

Technical note

**EMEP/CEIP Data report, emission data reported to
UNECE/EMEP**

August 2008

EMEP/CEIP Data report, emission data reported to UNECE/EMEP: Status as of 30 Aug 2008

Introduction

1. This report reflects status of emission reporting under the Convention in the 2008 reporting round (2006 emission data, including 5-yearly reporting of gridded and large point source data not previously reported) as of 30 Aug 2008. The report was prepared by the EMEP Centre on Emission Inventories and Projection¹ (CEIP) established by Austria's Federal Environment Agency (Umweltbundesamt-Vienna) in December 2007, in line with the decision taken by the Executive Body at its twenty fifth session (ECE/EB.AIR/91, para 27 (f)).
2. Parties are requested to provide information on the main pollutants (nitrogen oxides (NO_x), carbon monoxide (CO), non-methane volatile organic compounds (NMVOC), sulphur oxides (SO_x) and ammonia (NH₃), heavy metals (HMs), particulate matter² (PM) and persistent organic pollutants (POPs)) (ECE/EB.AIR/80, Air pollution series, No15). In 2008, Parties were invited to submit data directly to CEIP or alternatively to post their data on the European Environment Agency's (EEA) central data repository and to inform the UNECE secretariat about the contents of the data submission by means of a notification form. Most Parties that submitted data also provided the secretariat with the notification form (with the exception of Greece, the Former Yugoslav Republic of Macedonia, the Netherlands and Ukraine).
3. An up-to-date overview of the data submitted by Parties during the 2008 reporting round has been made publicly available [at http://www.ceip.at/emission-data-webdab/2008-submissions-under-clrtap/](http://www.ceip.at/emission-data-webdab/2008-submissions-under-clrtap/). In addition, since 15 June 2008, the officially reported emission data can be accessed on-line at <http://www.ceip.at/emission-data-webdab/emission-as-reported-by-parties/>. Gap-filled and gridded emission data for modellers were distributed to all EMEP centres (by 16 April 2008) and are publicly accessible at <http://www.emep-emissions.at/emission-data-webdab/emissions-used-in-emep-models/>

¹ In December 2007 Umweltbundesamt Austria established a Center on Emission Inventories and Projections. The new EMEP Centre on Emission Inventories and Projection (CEIP) builds on the current emission related work within EMEP. The CEIP website with information to support Parties on emission reporting was launched on 15 January 2008: <http://www.emep-emissions.at/>.

² Reporting of particulate matter is due 2000 onwards.

Status of reporting as of 30 August 2008

4. The volume of officially reported data has increased by more than a factor of 900 between 1992 (the first reporting year recorded in the EMEP database) and 2008. In particular, the number of emission data sets (national total, sector, large point source, gridded total, gridded sector and projections) rose exponentially from 2000 onwards. In addition, the number of sectors reported increased by a factor 10 when reporting the Nomenclature for Reporting (NFR) sectors replaced reporting according to the Selected Nomenclature for Air Pollution (SNAP) source categories. The increase in data quantity³ has been important for the work of the Convention, but it also requires more resources to assess the quality of the reported data.
5. Timeliness: Forty Parties to the Convention, submitted inventories before 30 Aug 2008, from which twenty-nine Parties to the protocols (and Poland) reported emission data by the **due date** of 15 February 2008, representing an increase of two Parties to protocols compared with the 2007 reporting round. The above figures indicate that 59 per cent of Parties to the Convention submitted data on time, and that a further ten Parties submitted data before 30 Aug 2008, increasing the number of submissions to 78 per cent. This is again an increase compared with last year, representing the highest number of submissions in the history of the Convention.
6. Completeness: **No data** were provided by 3 Parties to the protocols Luxembourg, Lichtenstein and the Russian Federation. However, in order to further improve the atmospheric monitoring and modelling under the Convention, it would be important that emission inventories were also received from countries from which data are currently lacking or insufficient (Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Kazakhstan, Kyrgyzstan, Montenegro, San Marino and Turkey).
7. A number of Parties to protocols that submitted data in the 2008 reporting round did not provide complete time series in line with the current reporting requirements: ten Parties (and Poland) submitted only 2006 data. Complete time series of the main pollutants in NFR format for 1990–2006, which is the period relevant for the review of the Gothenburg Protocol, were reported by 18 Parties to that Protocol (15 in 2007), and 17 Parties to the Protocol on Heavy Metals also provided complete time series (1990–2006) of the main heavy metals. Seven Parties to protocols (Austria, Denmark, Finland, France, Italy, Sweden and the United Kingdom) submitted 1980–2006 time series. Twenty-one Parties to protocols reported the full time series of particulate matter (2000 – 2006)⁴, with 12 Parties also reporting figures back to 1990. Thirty Parties to the Protocol on POPs as well as Georgia and Poland provided information on POPs. 20 Parties provided additional or updated data between 19 Feb and 14 Aug. (Table 1).

³ Thirty-seven Parties to protocols as well as Georgia, Malta and Poland submitted the inventories in 2008.

⁴ The reporting of PM is due 2000 onwards.

8. Projections: In 2008, 17 Parties submitted emission projections, out of which only 13 Parties submitted data for 2020.
9. Gridded data: Gridded data are part of the 5-year reporting obligation and as such were not due in 2008. However, seven Parties (Estonia, Finland, Latvia, Lithuania, Portugal, Romania and Spain) submitted gridded sectoral and national total emissions and one Party (Slovakia) re-submitted gridded national total emissions before 30 June 2008. Parties reported new data and resubmissions as follows: Portugal and Romania for 2005, Latvia for 2000 and 2005, Slovakia and Estonia for 1990, 1995, 2000 and 2005, and Spain for 1990 to 2006. Lithuania and Finland submitted gridded data for the year 2006. In addition, CEIP imported into the database late submissions of 2005 gridded data from the European Community (EC) and Croatia that were due in the 2007 reporting round. 5 more Parties (Czech r., Cyprus, the Netherlands, Slovenia, United Kingdom, provided 2005 and Switzerland 2000 and 2005 gridded data during July and August. The availability of 2005 gridded sector data used for EMEP modelling improved considerably compared to 2000 gridded sectoral data previously used.
10. Transparency:/Documentation Compared with 2007, the number of Informative Inventory Reports (IIRs) submitted increased from six to 29 (i.e. 73 % of those reporting inventories, also reported IIRs) in 2008. Although, the increase in the number of IIRs submitted is a positive signal, the reports differ so substantially in structure and content, that it is time-consuming, and sometimes impossible, to find the necessary information in them. Therefore, Parties are urged to use the template for the recommended structure of IIRs as contained in annex VI to the revised ECE/EB.AIR/GE.1/2008/12 Emission Reporting Guidelines. In addition, in a number of cases Parties submitted IIRs in their national languages and without an English summary. To increase transparency, it is essential that key information on the inventories, including reasons for recalculations, new (closed) large emission sources, explanation of trends and the implementation of country specific methods/data be summarized in English.

Figure 1 Timeliness of reporting to UNECE/EMEP , as of 30 August 2008

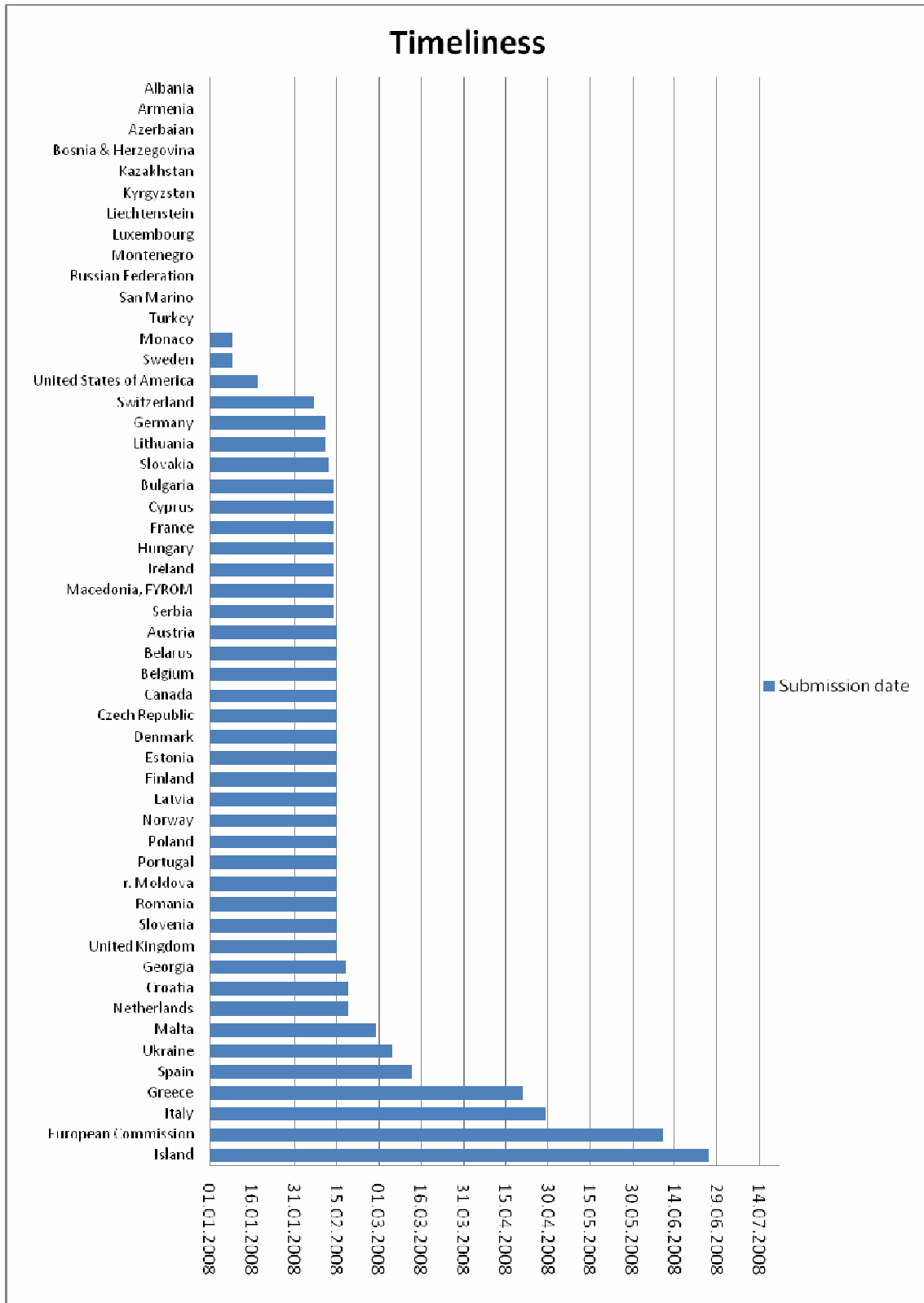


Table 1 Overview of data submitted in 2008 to EMEP/UNECE, as of 30 Aug 2008

PARTY	SO2 NOx CO NH3 MMVOC	Cd,Hg, Pb	additional HM	PM2.5; PM10	TSP	POPs (PAH DIOX HCB)	Projections table 2a	Gridded data (totals, 3A, 3B)
Austria	1980 - 2006	1985 - 2006		1990 - 2006	1990 - 2006	1985 - 2006		
Belgium	1990 - 2006	1990 - 2006	1990 - 2006	2000 - 2006	2000 - 2006	1990 - 2006	2010	
Bulgaria	2006	2006				2006		
Cyprus	1990 - 2006	1990 - 2006	1990 - 2006	2000 - 2006	2000 - 2006	1990 - 2006		2005 (only HM and POP)
Czech Republic	2006	2006	2006	2006	2006	2006		2005 (only 3A)
Denmark	1980 - 2006	1990 - 2006	1990 - 2006	2000 - 2006	2000 - 2006	1990 - 2006	2010, 2015, 2020	
Estonia	1990 - 2006	1990 - 2006	1990 - 2006	2000 - 2006	1990 - 2006	1990 - 2006	2010, 2015	1990, 1995, 2000, 2005
Finland	1980 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	2010, 2020	2006
France	1980 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	2010, 2020	
Germany	1990 - 2006	1990 - 2006	1990 - 2006	1995 - 2006	1995 - 2006	1990 - 2006	2010, 2015, 2020	
Greece	2006 (no NH3)							
Hungary	2002 - 2006 (1980 - 2005 other format)	2002 - 2006	2002 - 2006	2002 - 2006	2002 - 2006	2002 - 2006 (1990 - 2006 other format > imported only 1990, 1995 and 2000)		2005 (only POPs)
Ireland	1987, 1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006			
Italy	1980 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	np	1990 - 2006		
Latvia	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006		2000, 2005
Lithuania	2006	2006	2006	2006	2006	1990, 2006	2010	2006
Luxembourg								
Malta	2000 - 2006	2000 - 2006	2000 - 2006	2000 - 2006	2000 - 2006			
Netherlands	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	2010, 2015, 2020	2005
Poland	2006	2006	2006	2006	2006	2006		
Portugal	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	1990 - 2006	2010	2005
Romania	2005, 2006 (National Totals from 1980 - 2004)	2005, 2006	2005, 2006	2005, 2006	2005, 2006	2005, 2006	2010, 2020	2005 (NFR02 level 2 codes)
Slovakia	2000 - 2006	2000 - 2006	2000 - 2006	2000 - 2006	2000 - 2006	2000 - 2006	2010, 2015, 2020	1990, 1995, 2000, 2005
Slovenia	2000 - 2006	2000 - 2006		2000 - 2006	2000 - 2006	1990 - 2006	2010, 2015, 2020	2005
Spain	1980 - 2006	1990 - 2006	1990 - 2006	2000 - 2006	2000 - 2006	1990 - 2006	2010, 2015, 2020	1990 - 2006
Sweden	1980 - 2006	1990 - 2006	1990 - 2006	1980 - 2006	1980 - 2006	1980 - 2006	2010, 2015, 2020	
United Kingdom	1980 - 2006	1980 - 2006	1980 - 2006	1980 - 2006		1990 - 2006		2005
European Community	1990 - 2006			2000 - 2006				2000 (only table 3A, and SOx)
Albania								
Armenia								
Azerbaijan								
Belarus	2006	2006	2006	2006	2006	2006		
Bosnia & Herzegovina								
Canada	2006	2006		2006	2006	2006	2010, 2015, 2020	
Croatia	2006	2006	2006	2006	2006	2006		
Georgia	2000 - 2006				2000 - 2006	2000 - 2006		
Iceland						1990 - 2006		
Kazakhstan								
Kyrgyzstan								
Liechtenstein								
Monaco	2006	2006	2006		2006	2006	2010	
Montenegro								
Norway	1990 - 2006	1990 - 2005	1990 - 2005	1990 - 2006	1990 - 2006	1990 - 2006		
r. Moldova	2006	2006	2006	2006	2006	2006	2010, 2015, 2020	
Macdonia, FYROM	2006				2006			
Russian Federation								
Serbia	2006							
Switzerland	1990 - 2006; 2010, 2015 and 2020	1990 - 2006; 2010, 2015 and 2020		1990 - 2006; 2010, 2015 and 2020	1990 - 2006; 2010, 2015 and 2020	1990 - 2006; 2010, 2015 and 2020		2000, 2005
Turkey								
Ukraine	2006	2006	2006		2006			
United States of America	2002 - 2006	2002		2002 - 2006				

Emission trends 1990-2006

1. Tables 2 to 8 show trends of national total emissions of main pollutants (NO_x, CO, NMVOC, SO_x, NH₃) and PM (PM₁₀ and PM_{2.5}) as submitted by Parties to the EMEP/UNECE. The calculated emission changes between 1990-2006 and 2005-2006 show positive trends for almost all Parties – emission are decreasing. However even this simple tables indicate that some countries do not report consistent time series. Different shading of cells indicates that even if information on national total emissions was submitted by many Parties almost for entire time series (1990-2006), in many cases the format of data is not comparable. Serious problems arise during compilation of data sets for modellers, while many Parties to the Convention have submitted only national totals emissions particularly for years before 2000. Detailed sectoral NFR or SNAP emissions (as reported by Parties) can be downloaded from the CEIP webpage⁵.
2. Trend tables below show that up to now no emission inventories of main pollutants were provided to UNECE/EMEP by Albania, Iceland⁶ and Montenegro. Very limited information on emission was submitted by Bosnia & Herzegovina (1990) Azerbaijan (2001), Serbia (2005, 2006). On the other side number of Parties (Kazakhstan, Kyrgyzstan, Armenia, Turkey, Liechtenstein) used to submit data before year 2000, but information is missing for current years.

Legend to the tables:

NFR02
NFR01
SNAP

- As a basic data source for the trend tables are national total emissions reported by Parties in NFR02 format (white background color).
- If no NFR02 value is available in the EMEP/CEIP database the database is searched for NFR01 value (red background color).
- If there is neither NFR02 or NFR01 value reported to EMEP/UNECE than the SNAP national total emissions have been imported in the trend tables (blue background color).
- Empty cells indicate that no emissions or notation keys have been reported for the particular year/pollutant.

-20.6%

Minus values indicate that 2006 emissions decreased comparing to 1990 and/or 2005 emissions.

48 *The red numbers on the bottom of the table indicate how many Parties reported emissions for particular year*

⁵ <http://www.emep-emissions.at/emission-data-webdab/emission-as-reported-by-parties/>

⁶ Iceland is Party to Protocol on POPs and has submitted only POPs emissions.

Table 2 NOx Emission trends 1990-2006 (Gg)

	NOx (Gg)										Change	
	1990	1995	2000	2001	2002	2003	2004	2005	2006	1990-2006	2005-2006	
Albania												
Armenia	46	15	10	13	13	15						
Austria	192	181	205	215	225	236	233	237	225	17.0%	-5.0%	
Azerbaijan				43								
Belarus	285	195	135	135	137	140	148	159	174	-38.8%	9.9%	
Belgium	368	372	330	316	300	297	299	285	278	-24.5%	-2.5%	
Bosnia & Herzegovina												
Bulgaria	361	266	185	188	197	209	216	233	246	-31.9%	5.4%	
Canada	2390	2455	2463	2478	2473	2493	2491	2379	2312	-3.3%	-2.8%	
Croatia	86	60	72	71	70	71	69	77	79	-8.6%	3.2%	
Cyprus	15	17	22	21	22	21	18	17	18	21.1%	1.5%	
Czech Republic	544	368	321	332	318	324	328	278	282	-48.1%	1.6%	
Denmark	274	266	205	203	199	208	193	184	185	-32.4%	0.6%	
Estonia	74	38	35	37	40	39	37	32	30	-58.6%	-5.0%	
European Commission	17101	14576	12581	12286	12019	11955	11728	11406	11199	-34.5%	-1.8%	
Finland	300	259	210	220	208	219	205	177	193	-35.7%	8.7%	
France	1856	1696	1559	1516	1483	1450	1431	1413	1351	-27.2%	-4.3%	
Georgia	130	27	11	14	15	16	20	26	28	-78.7%	8.0%	
Germany	2862	2132	1815	1735	1640	1580	1532	1447	1394	-51.3%	-3.6%	
Greece	299	320	328	343	341	343	317	332	316	5.4%	-4.8%	
Hungary	238	190	185	185	185	180	185	203	208	-12.7%	2.3%	
Iceland	NR	NR	NR	NR	NR	NR	NR	NR	NR			
Ireland	124	125	136	138	128	123	123	124	119	-3.8%	-4.0%	
Italy	1941	1808	1373	1352	1258	1249	1180	1112	1061	-45.3%	-4.5%	
Kazakhstan	356	283	201									
Kyrgyzstan		3										
Latvia	67	40	37	38	38	39	40	40	44	-34.5%	8.8%	
Liechtenstein	0.5	0.4	0.4	0.3								
Lithuania	158	65	48	55	51	53	55	58	61	-61.2%	6.5%	
Luxembourg	23	21	17		18	17	15					
Malta			9	9	9	10	9	9	9			-4.3%
Monaco	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	-31.8%	-9.2%	
Montenegro												
Netherlands	536	440	377	367	360	358	338	325	311	-42.0%	-4.3%	
Norway	208	209	207	206	198	197	198	192	191	-8.2%	-0.5%	
Poland	1280	1120	838	805	796	808	804	811	890	-30.5%	9.7%	
Portugal	254	287	298	300	309	285	288	289	267	5.0%	-7.7%	
Republic of Moldova	131	38	27	23	25	30	38	31	25	-81.0%	-19.9%	
Romania	546	420	296	338	360	347	380	323	326	-40.2%	1.0%	
Russian Federation	3600	2570	2357		2566	2829	2822	2795				
Serbia								48	51			5.5%
Slovakia	222	178	109	109	101	98	98	98	87	-61.0%	-11.7%	
Slovenia	63	67	49	50	49	48	48	47	47	-25.6%	0.4%	
Spain	1246	1347	1462	1446	1496	1500	1529	1529	1481	18.8%	-3.1%	
Sweden	314	280	220	209	204	198	188	181	175	-44.3%	-3.3%	
Switzerland	157	120	101	98	93	90	88	85	82	-47.7%	-3.3%	
Turkey	644	800	951									
Macedonia, FYROM			30	32	37	50	34	34	30			-12.4%
Ukraine	1097	531	561	1091	588	523	510	513	488	-55.5%	-5.0%	
United Kingdom	2968	2390	1899	1828	1715	1721	1659	1620	1595	-46.3%	-1.5%	
United States	23161	22639	21547	20275	19173	18207	17331	16719	16015	-30.9%	-4.2%	
	42	43	44	41	41	41	40	40	39	36	39	

Table 3 CO Emission trends 1990-2006 (Gg)

	CO (Gg)									Change	
	1990	1995	2000	2001	2002	2003	2004	2005	2006	1990-2006	2005-2006
Albania											
Armenia	304	174	110	104	106	120					
Austria	1444	1267	959	930	899	900	857	823	785	-45.6%	-4.6%
Azerbaijan				293							
Belarus	1722	1253	718	711	712	733	749	532	592	-65.6%	11.4%
Belgium	1529	1114	1072	1009	985	953	898	839	838	-45.2%	-0.1%
Bosnia & Herzegovina											
Bulgaria	891	846	706	619	700	716	755	740	785	-11.9%	6.0%
Canada	15171	13658	11381	11060	10921	10728	10206	9372	9240	-39.1%	-1.4%
Croatia	503	338	381	326	309	325	311	347	374	-25.6%	8.0%
Cyprus	88	97	87	87	84	84	45	41	34	-61.7%	-18.2%
Czech Republic	1257	999	649	649	546	579	572	511	484	-61.5%	-5.3%
Denmark	761	702	543	559	543	563	559	592	591	-22.3%	-0.2%
Estonia	313	206	184	190	189	183	175	158	148	-52.7%	-6.3%
European Commission	64660	50791	39434	37891	35694	34005	34391	32240	30200	-53.3%	-6.3%
Finland	561	436	610	604	600	564	551	522	511	-8.9%	-2.1%
France	11054	9668	7131	6575	6320	6026	6183	5668	5179	-53.1%	-8.6%
Georgia	526	250	131	170	173	167	187	221	225	-57.3%	1.5%
Germany	12145	6671	5134	4907	4634	4484	4317	4201	4006	-67.0%	-4.6%
Greece	1281	1319	1294	1266	1243	1200	637	1075	956	-25.4%	-11.0%
Hungary	997	761	633	592	564	600	587	587	569	-42.9%	-3.1%
Iceland	NR	NR	NR	NR	NR	NR	NR	NR	NR		
Ireland	404	306	243	233	215	203	193	183	175	-56.8%	-4.9%
Italy	7123	7155	5123	5058	4446	4346	4182	3808	3576	-49.8%	-6.1%
Kazakhstan	1640	1422	1114								
Kyrgyzstan		8									
Latvia	382	314	302	308	305	316	322	328	330	-13.7%	0.7%
Liechtenstein	3	2	2	2							
Lithuania	519	286	282	229	224	225	184	190	200	-61.5%	5.0%
Luxembourg	175	107	49		49	48	41				
Malta			0.4	0.4	0.4	0.4	0.4	0.8	0.4		-46.2%
Monaco	3	3	2	2	2	2	1	1	1	-52.3%	3.3%
Montenegro											
Netherlands	1066	802	652	620	597	576	575	543	519	-51.3%	-4.4%
Norway	868	735	566	554	548	512	475	448	421	-51.5%	-6.0%
Poland	7406	4547	3463	3528	3410	2626	3426	3333	2800	-62.2%	-16.0%
Portugal	894	864	758	708	697	682	673	645	619	-30.7%	-3.9%
Republic of Moldova	494	192	84	88	107	139	147	140	137	-72.2%	-2.1%
Romania	3186	2440	1198	1133	1292	1066	1204	1496	1417	-55.5%	-5.3%
Russian Federation	13329	9945	10811		11517	11603	12132	12277			
Serbia								NE	NE		
Slovakia	512	420	313	315	292	308	310	299	290	-43.4%	-3.2%
Slovenia	81	91	162	154	141	135	121	117	109	34.9%	-6.5%
Spain	3883	3475	2998	2964	2739	2821	2717	2530	2433	-37.3%	-3.9%
Sweden	974	908	710	673	660	651	616	608	578	-40.6%	-5.0%
Switzerland	661	483	412	400	379	366	349	334	319	-51.8%	-4.5%
Turkey	3585	3987	3778								
Macedonia, FYROM			77	76	81	139	95	96	96		0.0%
Ukraine	8141	2906		3107	2780	2766	3057	2923	2553	-68.6%	-12.7%
United Kingdom	8235	6300	4230	3880	3338	2932	2689	2388	2268	-72.5%	-5.0%
United States	84544	83993	82939	103079	100750	88727	84832	80937	77042	-8.9%	-4.8%
	42	43	43	41	41	41	40	39	38	36	38

Table 4 NMVOC Emission trends 1990-2006 (Gg)

	NMVOC (Gg)										Change	
	1990	1995	2000	2001	2002	2003	2004	2005	2006	1990-2006	2005-2006	
Albania												
Armenia	81	23	16	28	14	28						
Austria	283	229	177	188	189	183	176	164	172	-39.4%	4.9%	
Azerbaijan				9								
Belarus	533	195	225	215	229	308	324	189	180	-66.3%	-4.6%	
Belgium	399	306	249	243	230	224	205	153	150	-62.4%	-2.2%	
Bosnia & Herzegovina												
Bulgaria	217	173	288	123	123	119	130	147	159	-26.6%	8.3%	
Canada	2808	2471	2443	2438	2420	2473	2472	2256	2313	-17.6%	2.5%	
Croatia	115	83	84	79	86	87	92	104	112	-2.3%	8.0%	
Cyprus	14	16	16	16	16	16	12	11	11	-23.9%	-7.0%	
Czech Republic	441	292	288	220	203	203	203	182	179	-59.5%	-1.8%	
Denmark	172	161	129	122	120	115	116	116	110	-36.1%	-4.9%	
Estonia	70	46	41	40	40	40	40	36	34	-51.3%	-6.3%	
European Commission	16868	13501	NE	10760	10520	10082	9948	9596	9391	-44.3%	-2.1%	
Finland	226	185	160	155	154	145	140	131	133	-41.3%	0.8%	
France	2744	2373	1935	1810	1662	1606	1505	1425	1336	-51.3%	-6.2%	
Georgia	46	2	54	63	63	86	96	120	120	159.2%	0.5%	
Germany	3768	2094	1613	1524	1451	1390	1402	1385	1349	-64.2%	-2.6%	
Greece	280	305	299	294	289	288	332	289	291	3.9%	1.0%	
Hungary	205	150	173	166	156	155	157	177	177	-13.8%	-0.5%	
Iceland	NR	NR	NR	NR	NR	NR	NR	NR	NR			
Ireland	108	104	81	78	71	67	63	62	60	-44.3%	-1.9%	
Italy	1979	2005	1496	1425	1330	1289	1259	1212	1174	-40.7%	-3.2%	
Kazakhstan	0.39	1.22	0.22									
Kyrgyzstan		3										
Latvia	94	59	56	55	57	59	60	63	65	-31.2%	3.6%	
Liechtenstein	1.0	0.7	0.5	0.6								
Lithuania	108	77	61	71	72	74	67	84	78	-27.8%	-7.3%	
Luxembourg	19	16	15		13	13	10					
Malta			3	8	6	6	4	4	4			-1.5%
Monaco	0.7	0.7	0.5	0.5	0.5	0.4	0.4	0.4	0.4	-43.4%	4.4%	
Montenegro												
Netherlands	450	315	220	199	190	175	168	169	164	-63.6%	-3.0%	
Norway	295	368	380	390	344	298	266	221	196	-33.6%	-11.4%	
Poland	831	769	599	576	898	892	888	885	916	10.3%	3.5%	
Portugal	294	297	284	285	287	287	289	287	284	-3.3%	-0.7%	
Republic of Moldova	124	62	21	25	28	29	33	38	37	-70.2%	-3.7%	
Romania	616	491	519	486	458	482	489	332	353	-42.6%	6.3%	
Russian Federation	3668	2857	2450		2777	2644	2527	2567				
Serbia								NE	NE			
Slovakia	137	105	78	84	82	87	88	83	78	-42.8%	-5.0%	
Slovenia	44	44	51	50	48	47	46	42	41	-6.2%	-2.7%	
Spain	1094	1030	1088	1061	1022	1039	1027	990	965	-11.9%	-2.6%	
Sweden	373	268	220	208	206	207	203	200	195	-47.7%	-2.4%	
Switzerland	286	192	140	133	124	116	107	104	101	-64.7%	-2.5%	
Turkey	463	677	726									
Macedonia, FYROM						NE	25	25	45			78.1%
Ukraine	1369	811		269	282	318	396	324	295	-78.4%	-8.9%	
United Kingdom	2388	1929	1338	1237	1157	1063	1002	961	910	-61.9%	-5.3%	
United States	18421	18824	16252	15408	19201	16836	16298	15759	15220	-17.4%	-3.4%	
	42	43	41	40	40	40	40	39	38	36	38	

Table 5 SOx Emission trends 1990-2006 (Gg)

	SOx (Gg)										Change	
	1990	1995	2000	2001	2002	2003	2004	2005	2006	1990-2006	2005-2006	
Albania												
Armenia	72	3	8	4	8	10						
Austria	74	47	32	33	32	32	27	27	28	-61.7%	6.8%	
Azerbaijan				15								
Belarus	637	275		151	143	131	95	77	91	-85.6%	18.8%	
Belgium	354	262	171	169	158	154	157	144	139	-60.8%	-3.4%	
Bosnia & Herzegovina	480											
Bulgaria	2008	1476	982	940	964	968	929	900	877	-56.3%	-2.6%	
Canada	3143	2446	2265	2312	2273	2228	2304	2066	2012	-36.0%	-2.6%	
Croatia	172	79	68	68	74	73	60	65	63	-63.5%	-2.7%	
Cyprus	37	44	52	50	51	45	45	42	36	-3.0%	-16.3%	
Czech Republic	1881	1089	265	251	237	232	227	219	211	-88.8%	-3.4%	
Denmark	178	137	29	27	25	32	25	22	25	-85.9%	14.9%	
Estonia	273	117	96	91	87	101	89	77	71	-74.0%	-8.1%	
European Commission	26217	16719	9928	9992	9460	8935	8382	8227	7946	-69.7%	-3.4%	
Finland	259	95	89	85	79	99	84	69	85	-67.1%	23.1%	
France	1332	970	615	561	516	509	504	486	452	-66.1%	-7.0%	
Georgia	248	20	4	5	5	4	6	10	14	-94.4%	42.2%	
Germany	5353	1724	637	641	601	605	582	574	558	-89.6%	-2.6%	
Greece	487	536	493	502	513	545	529	545	536	10.0%	-1.7%	
Hungary	1010	705	486	400	365	347	248	129	118	-88.3%	-8.5%	
Iceland	NR	NR	NR	NR	NR	NR	NR	NR	NR			
Ireland	183	160	137	129	99	78	72	71	60	-67.3%	-15.6%	
Italy	1794	1320	755	704	622	525	488	408	389	-78.3%	-4.7%	
Kazakhstan	1156	1083	948									
Kyrgyzstan		16										
Latvia	101	48	10	8	6	5	4	4	3	-96.8%	-9.9%	
Liechtenstein	0.1	0.1	0.1	0								
Lithuania	222	94	43	49	43	43	42	44	43	-80.7%	-2.0%	
Luxembourg	15	9	3		2	2	3					
Malta			24	26	25	27	12	12	12		0.9%	
Monaco	0.07	0.08	0.06	0.06	0.06	0.07	0.06	0.06	0.05	-34.0%	-12.6%	
Montenegro												
Netherlands	190	128	72	73	66	63	65	65	64	-66.4%	-2.4%	
Norway	52	34	27	25	23	23	25	24	21	-60.0%	-12.0%	
Poland	3210	2376	1511	1564	1455	1375	1241	1222	1195	-62.8%	-2.2%	
Portugal	320	334	307	296	296	202	214	214	191	-40.4%	-10.8%	
Republic of Moldova	175	64	13	12	15	21	15	13	16	-91.0%	23.8%	
Romania	1311	932	759	842	777	804	832	831	863	-34.2%	3.8%	
Russian Federation	4671	2969	1997		2130	2123	1971	1847				
Serbia								375	400		6.6%	
Slovakia	526	246	127	131	103	106	97	89	88	-83.3%	-1.4%	
Slovenia	196	125	99	69	71	66	54	41	18	-90.9%	-56.5%	
Spain	2169	1786	1458	1433	1536	1270	1312	1264	1170	-46.1%	-7.5%	
Sweden	108	71	46	44	45	45	41	40	39	-63.7%	-0.7%	
Switzerland	42	27	17	19	18	17	17	18	18	-58.2%	-2.8%	
Turkey	765	1007	1347									
Macedonia, FYROM			105	137	166	150	101	101	87		-13.8%	
Ukraine	2783	1639		1844	1329	1252	1048	1192	1446	-48.1%	21.2%	
United Kingdom	3717	2352	1198	1095	978	967	812	688	676	-81.8%	-1.8%	
United States	21478	17406	16483	14325	13403	13631	13233	13114	12258	-42.9%	-6.5%	
	43	43	42	41	41	41	40	40	39	36	39	

Table 6 NH3 Emission trends 1990-2006 (Gg)

	NH ₃ (Gg)										Change	
	1990	1995	2000	2001	2002	2003	2004	2005	2006	1990-2006	2005-2006	
Albania												
Armenia	25	0.0	0.0	0.0	12	15						
Austria	71	75	69	69	68	67	66	66	66	-7.4%	-0.2%	
Azerbaijan												
Belarus	215	154	142	137	128	120	121	135	134	-37.8%	-1.3%	
Belgium	109	103	87	84	82	79	76	74	73	-33.0%	-0.8%	
Bosnia & Herzegovina												
Bulgaria	144	99	56	56	56	52	54	57	55	-61.9%	-3.7%	
Canada	0	534	571	592	568	614	626	556	550		-1.0%	
Croatia	57	41	42	40	42	43	44	43	42	-26.6%	-3.4%	
Cyprus	5	5	5	6	6	6	6	5	5	16.6%	-0.2%	
Czech Republic	156	86	74	77	72	82	70	68	63	-59.6%	-7.8%	
Denmark	134	115	106	104	101	97	98	93	90	-33.0%	-3.8%	
Estonia	26	12	10	10	9	10	10	9	9	-64.1%	-0.2%	
European Commission	5118	4395	NE	NE	4118	4090	4068	4049	4001	-21.8%	-1.2%	
Finland	42	35	33	33	33	33	33	36	36	-13.9%	0.4%	
France	791	773	797	783	785	758	751	745	740	-6.4%	-0.7%	
Georgia			25	25	26	27	3	27	25		-7.9%	
Germany	738	631	627	639	627	632	625	620	621	-15.9%	0.2%	
Greece	79	85										
Hungary	124	77	71	66	65	67	74	80	81	-34.7%	1.1%	
Iceland	NR	NR	NR	NR	NR	NR	NR	NR	NR			
Ireland	110	115	121	115	113	112	111	110	110	0.2%	-0.4%	
Italy	464	447	441	444	434	429	423	411	408	-12.0%	-0.7%	
Kazakhstan	0.5	0.3	0.3									
Kyrgyzstan												
Latvia	47	15	12	14	13	14	14	14	15	-68.9%	1.1%	
Liechtenstein	0.2	0.4	0.2	0								
Lithuania	84	38	25	50	51	34	33	39	35	-58.4%	-11.3%	
Luxembourg	7	7	7		5	5	5					
Malta			1	1	1	1	1	1	1		-8.2%	
Monaco	0.001	0.003	0.006	0.006	0.006	0.006	0.006	0.006	0.005	529.7%	-5.6%	
Montenegro												
Netherlands	250	193	152	144	139	135	134	133	133	-46.8%	0.0%	
Norway	20	23	23	23	23	23	23	23	23	10.8%	-1.7%	
Poland	508	380	322	328	325	323	317	326	287	-43.6%	-12.2%	
Portugal	66	68	71	70	70	65	66	63	65	-2.2%	2.5%	
Republic of Moldova	63	33	25	26	27	28	26	27	27	-57.8%	-0.4%	
Romania	300	217	206	164	156	182	191	204	199	-33.6%	-2.4%	
Russian Federation	1191	824	650		600	600	608	531				
Serbia								NE	NE			
Slovakia	65	40	30	31	31	29	27	27	27	-59.0%	-1.0%	
Slovenia	24	22	20	20	20	19	17	18	19	-22.5%	2.6%	
Spain	342	340	411	413	409	424	425	406	424	24.2%	4.4%	
Sweden	54	62	56	53	52	53	53	53	52	-3.4%	-1.1%	
Switzerland	67	62	60	59	59	58	58	59	59	-12.3%	0.2%	
Turkey		0.01	0.01									
Macedonia, FYROM						NE	7	7	7		0.0%	
Ukraine	729	540	358	378	270	242	225	260	227	-68.8%	-12.8%	
United Kingdom	383	362	335	331	326	316	322	315	315	-17.7%	0.0%	
United States	3925	4225	4503	4532	3749	3625	3624	3623	3622	-7.7%	0.0%	
	40	41	41	37	39	39	39	38	37	33	37	

Table 7 PM10 Emission trends 2000-2006 (Gg)

	PM ₁₀ (Gg)							Change	
	2000	2001	2002	2003	2004	2005	2006	2000-2006	2005-2006
Albania									
Armenia									
Austria	44	44	44	44	44	43	43	-1.1%	1.0%
Azerbaijan									
Belarus			NE	NE	48	36	40		12.3%
Belgium	66	64	63	61	45	40	40	-39.7%	-0.4%
Bosnia & Herzegovina									
Bulgaria		NO	NO	NE	NE	NE	NE		
Canada	5083	5182	5156	5282	5369	5646	5828	14.7%	3.2%
Croatia	8	7	7	9	9	9	9	6.5%	-1.6%
Cyprus	1	1	1	1	1	1	1	30.8%	-1.9%
Czech Republic		43	0	51	47	34	35		1.5%
Denmark	36	36	35	36	36	39	38	8.3%	-1.4%
Estonia	37	37	33	30	30	26	20	-46.2%	-24.8%
European Commission	1736	1715	1637	1614	1622	1586	1555	-10.4%	-2.0%
Finland	47	54	55	55	57	51	55	16.5%	6.6%
France	588	562	532	533	527	502	488	-17.0%	-2.8%
Georgia									
Germany	215	211	205	200	201	197	194	-9.7%	-1.6%
Greece									
Hungary	47	43	0	48	47	52	48	2.1%	-6.9%
Iceland	NR	NR	NR	NR	NR	NR	NR		
Ireland	13	13	12	11	11	12	11	-11.6%	-5.7%
Italy	200	199	187	184	185	174	171	-14.3%	-1.5%
Kazakhstan									
Kyrgyzstan									
Latvia	13	14	14	14	15	15	15	18.7%	2.7%
Liechtenstein	0.1	0							
Lithuania		0.6	NE	NE	11	11	11		3.4%
Luxembourg									
Malta	2	1	1	2	2	2	1	-19.7%	-42.5%
Monaco		NE	NE	NE	NE	NE	NE		
Montenegro									
Netherlands	44	42	42	39	39	38	37	-15.8%	-1.6%
Norway	65	64	66	63	59	56	55	-15.8%	-3.3%
Poland	282	300	291	267	280	289	285	1.0%	-1.5%
Portugal	131	139	130	131	142	137	140	7.1%	1.8%
Republic of Moldova	5	3	5	6	11	8	8	83.0%	9.4%
Romania						47	46		-1.5%
Russian Federation			1	576	647	591			
Serbia						NE	NE		
Slovakia	40	41	36	33	36	45	40	-1.1%	-11.5%
Slovenia	8	8	8	8	8	8	8	-6.7%	-1.8%
Spain	173	174	179	178	180	178	176	1.6%	-1.4%
Sweden	48	49	49	49	49	50	48	-0.7%	-3.0%
Switzerland	20	19	19	19	19	19	19	-4.1%	-0.8%
Turkey									
Macedonia, FYROM				NE	NE	NE	NE		
Ukraine		NO	3		119	131	NE		
United Kingdom	184	177	155	154	153	150	152	-17.6%	1.2%
United States	20901	21266	19346	17495	16478	15461	14444	-30.9%	-6.6%
	29	31	31	30	33	34	32	28	32

Table 8 PM_{2.5} Emission trends (2000-2006)

	PM _{2.5} (Gg)							Change	
	2000	2001	2002	2003	2004	2005	2006	2000-2006	2005-2006
Albania									
Armenia									
Austria	24	24	24	24	23	23	23	-3.7%	-2.4%
Azerbaijan									
Belarus			NE	NE	36	25	28		11.5%
Belgium	35	32	32	30	31	28	28	-21.8%	-0.2%
Bosnia & Herzegovina									
Bulgaria		NO	NO	NE	NE	NE	NE		
Canada	1043	1064	1057	935	951	1096	1123	7.7%	2.5%
Croatia	7	6	6	7	7	9	9	38.4%	-1.0%
Cyprus	0	1	1	1	1	1	1	35.6%	1.7%
Czech Republic		0	NE	38	35	21	22		3.1%
Denmark	24	25	24	26	26	29	28	14.5%	-2.9%
Estonia	21	23	23	21	22	20	15	-27.8%	-23.4%
European Commission	1158	1135	1090	1078	1096	1073	1044	-9.8%	-2.7%
Finland	37	38	39	38	38	34	35	-4.8%	2.1%
France	400	378	352	353	347	328	316	-21.1%	-3.7%
Georgia									
Germany	126	125	120	117	117	115	112	-11.4%	-2.8%
Greece									
Hungary	26	24	0	27	27	31	29	13.9%	-5.5%
Iceland	NR	NR	NR	NR	NR	NR	NR		
Ireland	10	10	10	9	9	10	9	-11.6%	-5.4%
Italy	166	164	152	149	149	139	137	-17.6%	-1.6%
Kazakhstan									
Kyrgyzstan									
Latvia	11	12	12	13	13	13	13	17.8%	2.4%
Liechtenstein		NE							
Lithuania			NE	NE	9	9	9		2.1%
Luxembourg									
Malta	1	0	0	1	1	1	1	-48.0%	-64.6%
Monaco		NE	NE	NE	NE	NE	NE		
Montenegro									
Netherlands	26	24	23	23	21	21	20	-20.6%	-3.2%
Norway	59	58	60	56	53	50	48	-18.3%	-3.6%
Poland	135	142	142	142	134	138	136	0.4%	-1.4%
Portugal	106	109	102	104	114	109	111	4.6%	1.6%
Republic of Moldova	2	2	1	3	6	6	7	245.8%	17.4%
Romania						NE	NE		
Russian Federation			0	341	383	350			
Serbia						NE	NE		
Slovakia	26	26	27	25	28	36	33	25.9%	-9.3%
Slovenia	6	6	6	6	6	6	6	-11.8%	-5.2%
Spain	131	132	135	136	137	138	136	3.9%	-1.5%
Sweden	36	37	37	36	37	37	36	-1.7%	-4.1%
Switzerland	9	9	9	9	9	9	9	-7.3%	-1.7%
Turkey									
Macedonia, FYROM				NE	NE	NE	NE		
Ukraine		NO	0		15	125	NE		
United Kingdom	112	108	97	97	97	94	95	-14.5%	1.1%
United States	6061	6154	5059	4401	4374	4347	4321	-28.7%	-0.6%
	28	29	30	30	33	33	31	28	31