}	366000	338000	336000	348000	330000	332000	321000	304000		
Georgia										
Germany										
Greece										
Hungary			27780	27940	26790	25170	20210	20150 ^e		
Iceland										
Ireland										
Italy										
Kazakhstan										
Kyrgyzstan										
Latvia										
Liechtenstein										
Lithuania										
Luxembourg										
Malta										
Monaco										
Netherlands										
Norway										
Poland								135317		
Portugal										
Republic of Moldova										
Romania										
Russian Federation										
Slovakia										
Slovenia										
Spain										
Sweden										
Switzerland			15479							
The FYR of Macedonia										
Turkey										
Ukraine										
United Kingdom	154081	147332	132298	128813	116297	110268	103557	93562		
United States								5663650		
Yugoslavia										
European Community										

^a For road traffic the emissions of particulate matter include both exhaust, brake and tyre wear, and road abrasion. The road abrasion source is significant and contributes around half of the total emissions of TSP and PM10.

^b Data include those emissions located within the EMEP area only.

^c National totals include overseas areas.

^d National totals do not include international air traffic and international sea traffic.

^e Preliminary data.

^f Emissions reported for 1995 are identical to the emissions estimated by TNO in CEPMEIP.

Table 9: Anthropogenic emissions of persistent organic pollutants in the ECE region
 (kg per year, except for dioxins and furans which are g I-Teq per year; PAHs are Mg per year)

Party	Year	ANNEX I									ANNEX II			ANNEX III			OTHER			
		Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	PAHs	HCB	PCP	SCCP	PER	TRI
Austria	1980												.00	.00	.00					
	1981												.00	.00	.00					
	1982												.00	.00	.00					
	1983												.00	.00	.00					
	1984												.00	.00	.00					
	1985												177.7	25.98	44.07					
	1986												185.5	27.11	45.62					
	1987												188.2	27.01	48.57					
	1988												180.8	27.11	47.10					
	1989												171.5	26.71	46.01					
	1990												166.1	18.50	42.88					
	1991												128.8	17.46	29.72					
	1992												74.35	12.90	19.52					
	1993												68.97	10.49	16.89					
	1994	0	0	0	0	0	0		0	0	12000	0	60.51	10.19	10.12	0				
	1995	0	0	0	0	0	0		0	0	8056	0	62.41	10.77	9.18	0				
	1996	0	0	0	0	0	0		0	0	8640	0	59.81	10.86	8.80	0				
	1997	0	0	0	0	0	0		0	0	2324	0	60.32	9.65	10.51	0				
	1998	0	0	0	0	0	0		0	0	0	0	55.99	9.22	9.96	0				
	1999	0	0	0	0	0	0		0	0	0	0	51.51	8.74	7.97	0				
	2000												49.21	8.18	7.88					
Belarus	1997												16.4							
	1998												15.68							
	1999												15.19							
Belgium	1990												448.0 ^a	354.3 ^a	487.6	5768				
	1993 ^a													294.1						
	1994												147.6 ^b	235.2	30.00 ^c					
	1995											9 ^c	437.5	274.5	236.8	16.00 ^d				
	1996											9 ^c	108.1	185.0	21.00 ^e	6.000 ^f				
	1997											9600 ^e	122.8	187.4	25.00 ^e	7.000 ^e				
	1998											9600 ^{ec}	122.9	187.2	25.00 ^{ec}	7.000 ^{ec}				
	1999												129.2	104.7						
Bulgaria	1990											258.4	554.2	677.3	544	49.30				
	1995											382.2	456.0	443.4	79	10.72				
	1996											261.7	340.9	409.5	87	10.61				
	1997											227.0	309.6	364.3	47	7.54				
	1998											252.8	288.4	384.0	75.6	9.07				
	1999											247.4	245.3	286.0	46	6.36				
	2000 ^f											228.5	232.5	118.1	54	2.633				
	2010											453.9	425.3	621.4	109	9.8				
	2020											483.3	394.3	678.9	101	6.8				
Croatia	1990											9400 ^{gh}		178.6 ^{gh}	15.11 ^{gh}	0 ^{gh}	8500	1458967		
	1996											12800 ^{gh}		97.35 ^{gh}	9.30 ^{gh}	0 ^{gh}	0	1636000		
	1997											3100 ^{gh}		95.04 ^{gh}	9.17 ^{gh}	0 ^{gh}			142700	1242000

Party	Year	ANNEX I									ANNEX II			ANNEX III			OTHER					
		Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	PAHs	HCB	PCP	SCCP	PER	TRI		
	1998 ^{gh}												5000			110.8	8.59	0				
	1999 ^{gh}												5000			97.96	7.93	0				
Cyprus	1990														772				.7			
Czech Republic	1990													772.9		1252	751.6					
	1991													772.0		1220	747.0					
	1992													741.3		1220	1131					
	1993													643.6		1140	1115					
	1994													629.8		1135	951.4					
	1995													622.9		1135	1357					
	1996													554.5		921.5	971.4					
	1997													447.8		830.2	657.4					
	1998													457.7		766.7	656.7					
	1999													485.4		643.2	556.6					
	2000													474.1		743.8	487.6					
Denmarkⁱ	1990																8.192					
	1991																9.188					
	1992																9.084					
	1993																9.552					
	1994												61.00			15	9.491			842555		
	1995	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000				14	9.471					
	1996															21	9.930					
	1997	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000				20	9.934					
	1998	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000				20	9.093					
	1999																95	9.211				
	2000																1808	11.06				
Estonia	1990 ^j																	.308				
	1991 ^l																	.290				
	1992 ^l																	.172				
	1993 ^l																	.182				
	1994 ^l																	.183				
	1995 ^l																	.188				
	1996 ^l																	.191				
	1997 ^l																	.197				
	1998 ^l																	.213				
	2000																	2.963				
Finland	1990															30	15.76					
	1991															33.2	15.33					
	1992															31.2	15.45					
	1993															5300	31.9	15.72				
	1994															1100	32.7	15.64				
	1995															15800	33.8	16.92				
	1996																31.7	15.84				
	1997																32	16.05				
	1998																32.12	16.25				
	1999																32.2	15.9				
	2000																30.69	15.16				
Franceⁱ	1990													61 ^k		1871 ^k	319 ^k	1654 ^k	7820000 ^{lm}	18.8 ^k	28.4 ^k	
	1991													68 ^k		1942 ^k	384 ^k	1674 ^k	6910000 ^{lm}	16.9 ^k	25.6 ^k	

Party	Year	ANNEX I								ANNEX II			ANNEX III			OTHER			
		Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	PAHs	HCB	PCP	SCCP	PER
	1992											67 ^k	1968 ^k	360 ^k	1699 ^k		5990000 ^{lm}	13.4 ^k	23.3 ^k
	1993											67 ^k	2034 ^k	358 ^k	1633 ^k		5090000 ^{lm}	12.0 ^k	20.1 ^k
	1994											64 ^k	2025 ^k	331 ^k	1791 ^k		4870000 ^{lm}	12.6 ^k	18.8 ^k
	1995											60 ^k	1623 ^k	329 ^k	1788 ^k		4290000 ^{lm}	11.3 ^k	20.5 ^k
	1996											60 ^k	1617 ^k	343 ^k	1701 ^k		4000000 ^{lm}	10.2 ^k	19.7 ^k
	1997											50 ^k	1153 ^k	329 ^k	1719 ^k		3570000 ^{lm}	9.1 ^k	19.0 ^k
	1998											50 ^k	1023 ^k	336 ^k	1701 ^k		3420000 ^{lm}	9.4 ^k	19.9 ^k
	1999											46 ^k	707 ^k	329 ^k	1699 ^k		31900000 ^{nl}	10.1 ^k	18.6 ^k
	2000 ^k											42	570	321	1801		^m	9.7	18.2
Germany	1990											43579 ⁿ	1196	420 ^{no}	86 ⁿ				
	1994									15000	30894 ⁿ			396 ^{no}		752	2100300		
	1995													309					
Hungary	1980 ^p											180.6	199.4	135.2					
	1985											169.3 ^p	207.3 ^p	155.9 ^p	.486	.0365			
	1990									9281	134.9 ^p	156.8 ^p	132.0 ^p	.304	.0228				
	1991									60	119.6 ^p	150.9 ^p	121.6 ^p	.506	.038				
	1992									12	107.8 ^p	126.1 ^p	86.88 ^p	.678	.0509				
	1993									462	106.4 ^p	121.8 ^p	80.70 ^p	.632	.0474				
	1994									798	104.5 ^p	104.1 ^p	72.34 ^p	.476	.0357				
	1995									1650	101.1 ^p	116.5 ^p	67.62 ^p	.660	.0495				
	1996									2400	98.79 ^p	108.2 ^p	63.25 ^p	.660	.0495				
	1997									31	95.60 ^p	103.3 ^p	60.48 ^p	.678	.0509				
	1998									22	92.18 ^p	93.64 ^p	53.50 ^p	.712	.0534				
	1999 ^p										93.02	92.85	54.59						
	2000 ^{op}										88.29	90.83	54.75						
	2010										79	70	47						
	2020										79	57	38						
Iceland	1990	.000																	
Kyrgyzstan	1992										.04			1.824					
	1993										.038			4.363					
	1994									4.898			.27						
	1995												.129						
	1996												.544						
	1997									.003			.20						
	1998									.003			.202						
	1999												.089						
Lithuania	1997										12.45		5.620	71.21					
	1998										14.20		5.970	53.14					
	1999										12.69		5.030	44.49					
	2000										10.75		4.277	34.02					
Luxembourg	1990												40						
	1994												23	1.1					
	1995												24	.6					
	1996												16	.7					
	1997												16	.4					
	1998												8	.3					
	1999													.000					
Monaco	1990										.277		2.385	.008					

Party	Year	ANNEX I									ANNEX II			ANNEX III			OTHER			
		Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	PAHs	HCB	PCP	SCCP	PER	TRI
	1991												.282	2.428	.008					
	1992												.310	2.675	.009					
	1993												.338	2.912	.009					
	1994												.367	3.165	.010					
	1995												.366	3.155	.010					
	1996												.392	3.376	.011					
	1997												.441	3.804	.012					
	1998												.415	3.577	.011					
	1999												.419	3.614	.012					
	2000												.433	3.736	.012					
Netherlands	1990	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	611.0	1759	.000	34000	11070137 ⁹		
	1992	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.251	505.0	142.0		30000			
	1994	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.283	143.0	139.0	.0	.0	5631000		
	1995	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.015	66.57	929.4	.0	29000	4154627 ⁹		
	1996												.000	60.7	109.0	.0	.0	4036600		
	1997												.000	55.3	107.0	2.1	.0	3533200		
	1998													43.99	713.3	.0	26000	1335830 ⁹		
	1999													34.8	73.2	.0	25000	2850000		
Norway	1990	0	0	0	0	0	0	0	0	0	0	0	0	129.8	14.63					
	1991	0	0	0	0	0	0	0	0	0	0	0	0	98.57	14.01					
	1992	0	0	0	0	0	0	0	0	0	0	0	0	96.18	13.37	120 ⁹				
	1993	0	0	0	0	0	0	0	0	0	0	0	0	95.61	14.05	135 ⁹				
	1994	0	0	0	0	0	0	0	0	0	0	0	0	94.33	13.99	125 ⁹				
	1995	0	0	0	0	0	0	0	0	0	0	0	0	70.92	14.03	80 ⁹	63	379335		
	1996	0	0	0	0	0	0	0	0	0	0	0	0	50.15	14.51	50 ⁹	100	766800	304000	
	1997	0	0	0	0	0	0	0	0	0	0	0	0	42.51	14.57	60 ⁹	100			
	1998	0	0	0	0	0	0	0	0	0	0	0	0	35.23	14.21	50 ⁹				
	1999	0	0	0	0	0	0	0	0	0	0	0	0	39.67	13.10	40 ⁹				
	2000													34.12	13.56					
Poland	1990	.000	.000	.000	.000	.000	.000		.000	.000		.000	2425	529.1	159.2	62.1				
	1991												2367	535.4	174.3	38.6				
	1992												2322	517.1	171.7	39.1				
	1993												2348	591.8	253.2	42.5				
	1994												2330	519.5	231.4	38.1				
	1995	.000	.000	.000	.000	.000	.000		.000	.000		.000	2323	514.5	237.3	50.7				
	1996	.000	.000	.000	.000	.000	.000		.000	.000		.000	2348	484.2	224.9	48.0				
	1997	.000	.000	.000	.000	.000	.000		.000	.000		.000	2342	439.5	195.2	51.1				
	1998	.000	.000	.000	.000	.000	.000		.000	.000		.000	2353	381.3	176.2	43.2				
	1999	.000	.000	.000	.000	.000	.000		.000	.000		.000	2331	381.1	175.9	39.5				
	2000												2265	333.4	167.3	46.3				
Republic of Moldova	1990														6.171					
	1991														4.879					
	1992														3.993					
	1993														3.282					
	1994														3.120					
	1995														4.261					
	1996														3.595					

Party	Year	ANNEX I									ANNEX II			ANNEX III			OTHER			
		Aldrin	Chlor-dane	Chlor-decone	Dieldrin	Endrin	Hepta-chlor	Hexa-bromo-biphenyl	Mirex	Toxa-phene	HCH	DDT	PCBs	Dioxins and furans	PAHs	HCb	PCP	SCCP	PER	TRI
	1991	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1992	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1993	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1994	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1995	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1996	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1997	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1998	0	0	0	0	0	0	0	0	0	0	0			0	0				
	1999	0	0	0	0	0	0	0	0	0	0	0			0	0				
Ukraine	1997														2.948					
	1998														.770					
United Kingdom	1990	0	0	0	0	0	0	0	0	0	100013	0	7123	1172	224.8	1267	538010	1.5		
	1991	0	0	0	0	0	0	0	0	0	86189	0	6544	1152	209.0	1259	537991	1.5		
	1992	0	0	0	0	0	0	0	0	0	74756	0	6048	1126	186.7	1255	537989	1.5		
	1993	0	0	0	0	0	0	0	0	0	65250	0	5554	1077	138.1	1242	529774	1.5		
	1994	0	0	0	0	0	0	0	0	0	57301	0	4993	986.9	128.4	1230	518780	1.5		
	1995	0	0	0	0	0	0	0	0	0	50616	0	4439	856.4	102.9	1227	511035	1.5		
	1996	0	0	0	0	0	0	0	0	0	44963	0	3898	623.9	49.01	1232	503463	1.5		
	1997	0	0	0	0	0	0	0	0	0	40158	0	3395	453.0	37.73	874.2	496162	1.5		
	1998	0	0	0	0	0	0	0	0	0	36052	0	2894	393.1	34.37	885.2	489221	1.5		
	1999	0	0	0	0	0	0	0	0	0	33586	0	2217	377.4	30.05	786.0	482503	1.5		
	2000	0	0	0	0	0	0	0	0	0	32526	0	1706	347.2	27.02	786.1	476014	1.5		
United States	1990												102	2366 ^w	15642 ^x	1450				
	1996		300				83		1		235		195 ^y	z	18834 ^z	281				

^a Referring to Flanders only.

^b Referring to Brussels and Wallonia only.

^c Referring to Wallonia only.

^d Referring to Flanders and Wallonia only.

^e Preliminary data.

^f Emissions are calculated on the basis of the total quality of the fuels used.

^g 1990-1998: Emission of POPs is distributed according to SNAP94. 1999: According to SNAP97.

^h Values for the period 1991-1995 are missing because air emission inventories were not prepared for that period.

ⁱ Data include those emissions located within the EMEP area only.

^j National totals include overseas areas.

^k National totals do not include international air traffic and international sea traffic.

^l Emission figures do not include air traffic above 1000 m and international sea traffic.

^m Sum of TRI, PER AND TCE.

ⁿ Figures for 1990 and 1994 are not comparable because they are based on different reports.

^o Figures include only Benzo(ghi)perylene and Fluoranthene (Borneff 6).

^p Borneff 6.

^q Include chloro-methane dichloro-methane trichloro-methane tetrachloro-methane chloro-ethane 1,1-dichloro-ethane 1,2-dichloro-ethane 1,1,1-trichloro-ethane 1,1,2-trichloro-ethane tetrachloro-ethanes 1,1,1,2-tetrachloro-

ethane 1,1,2,2-tetrachloro-ethane pentachloro-ethanes hexachloro-ethanes 1-chloro-propane 2-chloro-propane 1,2-dichloro-propane 1,3-dichloro-propane 1,2,3-trichloro-propane trichloro-propanes.

^r Only data for sector 4: Production processes, no data for other sectors.

^s Figures apply to the European part within EMEP except for CO₂.

^t Including only benzo(a)pyrene.

^u The range reported is 58-127 gI-Teq.

^v The range reported is 19-46 gI-Teq.

^w The 1990 dioxin and furan inventory was developed using methodologies applied nationwide. Data development for subsequent years includes application of facility-specific information and is expected to include additional sources.

^x PAHs are defined as the sum of 16-PAH, which includes: Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenz(a, h)anthracene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Acenaphthylene, Anthracene, Benzo(ghi)perylene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, Pyrene.

^y The PCB national value reflects that reported to the US EPA Toxic Release Inventory (TRI) and is suspected to contain an error in industry reporting.

^z A reassessment of the dioxins & furans inventory data and estimation methodologies is being conducted. Data developed since the 1990 inventory include facility-specific information and are expected to include more sources.

Table 10: Anthropogenic emissions of heavy metals in the ECE region (Mg per year)

Party	Year	PRIORITY METALS			OTHER METALS					
		Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
Armenia	1983	91.00		.01	30.00					
	1984	61.00		.01	95.00					
	1985	44.00		.01	62.00		5.00			
	1986	87.00					5.00			
	1987	46.00			62.00	.20	5.00	.30		
	1988	57.00			66.00		5.00	.003		.10
	1989	22.00		.03	22.00	5.00	2.00	.10		
	1990	11.00		.01		4.00	2.50	.10		
	1991	.82		.01		5.97	1.60	.24		
	1992	.61		.008		1.8	.068	.239		
	1993	.79		.009		1.04	.036	.074		
	1994	.34		.001		.34	.002	.003		
	1995	.334		.001		.101	.001	.009		
	1996	.009		.0008	.0003	.466	.009	.02		.016
	1997	.009				.019	.650	.003		
	1998	.010				.008	.005	.007		.001
1999	.0053 ^a				.073	.008	.004		.021	
2000	.0 ^b				.006	.00043	.0		.0	
Austria	1980	.00	.00	.00						
	1981	.00	.00	.00						
	1982	.00	.00	.00						
	1983	.00	.00	.00						
	1984	.00	.00	.00						
	1985	331.7	4.66	4.22						
	1986	320.1	4.65	3.93						
	1987	311.5	4.15	3.44						
	1988	281.0	3.77	2.94						
	1989	245.2	3.44	2.68						
	1990	204.9	2.98	2.59						
	1991	172.9	2.68	2.51						
	1992	118.0	2.21	1.98						
	1993	84.06	2.08	1.75						
1994	58.91	1.82	1.54	3.300	6.600	9.200	35.50	4.700	208.4	
1995	18.49	1.61	1.50							
1996	17.28	1.52	1.41							
1997	16.39	1.55	1.44							
1998	15.12	1.47	1.25							
1999	14.09	1.44	1.23							
2000	13.18	1.30	1.10							
Belarus	1990	797.6	7.59	.480	13.15	29.24	34.98	601.9		210.5
	1995	148.4	3.48	.265	4.48	14.10	19.11	246.4		121.7
	1996	46.34	1.20	.297	3.66	8.68	13.89	202.7		122.3
	1997	42.20	1.25	.310	3.07	8.27	15.10	167.1		159.3
	1998	41.24	1.45	.392	2.96	7.91	13.64	154.3		177.9
	1999	37.52	1.42	.38	2.64	7.19	13.19	128.9		180.1
	2000	46.12	1.378	.358	3.33	6.295	11.78	94.43		196.5
Belgium	1990	601.3	9.52	8.79	10.45	53.98	52.26	106.5	21.35	370.5
	1991	218.0	3.00	2.00	1.00	12.00	6.00	10.00	.00	135.0
	1992	230.0	4.00	3.00	3.00	11.00	20.00	9.00	.10	97.00
	1993	230.0	1.00	1.00	2.00	22.00	22.00	11.00	3.00	86.00
	1994	325.4	4.40	5.82	4.63	26.82	45.69	52.64	23.46	241.6
	1995	336.1	6.38	4.54	6.39	48.32	55.70	46.73	18.80	286.5
	1996	302.6	4.62	5.55	5.22	32.15	33.19	57.68	7.66	219.9
	1997	287.2	4.60	3.32	4.67	25.48	28.08	46.36	10.19	177.5
	1998	203.0	3.26	3.50	4.86	22.47	29.52	67.72	9.99	186.4
	1999	173.7	2.90	2.06	4.43	4.33	30.54	66.36	5.56	170.8
Bulgaria	1990	435.9	28.25	13.20						
	1995	297.5	12.82	6.88						
	1996	278.8	14.33	4.70						
	1997	231.2	14.23	4.31						
	1998	250.8	14.87	4.69						
	1999	223.5	13.57	4.06						
	2000 ^c	213.4	10.99	4.186						
2010	176.7	11.9	5.8							
2020	202.8	13.3	6.9							
Croatia ^{def}	1990	466	1.61	1.15	2.28	13.00	14.64	45.76	.91	84.21

Party	Year	PRIORITY METALS			OTHER METALS					
		Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1995	264	.95	.29						
	1996	268	1.04	.30						
	1997	190	1.03	.32	1.25	5.19	10.21	30.39	.41	64.67
	1998	183	1.06	.32	1.33	5.63	10.31	31.42	.42	68.29
	1999	178	1.05	.31	1.32	5.65	10.72	31.83	.38	68.40
Cyprus	1990	81.00	.20	.30	.60	1.60	1.20	1.70		1.80
	1991	63.00								
	1992	66.00								
	1993	69.00								
	1994	68.00								
	1995	67.00								
	1996	67.00								
	1997	72.00								
	1998	69.00								
	1999	75.00								
	2000	74.00								
Czech Republic	1990	269.4	4.34	7.52						
	1991	240.0	3.92	7.42						
	1992	247.0	3.61	7.28						
	1993	232.0	3.48	7.46						
	1994	202.5	3.52	7.17						
	1995	179.7	3.55	7.40						
	1996	165.4	2.94	5.86						
	1997	179.7	3.00	5.54						
	1998	169.2	2.65	5.16						
	1999	157.0	2.72	3.66						
	2000	107.7	2.85	3.84						
Denmark	1990 ^e	134.3	1.167	3.352	1.442	6.450	10.34	26.43	4.199	35.77
	1991 ^e	99.03	1.229	3.234	1.921	5.256	10.50	31.96		24.53
	1992 ^e	87.09	1.203	3.073	1.716	4.888	10.13	31.15		23.52
	1993 ^e	45.02	1.124	3.055	1.692	4.551	10.07	27.35		23.70
	1994	31.85 ^e	1.359 ^e	3.098 ^e	2.008 ^e	4.950 ^e	10.43 ^e	38.46 ^e	2.928	26.42 ^e
	1995 ^e	28.71	.957	2.550	1.445	3.649	9.698	25.68	1.915	27.48
	1996 ^e	15.82	.915	2.752	1.104	3.807	9.781	24.88	3.413	30.75
	1997 ^e	8.731	.845	2.162	.916	3.236	9.638	22.76	3.209	25.99
	1998 ^e	7.636	.775	1.948	.846	2.697	9.410	18.86	2.815	22.97
	1999 ^e	7.418	.713	1.976	.846	2.648	9.546	15.16	2.629	22.85
	2000 ^e	7.515	.7286	2.052	.8453	2.409	9.072	13.73	2.017	22.18
Estonia	1990 ^h	232.5	1.612	1.292	8.1	8.2	1.7	4.4	.2	29.3
	1991 ^h	208.4	1.493	1.183	7.7	7.9	1.7	4.2	.2	27.5
	1992 ^h	120.9	1.118	.980	7.2	7.795	1.648	3.9	.2	26.77
	1993 ^h	100.4	.885	.750	5.6	6.195	1.241	3.1	.1	21.47
	1994 ^h	106.7	.937	.798	4.8	5.078	1.033	2.651	.1	17.64
	1995 ^h	87.56	.899	.751	4.0	3.982	.841	2.167	.1	16.76
	1996 ^h	80.16	.941	.778	4.3	4.236	2.344	2.352	.1	16.34
	1997 ^h	73.08	.978	.773	3.8	3.874	2.255	2.068	.1	14.33
	1998 ^h	54.66	.829	.664	3.5	3.368	2.158	1.929	.1	13.23
	1999 ^h	45.04	.776	.611						
	2000	40.73	.68	.553	9.668	9.686	3.482	7.865	.006	52.96
Finland	1990	326.1	6.3	1.1	33.2	31.6	94.4	67		570.5
	1991	247.4	3.4	.9	22.1	41.4	90.7	45.1		381.4
	1992	174.7	2.9	.8	17.5	31.2	65.5	37.1		283.7
	1993	99.7	2.9	.6	14.3	20.5	54.1	25.9		259.6
	1994	60.1	2.4	.7	10.7	19.6	48.9	33.6		315.7
	1995	56.6	1.7	.7	3.5	21.7	26.7	33.8		321.7
	1996	35	1.5	.8	7.2	21.2	54.5	25.1		191.4
	1997	18.5	1.1	.6	12.3	20.5	72.3	27.8		70.3
	1998	20.3	1.3	.5	12.4	18.2	27.4	20.8		71.2
	1999	14	.6	.4	3.6	18.5	4.1	16.9		57.7
	2000	37.5	1.4	.6	4.6	28	18.7	33.3		70.7
France^{gi}	1990	4192	17	27	25	378	97	301	11	1951
	1991	2795	17	28	24	320	98	347	11	1791
	1992	2020	17	27	24	270	98	294	11	1631
	1993	1766	16	24	20	210	95	248	10	1430
	1994	1570	15	24	22	185	95	239	11	1354
	1995	1395	14	22	22	195	94	248	11	1303
	1996	1221	14	22	20	199	93	250	11	1322

Party	Year	PRIORITY METALS			OTHER METALS					
		Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1997	1073	13	17	21	228	91	242	12	1415
	1998	961	13	17	22	235	91	265	12	1412
	1999	724	12	16	22	225	88	236	12	1311
	2000	196	12	15	22	244	89	215	12	1373
Germany	1985	5028	45.00	154.0	221.0	344.0	459.0	440.0		1900
	1990	2323	31	113	122	253	361	278	27	1323
	1995	632	11	31	32	115	79	158	25	451
	2010	294.0	11.00	24.00						
Greece^d	1996	470.0	3.00	13.00	4.00	10.00	14.00	101.0	.20	52.00
Hungary	1980	574.4	7.49	8.71	21.68	22.25	38.72	66.94	4.93	97.64
	1985	528.9	6.78	8.34	22.45	22.41	36.71	74.13	4.78	99.96
	1990	680.5	5.52	6.28	15.94	16.42	28.07	42.48	3.39	96.59
	1991	487.6	4.70	5.83	14.52	14.83	23.80	48.96	3.19	70.83
	1992	207.7	4.03	4.99	10.22	11.79	18.34	48.72	2.81	62.02
	1993	187.1	4.14	5.00	10.10	12.21	18.18	57.24	2.89	67.64
	1994	155.5	4.077	4.724	9.656	11.83	16.70	54.08	2.777	46.14
	1995	126.6	3.782	4.828	8.791	10.88	15.76	50.07	2.466	48.26
	1996	99.82	3.41	4.667	8.341	10.04	14.50	42.87	2.254	45.69
	1997	89.73	3.26	4.474	7.252	9.185	14.69	46.60	2.107	44.95
	1998	82.20	3.082	4.278	6.118	7.404	14.61	45.92	1.902	39.37
	1999	38.55	2.993	4.247	6.126	7.257	15.56	43.05	1.842	39.86
	2000 ^e	36.90	2.746	4.204	5.709	6.657	15.23	37.24	1.620	40.15
	2010	30	2.7	3.1						
	2020	30	2.7	3.1						
Iceland	1990	12.2								
	1991	8.9								
	1992	6.8								
	1993	5.3								
	1994	4.6								
	1995	3.9								
	1996	1.7								
	1997	.4								
	1998	.4								
Italy	1990	4300	53.79	19.98						
	1994	2174	29.90	13.23						
Kazakhstan	1990				1600		1800			
	1991				1700		1500			
	1992				1800		1100			
	1993				2100		1400			
	1994				1700		620			
	1995				3100		2670			
Kyrgyzstan	1999	.005				.169				
Latvia	1990	20.3	2.46	.37	18.8	11.5	9.9	58.8		22.7
	1991	10.1	1.79	.32	7.57	4.81	6.14	46		21.7
	1992	7.94	1.71	.27	5.47	3.93	5.57	41.7		11
	1993	6.18	1.68	.22	2.34	3.69	3.43	40.6		9.55
	1994	10.3	2.2	.37	2.68	4.71	4.86	56.8		13.3
	1995	4.69	1.44	.17	4.45	3.49	2.76	36.7		6.54
	1996	4.57	.3	.51						
	1997	3.4	.4	.07						
	1998	4.64	.7	.12						
	1999	.2	.32	.18						
	2000	.2								
Lithuania	1990	46.70	3.800	.018	3.400	7.400	11.70	95.60		59.10
	1991	48.80	2.800	.016	2.100	4.600	10.50	57.40		55.20
	1992	32.40	2.500	.011	2.100	4.600	6.800	59.90		30.00
	1993	28.20	2.300	.014	2.000	4.400	5.700	57.00		13.20
	1994	33.00	2.100	.013	1.900	4.300	3.700	57.80		8.900
	1995	30.20	2.10	.153	1.70	4.20	6.80	51.60		50.10
	1996	17.80	2.20	.159	1.70	4.50	7.50	54.40		56.90
	1997	19.50	2.20	.232	1.50	4.10	8.30	49.40		71.00
	1998	21.78	2.59	.245	1.85	5.07	9.18	62.40		78.71
	1999	19.25	2.008	.253	1.366	3.813	7.872	46.10		72.84
	2000	15.92	1.351	.252	.782	2.310	6.398	26.56		61.81
Luxembourg	1990	77.4	.6	.3						
	1994	52.5	.5	.2						
	1995	29.8	.4	.1						

Party	Year	PRIORITY METALS			OTHER METALS					
		Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1996	26.1	.4	.1						
	1997	17.7	.3	.1						
	1998	6.8	.2	.1						
	1999	2.340	.054	.286	.082	.373	1.205	.790	.015	35.47
	2000	1.615	.05079	.2749	.07902	.3420	1.250	.6796	.02365	36.70
Monaco	1990	2.181	.005	.052		.001	.018	.001	.000	.010
	1991	2.256	.005	.053		.001	.019	.001	.000	.011
	1992	2.285	.005	.059		.001	.020	.001	.000	.012
	1993	1.917	.006	.064		.001	.025	.001	.000	.014
	1994	1.653	.006	.070		.001	.025	.001	.000	.015
	1995	.624	.006	.069		.001	.024	.001	.000	.014
	1996	.537	.007	.074		.001	.024	.001	.000	.014
	1997	.481	.008	.084		.001	.024	.001	.000	.014
	1998	.403	.007	.079		.001	.023	.001	.000	.014
	1999	.364	.007	.080		.001	.025	.001	.000	.014
	2000	.060	.008	.082		.001	.025	.001	.000	.015
Netherlands	1990	332.7	1.95	3.03	1.47	11.22	19.4	84.41	.42	220.9
	1991	251.0	2.33	2.74		11.50	46.90	85.70		325.0
	1992	233.0	2.33	2.75	1.50	11.30	48.70	96.50	.40	317.0
	1993	213.0	1.84	2.57		13.80	49.90	90.30		270.0
	1994	164.0	1.68	1.54	1.81	10.40	50.70	95.60	.30	277.0
	1995	158.9	1.01	1.07	1.2	8.23	20.46	96.3	.37	143.9
	1996	106.0	1.83	1.04	1.29	7.51	43.40	95.60	.541	267.0
	1997	72.1	1.88	.759	1.37	6.32	47	85.1	.332	251
	1998	43.92	1.15	.56	1.24	5.4	21.36	52.58	.12	100.3
	1999	35.4	1.01	.529	1.18	5.32	44.6	51.5	.109	91.4
Norway	1980	482.3								
	1981	577								
	1982	651								
	1983	559								
	1984	401								
	1985	406	1.1							
	1986	341	.0							
	1987	227.8	.0							
	1988	293	.0							
	1989	212.3	1.2							
	1990	186.4	1.690	1.671						
	1991	143.3	1.625	1.563						
	1992	126.2	1.615	1.412						
	1993	86.23	1.682	1.103						
	1994	22.84	1.225	1.165						108.1
	1995	21.06	1.053	1.076						109.2
	1996	9.222	1.093	1.104						103.7
	1997	8.631	1.120	1.121			9.100			
	1998	8.632	1.176	1.086						
	1999	7.817	1.014	1.144						
	2000	6.468	.7457	.9601						
Poland	1990	1372	91.6	33.3	82.1	154.6	599.4	370.0		3092
	1991	1336	85.0	32.7	79.8	133.5	530.4	354.8		2781
	1992	986.0	84.1	31.9	78.9	121.6	497.3	349.8		2678
	1993	996.9	91.9	32.5	82.4	127.8	511.0	352.9		2830
	1994	966.1	85.8	32.4	76.2	120.0	478.3	322.5		2624
	1995	936.6	82.6	32.3	73.4	118.3	464.9	312.3		2580
	1996	959.7	91.2	33.6	75.6	117.0	494.8	328.3		2749
	1997	895.8	85.8	33.0	71.0	116.0	475.1	364.9		2580
	1998	736	55.4	29.5	54.3	89.8	388.7	251.3		2191
	1999	745	61.7	27.1	58.8	89.8	420.9	259.8		2377
	2000	647.5	50.4	25.6	50.4	84.3	374.5	251.4		2173
Republic of Moldova	1990	253.2	3.078	4.253	5.136	9.088	10.01	100.7	.518	12.51
	1991	220.3	3.493	3.810	3.199	7.300	7.467	83.49	.239	8.381
	1992	102.6	1.693	3.290	2.869	4.911	4.465	59.63	.072	5.384
	1993	71.20	1.415	1.849	1.671	4.189	3.633	48.33	.113	4.589
	1994	23.16	.819	1.287	1.487	2.681	2.848	27.33	.072	3.781
	1995	33.90	.594	.894	1.536	2.015	2.785	17.00	.162	3.100
	1996	27.90	0	.954	1.551	1.631	2.748	19.58	.057	3.007
	1997	22.36	.364	.571	.908	1.397	2.033	12.02	.038	2.052
	1998	7.898	.328	.406	.596	1.037	1.389	9.667	.065	1.371

Party	Year	PRIORITY METALS			OTHER METALS					
		Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
	1999	11.21	.148	.180	.210	.479	.796	4.374	.007	.628
Russian Federation^k	1990	3591	79.4	15.6						
	1991	3553	68.2	13.4						
	1992	3095	68.8	11.4						
	1993	3276	59	11.8						
	1994	2643	56.6	10.4						
	1995	2426	57.4	10.4						
	1996	2304	51	10.1						
	1997	2247	50.4	9.6						
	1998	2262	49	9.4						
	1999	2339	50.9	9.9						
	2000	2352	50.5	10						
	2010	550	55	14						
Slovakia	1990	151.7	9.97	12.53	154.4	79.27	103.5	80.19	7.17	112.1
	1992	148.6	11.31	6.15	85.58	70.98	79.64	67.02	9.70	92.10
	1994	84.03	7.19	3.86	46.16	12.13	52.49	36.00	7.38	75.59
	1995	81.14	10.57	3.95	39.48	12.62	50.88	37.81	7.78	75.39
	1996	78.39	9.62	3.41	47.44	10.51	62.98	38.64	10.36	72.68
	1997	78.67	10.82	3.74	46.97	9.85	64.63	35.68	8.67	74.81
	1998	67.17	8.47	4.10	40.44	9.68	53.98	35.17	7.41	68.09
	1999	55.38	7.34	3.72	13.31	9.80	24.89	30.70	4.60	58.75
	2000	75.00	7.90	4.45	13.32	9.67	28.01	34.41	5.59	72.82
Slovenia	1990	460.2	1.68	.76						
	1991	386								
	1992	390								
	1993	398								
	1994	405.6	1.66	.61						
	1995	195.5	1.71	.65						
	1996	99	1.77	.59						
	1997	80.38	1.75	.61						
	1998	60.47	1.67	.63						
	1999	50.2	1.62	.6						
	2000	37.15	1.54	.58						
Spain^e	1990	2834	14	21	34	36	99	262	44	1066
	1991	2081	15	22	37	38	112	279	46	1086
	1992	1301	16	23	43	40	110	312	47	1092
	1993	1194	15	21	41	37	107	279	45	1109
	1994	1180	15	21	43	39	108	296	50	1145
	1995	974	16	21	43	40	101	321	53	1162
	1996	1007	15	19	47	37	123	270	52	1168
	1997	943	15	20	49	37	128	261	56	1178
	1998	884	16	22	52	40	135	285	59	1288
	1999	826	18	24	49	44	140	314	60	1319
	2000	692	19	23	55	45	145	322	63	1458
Sweden	1990	540	2	1.5	6	23	27	26		230
	1992	365	1.3	1.2	4	20	30	25		195
	1994	37	.7	.9	1.1	13	9	34		94
	1995	37.8	.8	.9	1.3	13.8	9.8	32.2		138
	1997	10.8	.3	.55	.6	5.37	6.5	4.28	.09	34.9
	1998	10.5	.26	.54	.56	4.79	5.4	4.15	.08	32.2
	1999	10.5	.26	.54	.56	4.79	5.4	4.15	.08	32.2
Switzerland	1980	1760	6.35	7.93						1280
	1985	768	4.74	7.84						925
	1990	520	4.2	6.8						841
	1991	461	3.9	6.1						814
	1992	401	3.6	5.4						767
	1993	341	3.1	4.7						719
	1994	287	2.7	4						674
	1995	226	2.5	3.3						607
	1996	199.7	2.3	3.1						609.2
	1997	173.9	2.2	2.9						589.6
	1998	148.6	2.18	2.63						547.3
	1999	131.2	2.18	2.63						553.4
	2000	113.6	2.176	2.63						558.3
	2010	90	2.03	2.39						597
The FYR of Macedonia	1998	3.020	.167	.048						162.7
	2000	3.02	.0167	.048						

Party	Year	PRIORITY METALS			OTHER METALS					
		Lead	Cadmium	Mercury	Arsenic	Chromium	Copper	Nickel	Selenium	Zinc
United Kingdom	1980	8189	20.43	35.3	98.41	173.4	144.6	703.4	150.8	964.0
	1981	7393	19.89	34.12	93.49	170.3	138.2	614.5	141.8	985.9
	1982	7494	19.87	33.73	92.32	163.9	133.5	592.3	136.7	951.2
	1983	7611	19.71	32.7	90.52	162.8	134.0	529.7	135.5	956.6
	1984	7810	21.87	30.53	77.58	142.4	116.1	630.7	115.4	932.2
	1985	7210	20.32	33.39	92.12	159.3	127.7	514.5	131.7	953.4
	1986	3545	19.99	32.62	93.03	167.1	132.7	502.2	158.6	948.9
	1987	3635	19.74	31.57	89.37	164.8	132.0	431.4	148.9	959.8
	1988	3775	19.96	32.35	90.38	165.3	132.1	472.1	151.3	1006
	1989	3272	19.87	31.69	84.74	162.3	126.9	430.7	151.5	994.2
	1990	2828	20.33	31.78	81.56	152.8	125.9	422.2	145.7	961.2
	1991	2574	19.93	32.56	83.81	146.8	119.3	441.3	138.4	904.7
	1992	2355	19.58	30.5	83.75	147.5	113.9	445.1	141.1	918.6
	1993	2133	13.75	20.12	80.26	140.2	107.3	432.1	133.9	913.4
	1994	1888	13.29	19.63	74.6	132.5	102.0	396.9	123.3	912.1
	1995	1577	11.82	19.17	65.31	113.3	86.18	330.0	102.6	835.1
	1996	1335	9.35	14.56	60.5	97.72	88.06	296.0	95.1	733.6
	1997	1182	7.81	12.22	52.59	86.14	66.22	223.1	78.55	655.0
	1998	898	6.33	11.12	46.88	79.34	62.87	193.5	73.9	577.6
	1999	548	5.93	8.88	42.56	66.74	56.65	153.6	55.35	434
2000	496	5.22	8.54	34.56	62.8	45.7	115.1	49.91	336.2	
2010		340.0	12.30	12.30						
United States	1990	2996	180	187	394	1003		1205	504	
	1995			146						
	1996	2383	142	170	323	953		1086	782	

^a Road transport not included.

^b Road transport not included.

^c Emissions are calculated on the basis of the total quality of the fuels used.

^d 1990-1998: Distributed according to SNAP90.

^e 1999: Distributed according to SNAP97.

^f Values for the period 1991-1994 are missing because air emission inventories were not prepared for that period.

^g Data include those emissions located within the EMEP area only.

^h National totals include overseas areas.

ⁱ National totals do not include international air traffic and international sea traffic.

^j Preliminary data.

^k Figures apply to the European part within EMEP except for CO₂.

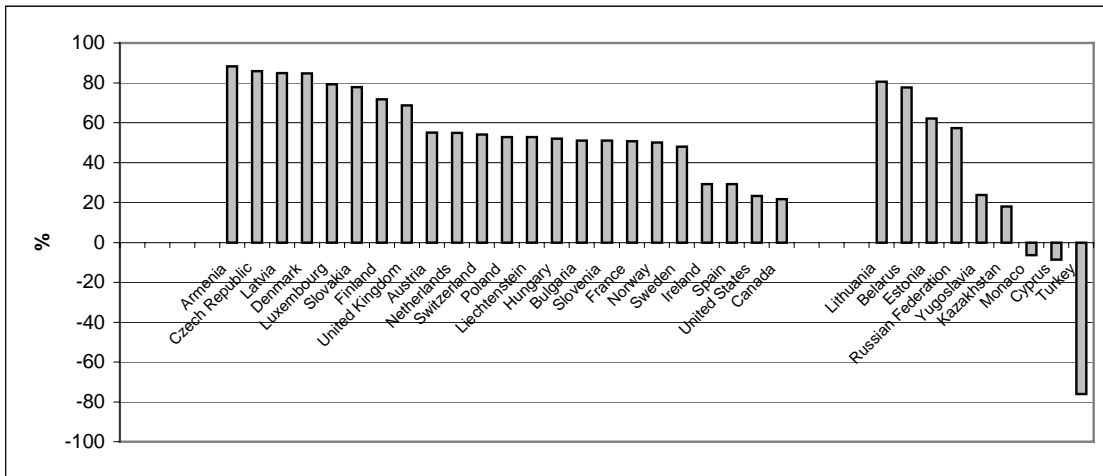


Figure I: Sulphur emission reductions in the ECE region, 1990-2000 (based on the latest data available, see table). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported emission data for both 1990 and 2000 are listed here.

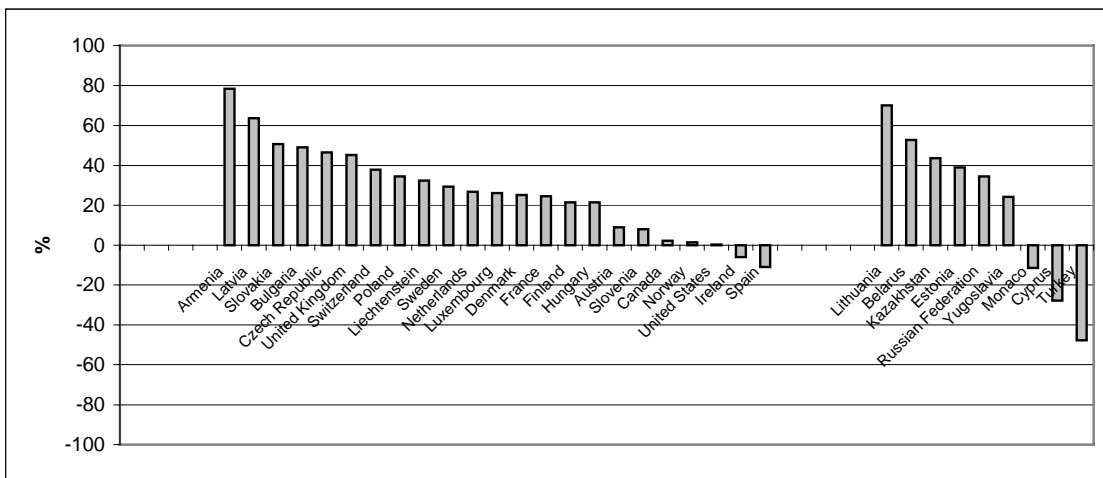


Figure II: Nitrogen oxides emission reductions in the ECE region, 1990-2000 (based on the latest data available, see table). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported emission data for both 1990 and 2000 are listed here.

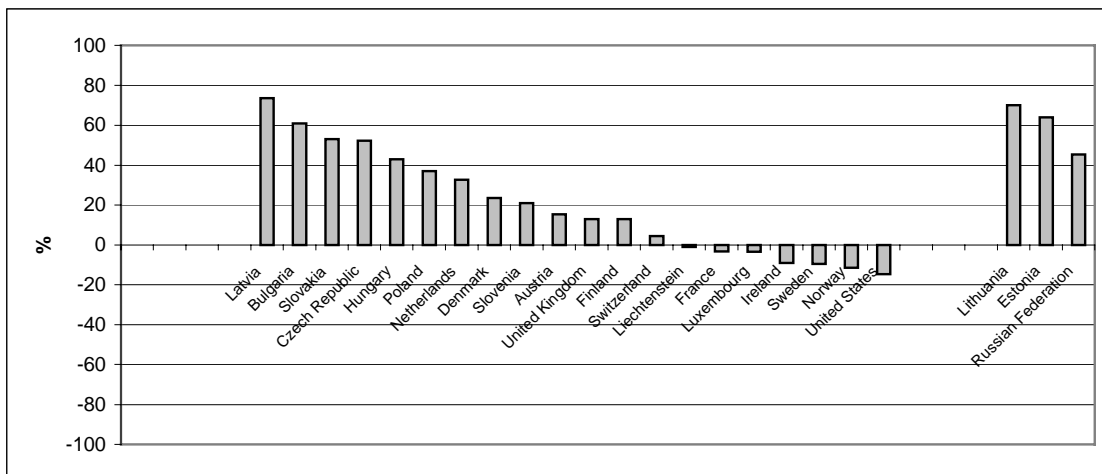


Figure III: Ammonia emission reductions in the ECE region, 1990-2000 (based on the latest data available, see table). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported emission data for both 1990 and 2000 are listed here.

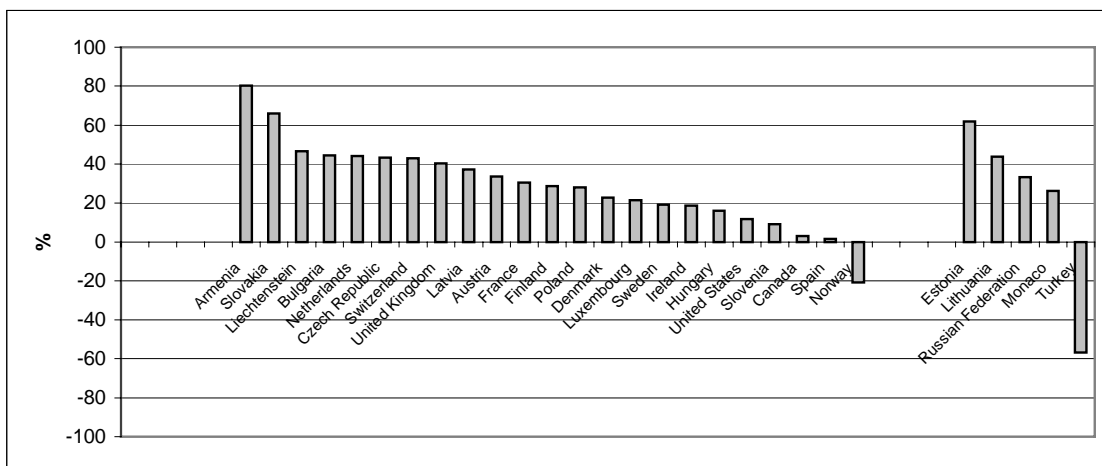


Figure IV: Reductions in emissions of non-methane volatile organic compounds in the ECE region 1990-2000 (based on the latest data available, see table). Signatories to the 1999 Gothenburg Protocol are on the left. Only countries that have reported emission data for both 1990 and 2000 are listed here.

Table 11: Percentage reduction (1990-2000) of 1990 level (A negative number indicates an increase)

Party to Convention	SO ₂			NO _x			NH ₃			NMVOC		
	1990	2000	Reduction	1990	2000	Reduction	1990	2000	Reduction	1990	2000	Reduction
	Gg SO ₂		%	Gg NO ₂		%	Gg NH ₃		%	Gg NMVOC		%
Signatories to the Gothenburg Protocol (as of August 2001)												
Armenia ¹	72	8.403	88.33	46.2	9.97	78.42	25	0.002		81	15.96	80.3
Austria	90.74	40.75	55.09	201.8	183.6	9.034	79.86	67.68	15.25	359.7	238.7	33.64
Belgium	357			320.6			107.3			303		
Bulgaria	2008	982	51.1	361	184.4	48.91	144	56.23	60.95	217	120.4	44.51
Canada ²	3236	2534	21.69	2104	2058	2.186				2880	2790	3.125
Croatia	180			87.6			37.1			105		
Czech Republic	1876	264.7	85.89	742	397.7	46.4	156	74.48	52.26	435	246.7	43.28
Denmark	180.6	27.5	84.78	276.9	207.2	25.17	132.2	101.1	23.48	170.5	131.9	22.64
Finland	260	73.5	71.73	300	235.8	21.4	38	33.1	12.89	224.4	159.9	28.74
France	1341	659	50.86	1899	1432	24.59	763	788	-3.28	2385	1659	30.44
Germany	5321			2706			765			3221		
Greece	479			311			79			317		
Hungary	1010	485.3	51.95	238	187.2	21.36	124	70.81	42.9	205	172	16.1
Ireland	185.7	131.5	29.19	118.1	125.1	-5.95	112.4	122.4	-8.93	111.1	90.27	18.76
Italy	1651			1938			466			2213		
Latvia	119.2	18.06	84.85	92.28	33.63	63.56	43.85	11.61	73.52	152.4	95.61	37.25
Liechtenstein	0.113	0.053	52.74	0.525	0.355	32.4	0.205	0.207	-0.93	0.988	0.527	46.61
Luxembourg	15	3.092	79.39	23	17.03	25.96	7	7.233	-3.33	19	14.92	21.45
Netherlands	202.4	91.2	54.93	573.8	421	26.63	226.8	152.6	32.71	503.5	280.7	44.25
Norway	52.55	26.21	50.11	226.5	223.2	1.443	22.73	25.32	-11.4	300.5	363	-20.8
Poland	3210	1511	52.93	1280	838	34.53	512	322	37.11	831	599	27.92
Portugal	359.4			317			104.6			379.9		
Republic of Moldova	265			100			49			157		
Romania	1311			546			300			772		
Slovakia	542	120	77.86	215	106	50.7	63	29.6	53.02	262	89	66.03
Slovenia	196	96	51.02	63	58	7.937	24	19	20.83	44	40	9.091
Spain	2167	1535	29.16	1279	1419	-10.9	472			1610	1584	1.615
Sweden	111.1	57.65	48.12	348.9	246.6	29.3	51	55.87	-9.55	516.7	417.8	19.13
Switzerland	41.96	19.26	54.11	153.7	95.69	37.74	71.5	68.29	4.49	278.8	158.8	43.03
United Kingdom	3721	1165	68.69	2763	1512	45.28	341	297	12.9	2508	1498	40.27
United States ²	21478	16483	23.26	21747	21713	0.156	3925	4503	-14.7	18421	16252	11.77
Non Signatories to the Gothenburg Protocol (as of August 2001)												
Belarus ³	637	142.8	77.59	285	134.8	52.69	4	142.1		533		
Bosnia and Herzegovina	480											
Cyprus	46	50	-8.7	18	23	-27.8						
Estonia	252.1	95.46	62.13	67.7	41.4	38.84	24.25	8.764	63.86	88.4	33.69	61.89
Georgia	248.3			129.5						46.4		
Iceland	24			26.3						12.8		
Kazakhstan ⁴	1156	948	18.02	355.7	200.9	43.52	0.49	0.27		0.394	0.22	44.16
Kyrgyzstan												
Lithuania	222	43.1	80.59	158	47.5	69.94	84	25.2	70	108	60.8	43.7
Malta												
Monaco ⁵	0.063	0.067	-6.35	0.53	0.59	-11.3	0.001	0.006	-500	0.702	0.518	26.21
Russian Federation	4671	1997	57.25	3600	2357	34.53	1191	650	45.42	3668	2450	33.21
The FYR of Macedonia		105.2			30.4							
Turkey ⁴	764.6	1347	-76.2	643.7	951.1	-47.8		0.007		462.9	725.6	-56.8
Ukraine ⁴	3782			1097			23			1369		
Yugoslavia	508	387	23.82	66	50	24.24						
European Community	16325			13292			3795			16633		

1. Emissions of NH₃ from agriculture are not included in the 2000 emission value.

2. Special notes for NH₃ and NMVOC are stated in the Gothenburg Protocol.

3. Emissions of NH₃ from agriculture are not included in the 1990 emission

value.

4. Emissions of NH₃ from agriculture are not included

5. The NH₃ emission reduction (increase) is not included in the NH₃ reduction figure.

**EMISSION TRENDS IN THE EMEP AREA: SO₂, NO_x, NH₃, NMVOC
1980-2000 and projections for 2010 and 2020**

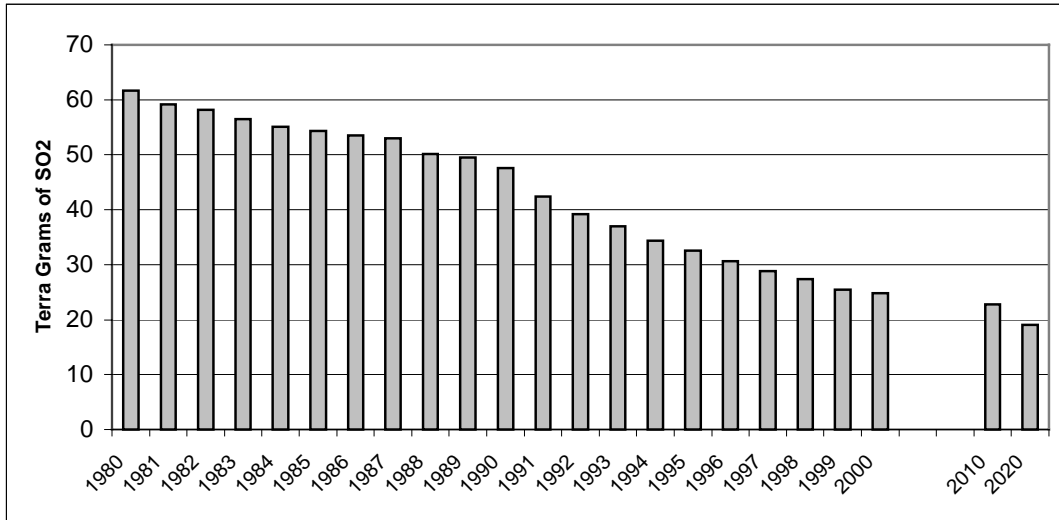


Figure V: Sulphur emission trends in the EMEP area (1980-2000, 2010, 2002).
The SO₂ reduction between 1980 and 2000 is 60%; the SO₂ reduction between 1990 and 2000 was 48%.

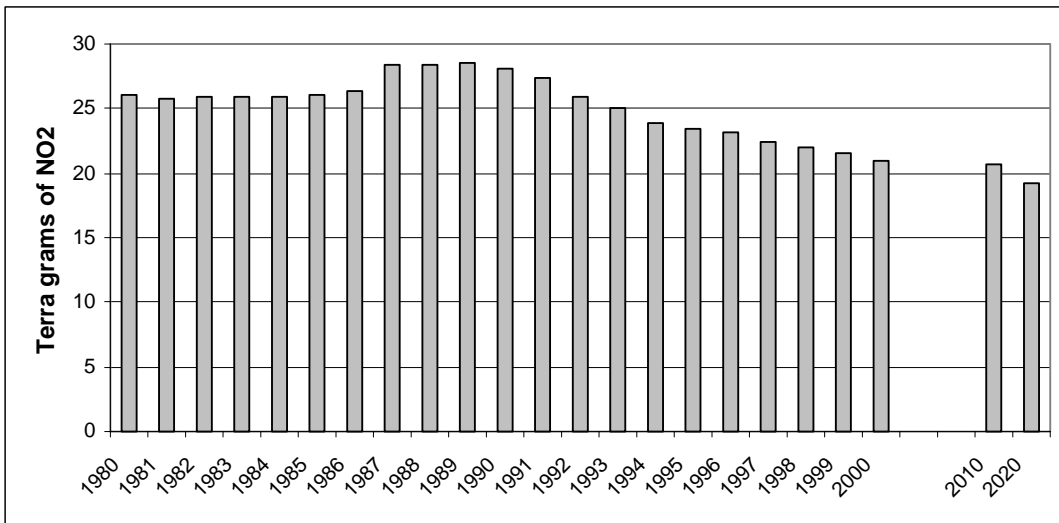


Figure VI: Nitrogen oxides emission trends in the EMEP area (1980-2000, 2010, 2002).
The NO_x reduction between 1990 and 2000 was 25%.

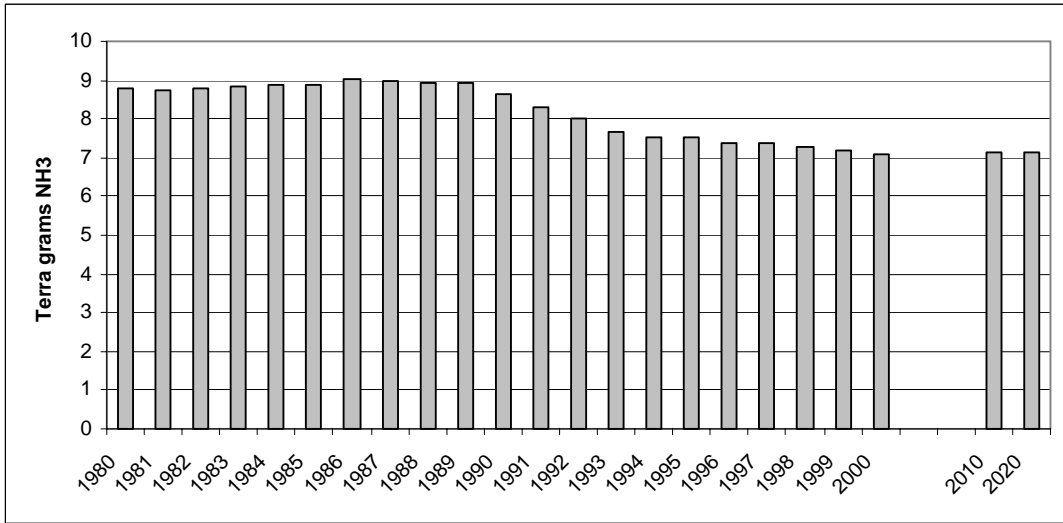


Figure VII: Ammonia emission trends in the EMEP area (1980 to 2000, 2010, 2020). The NH₃ reduction between 1990 and 2000 was 18%.

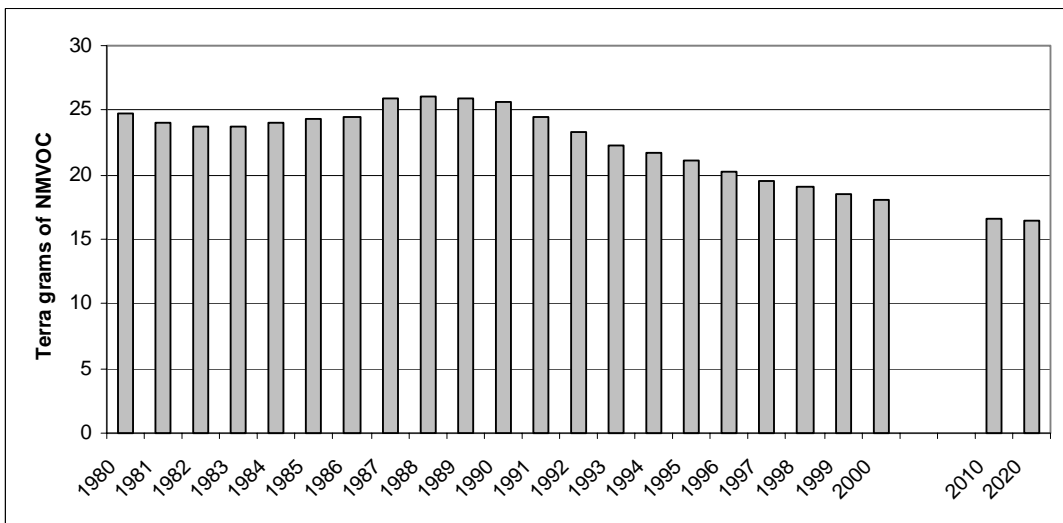


Figure VIII: Trends in emissions of volatile organic compounds in the EMEP area (1980-2000, 2010, 2020). The NMVOC reduction between 1990 and 2000 was 30%.