

Comparison of Convention data with ECLIPSEV data

v April 2016

Introduction

The following tables show a comparison of Convention data with ECLIPSE V data. The Convention data used for this comparison is the dataset “Emission used in EMEP models” that is available at the CEIP homepage¹. The data was downloaded in February 2016 and thus is based on data that has been submitted by Parties in 2015. An update of the tables for the planned Report with the key-findings (due in the year 2017) is planned. The ECLIPSE V data set can be downloaded from the IIASA homepage² and references for the dataset can also be found on the homepage³.

The dataset was released in April 2014 and in the meantime a new version of the dataset is available that could be used for the final comparison (ECLIPSEVa).

Reasons for differences at sectoral level are being/will be assessed with IIASA. It seems likely that in some cases different sector definitions are the reason for major differences at sectoral level. The comparison of total emissions is more robust but is also subject of consultation with IIASA at the moment. The following tables are thus preliminary results and should not further be distributed or used in any other publication before the final dataset is fully checked.

Comparison with other datasets is planned (e.g. from the Joint Research Centre of the European Commission) for the final report.

¹ <http://www.ceip.at/>

² http://www.iiasa.ac.at/web/home/research/researchPrograms/air/Global_emissions.html;

³ The most important references for this dataset are: Amann, M., Bertok, I., Borcken-Kleefeld, J., Cofala, J., Heyes, C., Höglund-Isaksson, L., Klimont, Z., Nguyen, B., Posch, M., Rafaj, P., Sander, R., Schöpp, W., Wagner, F., Winiwarter, W. (2011) Cost-effective control of air quality and greenhouse gases in Europe: modeling and policy applications. *Environmental Modelling and Software* 26, 1489–1501. doi:10.1016/j.envsoft.2011.07.012 and ECLIPSE (Evaluating the Climate and Air Quality Impacts of Short-Lived Pollutants) Project no. 282688. Further references and a list of bibliography can be found on the above indicated homepage.

Table 1: Comparison of Convention data (2015) with ECLIPSEV data– NO_x emissions

NO _x (kt)			Eclipse V	CEIP data	Diff 1990	Diff 1990 (%)	Eclipse V	CEIP data	Diff 1995	Diff 1995 (%)	Eclipse V	CEIP data	Diff 2000	Diff 2000 (%)	Eclipse V	CEIP data	Diff 2005	Diff 2005 (%)	Eclipse V	CEIP data	Diff 2010	Diff 2010 (%)
			1990				1995				2000				2005				2010			
EMEP West	1	S1	4 800	4 308	492	11%	3 726	3 543	183	5%	3 128	2 823	305	11%	3 021	2 709	311	11%	2 055	1 985	70	4%
EMEP West	2	S2	769	932	- 163	-17%	740	824	- 84	-10%	650	748	- 98	-13%	656	749	- 93	-12%	642	766	- 123	-16%
EMEP West	3	S3	2 254	1 969	285	14%	1 909	1 559	350	22%	1 426	1 290	135	10%	1 308	1 238	70	6%	964	963	1	0%
EMEP West	4	S4	498	410	89	22%	331	342	- 11	-3%	262	324	- 62	-19%	258	327	- 69	-21%	226	260	- 34	-13%
EMEP West	5	S5	0	21	- 21	-100%	0	14	- 14	-100%	0	8	- 8	-100%	0	7	- 7	-100%	0	7	- 7	-100%
EMEP West	6	S6	0	6	- 6	-100%	0	8	- 8	-100%	0	1	- 1	-100%	0	2	- 2	-100%	0	2	- 2	-100%
EMEP West	7	S7	8 099	7 524	576	8%	8 552	6 814	1 737	25%	6 396	5 858	537	9%	5 555	5 076	480	9%	4 338	3 965	373	9%
EMEP West	8	S8	2 266	2 275	- 9	0%	1 993	2 163	- 170	-8%	1 877	2 098	- 221	-11%	1 728	1 954	- 226	-12%	1 491	1 555	- 64	-4%
EMEP West	9	S9	14	38	- 25	-64%	13	31	- 18	-58%	12	23	- 12	-50%	10	21	- 11	-53%	9	19	- 11	-56%
EMEP West	10	S10	67	309	- 242	-78%	34	259	- 225	-87%	22	264	- 241	-92%	17	247	- 230	-93%	18	236	- 219	-92%
EMEP East	1	S1	4 882	3 625	1 258	35%	3 520	2 413	1 107	46%	3 082	2 060	1 022	50%	2 957	2 095	862	41%	2 542	1 462	1 080	74%
EMEP East	2	S2	481	423	58	14%	283	254	29	11%	231	223	7	3%	202	221	- 19	-9%	209	234	- 25	-10%
EMEP East	3	S3	1 052	786	266	34%	566	423	142	34%	451	373	78	21%	533	446	87	20%	683	510	172	34%
EMEP East	4	S4	267	152	116	76%	164	82	82	101%	175	81	94	115%	196	98	99	101%	222	112	110	99%
EMEP East	5	S5	0	72	- 72	-100%	0	53	- 53	-100%	0	56	- 56	-100%	0	58	- 58	-100%	0	59	- 59	-100%
EMEP East	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
EMEP East	7	S7	3 282	2 160	1 123	52%	1 827	1 135	692	61%	1 816	1 124	692	62%	1 750	1 153	597	52%	1 727	1 191	537	45%
EMEP East	8	S8	2 767	1 419	1 348	95%	1 785	856	930	109%	1 426	675	751	111%	1 593	890	702	79%	1 473	818	655	80%
EMEP East	9	S9	129	53	76	143%	68	27	41	154%	74	32	42	131%	107	55	52	94%	76	39	37	94%
EMEP East	10	S10	16	119	- 103	-87%	14	76	- 62	-82%	13	81	- 68	-84%	13	106	- 93	-87%	14	125	- 112	-89%
Turkey	1	S1	86	125	- 39	-31%	120	173	- 53	-30%	134	258	- 124	-48%	129	273	- 144	-53%	115	329	- 214	-65%
Turkey	2	S2	41	45	- 3	-8%	44	50	- 6	-13%	43	51	- 8	-15%	48	54	- 6	-11%	55	73	- 18	-24%
Turkey	3	S3	128	58	70	122%	145	65	80	123%	195	96	99	104%	196	104	93	90%	184	101	83	82%
Turkey	4	S4	74	2	71	3019%	77	12	65	568%	74	10	65	662%	77	7	70	1037%	79	8	71	877%
Turkey	5	S5	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	7	S7	318	317	1	0%	382	378	4	1%	339	401	- 63	-16%	287	399	- 112	-28%	319	375	- 56	-15%
Turkey	8	S8	90	15	75	500%	118	25	93	370%	137	23	113	487%	147	42	104	246%	186	58	128	221%
Turkey	9	S9	0	1	- 1	-79%	0	1	- 1	-84%	0	1	- 1	-81%	0	1	0	-57%	0	0	0	-40%
Turkey	10	S10	1	0	1	0%	1	0	1	0%	1	0	1	0%	1	0	1	0%	1	0	1	0%
Sum of parties	1	S1	9 768	8 058	1 710	21%	7 366	6 129	1 237	20%	6 345	5 141	1 204	23%	6 107	5 077	1 030	20%	4 713	3 777	936	25%
Sum of parties	2	S2	1 291	1 399	- 109	-8%	1 067	1 128	- 61	-5%	924	1 022	- 98	-10%	906	1 023	- 117	-11%	907	1 073	- 165	-15%
Sum of parties	3	S3	3 434	2 812	622	22%	2 619	2 047	573	28%	2 072	1 759	313	18%	2 038	1 787	251	14%	1 831	1 574	256	16%
Sum of parties	4	S4	840	564	276	49%	572	435	137	31%	511	415	96	23%	532	432	100	23%	527	380	147	39%
Sum of parties	5	S5	0	93	- 93	-100%	0	68	- 68	-100%	0	64	- 64	-100%	0	65	- 65	-100%	0	66	- 66	-100%
Sum of parties	6	S6	0	6	- 6	-100%	0	8	- 8	-100%	0	1	- 1	-100%	0	2	- 2	-100%	0	2	- 2	-100%
Sum of parties	7	S7	11 700	10 001	1 699	17%	10 761	8 328	2 433	29%	8 551	7 384	1 167	16%	7 592	6 628	965	15%	6 384	5 531	853	15%
Sum of parties	8	S8	5 123	3 708	1 415	38%	3 896	3 043	853	28%	3 440	2 796	643	23%	3 467	2 887	580	20%	3 149	2 431	719	30%
Sum of parties	9	S9	143	93	50	55%	81	59	22	37%	86	57	29	52%	117	77	40	52%	85	59	26	44%
Sum of parties	10	S10	84	428	- 344	-80%	49	335	- 286	-85%	36	345	- 308	-89%	32	353	- 322	-91%	33	362	- 329	-91%
EMEP West		Total	18 767	17 791	976	5%	17 298	15 557	1 741	11%	13 773	13 438	334	2%	12 554	12 331	223	2%	9 742	9 757	- 15	0%
EMEP East		Total	12 876	8 807	4 069	46%	8 227	5 319	2 907	55%	7 268	4 706	2 562	54%	7 351	5 121	2 230	44%	6 947	4 551	2 396	53%
Turkey		Total	739	564	175	31%	887	703	183	26%	924	840	84	10%	885	879	6	1%	940	945	- 5	-1%
Total		Total	32 382	27 162	5 220	19%	26 411	21 579	4 832	22%	21 964	18 985	2 980	16%	20 790	18 331	2 459	13%	17 629	15 253	2 375	16%

Table 2: Comparison of Convention data (2015) with ECLIPSEV data– SO_x emissions

SO _x (kt)			Eclipse V	CEIP data	Diff 1990	Diff 1990 (%)	Eclipse V	CEIP data	Diff 1995	Diff 1995 (%)	Eclipse V	CEIP data	Diff 2000	Diff 2000 (%)	Eclipse V	CEIP data	Diff 2005	Diff 2005 (%)	Eclipse V	CEIP data	Diff 2010	Diff 2010 (%)
			1990				1995				2000				2005				2010			
EMEP West	1	S1	19 415	16 822	2 593	15%	11 745	12 242	- 497	-4%	8 202	7 954	248	3%	6 175	5 985	190	3%	3 511	3 299	211	6%
EMEP West	2	S2	2 340	3 083	- 742	-24%	1 360	1 403	- 44	-3%	754	833	- 79	-9%	686	673	13	2%	672	594	79	13%
EMEP West	3	S3	2 824	4 706	- 1 882	-40%	2 277	2 498	- 220	-9%	1 520	1 531	- 11	-1%	1 152	1 064	88	8%	735	869	- 134	-15%
EMEP West	4	S4	1 132	1 022	110	11%	972	672	300	45%	859	568	291	51%	798	527	271	51%	682	406	276	68%
EMEP West	5	S5	0	62	- 62	-100%	0	34	- 34	-100%	0	46	- 46	-100%	0	47	- 47	-100%	0	60	- 60	-100%
EMEP West	6	S6	0	51	- 51	-100%	0	24	- 24	-100%	0	0	0	-100%	0	1	- 1	-100%	0	0	0	-100%
EMEP West	7	S7	551	811	- 260	-32%	441	486	- 45	-9%	171	150	21	14%	51	46	4	9%	10	32	- 21	-67%
EMEP West	8	S8	423	423	- 1	0%	292	317	- 24	-8%	243	261	- 18	-7%	217	209	8	4%	139	129	11	8%
EMEP West	9	S9	5	74	- 68	-93%	5	60	- 55	-91%	6	52	- 47	-89%	5	41	- 36	-88%	3	27	- 25	-90%
EMEP West	10	S10	28	8	20	262%	15	7	8	112%	10	7	3	49%	8	5	2	47%	8	7	1	23%
EMEP East	1	S1	10 239	8 610	1 629	19%	6 481	4 778	1 703	36%	4 962	3 585	1 377	38%	4 515	3 616	899	25%	3 875	3 718	156	4%
EMEP East	2	S2	2 008	1 449	559	39%	826	584	242	41%	530	343	187	55%	357	222	136	61%	418	228	189	83%
EMEP East	3	S3	2 614	1 597	1 017	64%	1 232	704	528	75%	661	446	216	48%	803	615	188	31%	1 308	637	671	105%
EMEP East	4	S4	3 628	648	2 979	460%	2 050	458	1 592	348%	2 486	523	1 964	376%	3 149	486	2 663	548%	2 576	540	2 036	377%
EMEP East	5	S5	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
EMEP East	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
EMEP East	7	S7	365	277	87	31%	145	110	35	32%	177	128	49	38%	156	136	20	14%	42	32	10	31%
EMEP East	8	S8	381	249	132	53%	206	129	76	59%	141	90	52	58%	118	97	21	22%	55	42	13	31%
EMEP East	9	S9	76	3	73	2889%	40	2	38	2111%	39	2	37	2210%	47	2	45	2233%	33	2	31	1542%
EMEP East	10	S10	12	16	- 4	-24%	11	13	- 1	-11%	11	13	- 2	-16%	11	15	- 4	-25%	11	16	- 5	-31%
Turkey	1	S1	812	748	64	9%	1 016	1 001	15	1%	897	1 363	- 466	-34%	647	1 218	- 571	-47%	598	1 376	- 778	-57%
Turkey	2	S2	149	417	- 268	-64%	138	376	- 239	-63%	87	291	- 204	-70%	83	310	- 227	-73%	215	550	- 335	-61%
Turkey	3	S3	400	517	- 117	-23%	419	423	- 3	-1%	658	579	80	14%	618	463	155	33%	340	617	- 277	-45%
Turkey	4	S4	164	4	160	4088%	177	4	173	4400%	111	5	106	1957%	79	3	77	2834%	69	3	66	1997%
Turkey	5	S5	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	7	S7	51	61	- 10	-16%	57	79	- 22	-27%	29	91	- 62	-68%	6	101	- 95	-94%	8	1	7	938%
Turkey	8	S8	18	4	14	374%	23	6	17	269%	13	6	8	133%	14	11	4	35%	20	14	6	43%
Turkey	9	S9	0	0	0	160%	0	0	0	122%	0	0	0	188%	0	0	0	508%	0	0	0	835%
Turkey	10	S10	1	0	1	100%	1	0	1	100%	1	0	1	100%	1	0	1	100%	1	0	1	100%
Sum of parties	1	S1	30 466	26 181	4 286	16%	19 242	18 021	1 221	7%	14 061	12 902	1 159	9%	11 337	10 819	518	5%	7 984	8 394	- 410	-5%
Sum of parties	2	S2	4 497	4 949	- 452	-9%	2 323	2 364	- 41	-2%	1 371	1 466	- 96	-7%	1 126	1 205	- 79	-7%	1 305	1 372	- 67	-5%
Sum of parties	3	S3	5 838	6 820	- 982	-14%	3 929	3 624	304	8%	2 840	2 556	284	11%	2 573	2 142	430	20%	2 383	2 122	260	12%
Sum of parties	4	S4	4 924	1 675	3 249	194%	3 199	1 134	2 065	182%	3 457	1 096	2 361	215%	4 027	1 016	3 011	296%	3 328	950	2 378	250%
Sum of parties	5	S5	0	62	- 62	-100%	0	34	- 34	-100%	0	46	- 46	-100%	0	47	- 47	-100%	0	60	- 60	-100%
Sum of parties	6	S6	0	51	- 51	-100%	0	24	- 24	-100%	0	0	0	-100%	0	1	- 1	-100%	0	0	0	-100%
Sum of parties	7	S7	967	1 149	- 182	-16%	643	676	- 32	-5%	377	369	8	2%	213	284	- 71	-25%	60	65	- 5	-7%
Sum of parties	8	S8	821	676	145	21%	521	453	68	15%	398	356	42	12%	350	317	33	10%	214	185	30	16%
Sum of parties	9	S9	81	76	5	7%	45	62	- 17	-27%	44	54	- 10	-18%	52	43	9	20%	36	29	7	23%
Sum of parties	10	S10	41	24	18	75%	28	20	8	39%	22	20	3	13%	20	20	0	0%	20	23	- 2	-10%
EMEP West		Total	26 719	27 062	- 343	-1%	17 108	17 743	- 635	-4%	11 765	11 402	363	3%	9 091	8 599	492	6%	5 761	5 423	338	6%
EMEP East		Total	19 322	12 849	6 473	50%	10 991	6 778	4 213	62%	9 008	5 129	3 879	76%	9 157	5 189	3 968	76%	8 318	5 216	3 102	59%
Turkey		Total	1 594	1 750	- 156	-9%	1 832	1 890	- 58	-3%	1 797	2 335	- 538	-23%	1 449	2 106	- 657	-31%	1 252	2 561	- 1 309	-51%
Total		Total	47 636	41 662	5 974	14%	29 931	26 412	3 519	13%	22 569	18 865	3 704	20%	19 697	15 895	3 803	24%	15 330	13 199	2 131	16%

Table 3: Comparison of Convention data (2015) with ECLIPSEV data– NMVOC emissions

NMVOC (kt)			Eclipse V	CEIP data	Diff 1990	Diff 1990 (%)	Eclipse V	CEIP data	Diff 1995	Diff 1995 (%)	Eclipse V	CEIP data	Diff 2000	Diff 2000 (%)	Eclipse V	CEIP data	Diff 2005	Diff 2005 (%)	Eclipse V	CEIP data	Diff 2010	Diff 2010 (%)
			1990				1995				2000				2005				2010			
EMEP West	1	S1	148	100	48	47%	139	101	38	38%	170	93	76	82%	182	95	87	91%	203	94	109	116%
EMEP West	2	S2	1 394	1 714	- 321	-19%	1 383	1 276	106	8%	1 236	1 105	130	12%	1 090	1 044	46	4%	1 188	1 092	96	9%
EMEP West	3	S3	74	107	- 33	-31%	69	97	- 28	-29%	57	84	- 27	-32%	56	93	- 36	-39%	59	82	- 23	-28%
EMEP West	4	S4	1 282	1 439	- 156	-11%	1 159	1 171	- 12	-1%	1 017	954	63	7%	985	858	127	15%	917	768	149	19%
EMEP West	5	S5	1 227	1 205	22	2%	1 142	1 086	56	5%	996	928	67	7%	660	622	38	6%	455	441	14	3%
EMEP West	6	S6	5 377	5 683	- 306	-5%	4 599	4 454	146	3%	4 209	4 169	40	1%	3 763	3 835	- 72	-2%	3 187	3 345	- 159	-5%
EMEP West	7	S7	8 415	6 391	2 024	32%	8 075	4 917	3 159	64%	4 149	3 301	848	26%	2 402	1 997	405	20%	1 312	1 197	115	10%
EMEP West	8	S8	1 037	763	274	36%	851	682	170	25%	792	606	186	31%	703	543	160	29%	575	420	155	37%
EMEP West	9	S9	222	133	89	67%	212	128	83	65%	196	114	81	71%	168	115	53	46%	156	103	53	51%
EMEP West	10	S10	431	864	- 433	-50%	252	692	- 440	-64%	179	646	- 467	-72%	141	604	- 464	-77%	141	611	- 469	-77%
EMEP East	1	S1	133	82	51	63%	94	52	42	81%	83	41	41	100%	83	41	42	102%	68	33	36	109%
EMEP East	2	S2	815	488	327	67%	435	276	159	57%	340	231	109	47%	207	156	50	32%	230	164	66	40%
EMEP East	3	S3	34	28	6	23%	20	16	4	24%	13	10	2	21%	14	15	0	-2%	17	16	1	8%
EMEP East	4	S4	676	627	49	8%	474	445	29	7%	444	420	25	6%	478	440	38	9%	520	458	63	14%
EMEP East	5	S5	1 647	856	791	92%	967	570	396	70%	973	617	357	58%	1 278	770	508	66%	1 469	962	507	53%
EMEP East	6	S6	1 408	1 086	322	30%	1 087	919	168	18%	1 101	929	171	18%	1 190	970	220	23%	1 220	959	261	27%
EMEP East	7	S7	3 510	2 726	784	29%	2 406	1 785	622	35%	2 118	1 578	540	34%	2 037	1 350	687	51%	1 745	1 181	564	48%
EMEP East	8	S8	1 158	561	597	106%	507	171	336	196%	413	132	281	213%	358	286	72	25%	324	151	174	115%
EMEP East	9	S9	616	284	332	117%	345	168	177	106%	372	195	177	91%	519	303	216	72%	386	232	154	66%
EMEP East	10	S10	379	425	- 46	-11%	366	370	- 3	-1%	361	372	- 11	-3%	363	401	- 38	-9%	364	423	- 60	-14%
Turkey	1	S1	4	1	3	238%	5	1	4	317%	5	2	3	155%	4	2	2	98%	4	3	2	57%
Turkey	2	S2	341	259	83	32%	318	258	60	23%	264	229	35	15%	218	203	15	7%	200	257	- 57	-22%
Turkey	3	S3	3	22	- 18	-85%	3	22	- 19	-86%	5	40	- 35	-87%	5	40	- 36	-88%	4	39	- 35	-89%
Turkey	4	S4	40	71	- 32	-44%	45	79	- 34	-43%	44	92	- 48	-52%	50	87	- 37	-43%	55	95	- 40	-42%
Turkey	5	S5	22	0	22		29	0	29		24	0	24		17	0	17		15	0	15	
Turkey	6	S6	138	181	- 43	-24%	159	198	- 40	-20%	167	226	- 59	-26%	150	232	- 82	-35%	146	238	- 92	-38%
Turkey	7	S7	306	65	241	369%	415	91	325	358%	305	107	197	184%	168	95	74	78%	127	90	37	41%
Turkey	8	S8	25	1	23	1913%	32	2	30	1303%	43	2	40	1721%	41	3	38	1085%	38	5	33	621%
Turkey	9	S9	15	5	10	210%	16	32	- 16	-50%	16	38	- 22	-57%	17	39	- 21	-55%	18	39	- 21	-54%
Turkey	10	S10	42	231	- 189	-82%	47	226	- 180	-79%	47	219	- 172	-79%	46	217	- 171	-79%	46	211	- 165	-78%
Sum of parties	1	S1	285	183	102	55%	239	154	84	55%	257	137	121	88%	270	139	131	94%	276	130	146	113%
Sum of parties	2	S2	2 550	2 461	89	4%	2 136	1 811	325	18%	1 840	1 566	274	18%	1 515	1 403	112	8%	1 618	1 513	106	7%
Sum of parties	3	S3	111	156	- 45	-29%	91	135	- 44	-32%	75	135	- 60	-44%	75	148	- 72	-49%	81	137	- 56	-41%
Sum of parties	4	S4	1 998	2 137	- 139	-7%	1 678	1 694	- 17	-1%	1 505	1 466	39	3%	1 513	1 385	128	9%	1 493	1 321	172	13%
Sum of parties	5	S5	2 896	2 060	836	41%	2 138	1 656	482	29%	1 994	1 545	449	29%	1 956	1 392	563	40%	1 939	1 403	536	38%
Sum of parties	6	S6	6 924	6 950	- 27	0%	5 845	5 571	274	5%	5 476	5 324	152	3%	5 103	5 037	66	1%	4 553	4 542	11	0%
Sum of parties	7	S7	12 231	9 182	3 050	33%	10 897	6 792	4 105	60%	6 572	4 987	1 585	32%	4 608	3 442	1 166	34%	3 184	2 468	716	29%
Sum of parties	8	S8	2 219	1 326	894	67%	1 391	855	536	63%	1 248	741	507	69%	1 102	832	270	32%	937	576	361	63%
Sum of parties	9	S9	853	421	431	102%	572	328	245	75%	584	348	237	68%	704	456	248	54%	560	374	185	49%
Sum of parties	10	S10	852	1 520	- 668	-44%	666	1 288	- 622	-48%	587	1 237	- 649	-53%	550	1 223	- 673	-55%	551	1 245	- 694	-56%
EMEP West		Total	19 606	18 398	1 208	7%	17 882	14 603	3 278	22%	13 000	12 003	997	8%	10 150	9 807	343	3%	8 193	8 154	40	0%
EMEP East		Total	10 377	7 162	3 215	45%	6 702	4 771	1 930	40%	6 218	4 526	1 692	37%	6 528	4 732	1 797	38%	6 344	4 579	1 765	39%
Turkey		Total	936	836	100	12%	1 069	910	159	18%	920	955	- 35	-4%	718	919	- 201	-22%	654	977	- 323	-33%
Total		Total	30 919	26 396	4 523	17%	25 652	20 284	5 368	26%	20 138	17 483	2 655	15%	17 396	15 458	1 939	13%	15 191	13 710	1 482	11%

Table 4: Comparison of Convention data (2015) with ECLIPSEV data– NH₃ emissions

NH ₃ (kt)			Eclipse V	CEIP data	Diff 1990	Diff 1990 (%)	Eclipse V	CEIP data	Diff 1995	Diff 1995 (%)	Eclipse V	CEIP data	Diff 2000	Diff 2000 (%)	Eclipse V	CEIP data	Diff 2005	Diff 2005 (%)	Eclipse V	CEIP data	Diff 2010	Diff 2010 (%)
			1990				1995				2000				2005				2010			
EMEP West	1	S1	5	5	0	-4%	6	6	0	2%	10	5	4	88%	14	6	8	127%	22	7	15	231%
EMEP West	2	S2	29	25	4	16%	25	22	2	9%	19	22	-3	-14%	20	21	-1	-5%	23	24	-1	-3%
EMEP West	3	S3	4	7	-3	-41%	4	6	-2	-35%	4	5	-2	-31%	4	9	-5	-56%	5	7	-2	-29%
EMEP West	4	S4	91	94	-2	-3%	80	75	5	6%	75	65	10	15%	80	72	8	11%	75	61	14	23%
EMEP West	5	S5	0	37	-37	-100%	0	35	-35	-100%	0	38	-38	-100%	0	39	-39	-100%	0	39	-39	-100%
EMEP West	6	S6	0	7	-7	-100%	0	7	-7	-100%	0	8	-8	-100%	0	8	-8	-100%	0	7	-7	-100%
EMEP West	7	S7	11	12	-1	-6%	15	54	-39	-72%	159	127	33	26%	133	111	22	20%	92	78	14	18%
EMEP West	8	S8	1	1	0	6%	1	1	0	-5%	1	1	0	14%	2	1	1	205%	2	1	1	178%
EMEP West	9	S9	189	54	134	246%	186	52	134	261%	177	50	127	253%	174	69	105	153%	181	75	106	141%
EMEP West	10	S10	4 727	5 045	-318	-6%	4 059	4 270	-211	-5%	3 970	4 150	-180	-4%	3 787	3 923	-136	-3%	3 545	3 794	-249	-7%
EMEP East	1	S1	6	5	1	27%	4	3	1	29%	3	2	1	27%	3	2	1	31%	2	2	1	41%
EMEP East	2	S2	22	13	9	64%	9	6	3	55%	7	4	3	62%	5	3	2	69%	5	4	2	52%
EMEP East	3	S3	1	1	0	28%	1	1	0	20%	1	0	0	33%	1	0	0	27%	1	1	0	27%
EMEP East	4	S4	12	16	-4	-24%	7	9	-2	-26%	25	27	-3	-10%	30	30	0	0%	29	32	-3	-9%
EMEP East	5	S5	0	32	-32	-100%	0	31	-31	-100%	0	31	-31	-100%	0	31	-31	-100%	0	31	-31	-100%
EMEP East	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
EMEP East	7	S7	3	2	0	7%	2	2	0	9%	3	2	0	21%	15	9	6	63%	28	17	11	68%
EMEP East	8	S8	2	1	1	49%	1	1	0	50%	1	1	0	50%	1	1	0	34%	1	1	0	31%
EMEP East	9	S9	40	4	37	1036%	39	3	37	1291%	39	3	36	1252%	39	3	36	1082%	40	4	36	973%
EMEP East	10	S10	2 766	2 704	62	2%	2 014	1 826	188	10%	1 474	1 346	128	10%	1 461	1 354	107	8%	1 339	1 514	-174	-12%
Turkey	1	S1	0	0	0	-67%	0	0	0	-2%	0	0	0	-35%	0	0	0	-58%	0	0	0	68%
Turkey	2	S2	4	1	3	306%	3	1	2	265%	3	1	2	268%	3	1	2	311%	4	1	3	550%
Turkey	3	S3	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	4	S4	3	4	0	-12%	3	5	-2	-39%	1	1	0	25%	2	5	-4	-68%	2	10	-8	-78%
Turkey	5	S5	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	7	S7	0	0	0	100%	0	0	0	109%	2	0	2	1073%	2	1	1	159%	2	1	1	56%
Turkey	8	S8	0	0	0	#####	0	0	0	99210%	0	0	0	#####	0	1	-1	-97%	0	3	-3	-98%
Turkey	9	S9	8	3	5	173%	10	3	8	303%	9	2	7	271%	10	2	8	344%	10	2	9	478%
Turkey	10	S10	379	502	-123	-25%	392	464	-72	-15%	408	478	-70	-15%	400	487	-87	-18%	472	471	1	0%
Sum of parties	1	S1	11	10	1	9%	10	9	1	11%	13	8	5	67%	17	9	8	100%	25	9	16	190%
Sum of parties	2	S2	55	40	15	38%	37	29	8	26%	29	27	2	7%	28	25	3	12%	33	28	4	16%
Sum of parties	3	S3	6	8	-2	-30%	5	7	-2	-28%	4	6	-1	-23%	4	9	-5	-51%	6	7	-2	-24%
Sum of parties	4	S4	107	113	-7	-6%	90	90	0	1%	101	94	7	8%	112	108	4	4%	107	103	3	3%
Sum of parties	5	S5	0	69	-69	-100%	0	66	-66	-100%	0	69	-69	-100%	0	70	-70	-100%	0	70	-70	-100%
Sum of parties	6	S6	0	7	-7	-100%	0	7	-7	-100%	0	8	-8	-100%	0	8	-8	-100%	0	7	-7	-100%
Sum of parties	7	S7	14	15	0	-3%	17	55	-39	-70%	164	129	35	27%	150	122	29	24%	122	96	26	27%
Sum of parties	8	S8	2	2	1	32%	2	1	0	28%	2	1	0	37%	3	3	0	11%	3	4	-1	-30%
Sum of parties	9	S9	236	61	176	289%	236	57	179	314%	225	55	170	306%	223	74	149	200%	231	81	151	187%
Sum of parties	10	S10	7 872	8 252	-380	-5%	6 465	6 560	-95	-1%	5 852	5 973	-122	-2%	5 648	5 764	-116	-2%	5 356	5 778	-422	-7%
EMEP West		Total	5 057	5 288	-231	-4%	4 374	4 528	-153	-3%	4 413	4 470	-56	-1%	4 214	4 258	-45	-1%	3 945	4 093	-147	-4%
EMEP East		Total	2 852	2 778	74	3%	2 077	1 881	195	10%	1 552	1 417	135	10%	1 556	1 435	121	8%	1 447	1 604	-158	-10%
Turkey		Total	394	510	-116	-23%	409	472	-63	-13%	424	482	-58	-12%	416	497	-81	-16%	490	487	3	1%
Total		Total	8 303	8 575	-273	-3%	6 860	6 881	-21	0%	6 389	6 369	20	0%	6 186	6 190	-5	0%	5 882	6 184	-302	-5%

Table 5: Comparison of Convention data (2015) with ECLIPSEV data– CO emissions

CO (kt)			Eclipse V	CEIP data	Diff 1990	Diff 1990 (%)	Eclipse V	CEIP data	Diff 1995	Diff 1995 (%)	Eclipse V	CEIP data	Diff 2000	Diff 2000 (%)	Eclipse V	CEIP data	Diff 2005	Diff 2005 (%)	Eclipse V	CEIP data	Diff 2010	Diff 2010 (%)	
			1990				1995				2000				2005				2010				
EMEP West	1	S1	455	778	- 322	-41%	428	675	- 247	-37%	1 508	605	903	149%	1 318	631	687	109%	2 354	663	1 692	255%	
EMEP West	2	S2	8 924	14 540	- 5 615	-39%	7 948	10 185	- 2 237	-22%	6 675	8 719	- 2 044	-23%	6 263	8 380	- 2 116	-25%	7 218	9 439	- 2 221	-24%	
EMEP West	3	S3	2 402	4 304	- 1 902	-44%	2 145	3 618	- 1 473	-41%	1 766	3 146	- 1 380	-44%	1 638	3 043	- 1 406	-46%	1 361	2 404	- 1 044	-43%	
EMEP West	4	S4	3 531	3 958	- 427	-11%	3 029	3 962	- 933	-24%	6 235	4 263	1 972	46%	6 811	3 623	3 188	88%	7 057	3 183	3 874	122%	
EMEP West	5	S5	0	111	- 111	-100%	0	91	- 91	-100%	0	96	- 96	-100%	0	73	- 73	-100%	0	69	- 69	-100%	
EMEP West	6	S6	0	53	- 53	-100%	0	61	- 61	-100%	0	77	- 77	-100%	0	69	- 69	-100%	0	51	- 51	-100%	
EMEP West	7	S7	35 751	37 906	- 2 155	-6%	34 786	29 136	5 650	19%	22 111	19 926	2 184	11%	14 519	12 502	2 016	16%	8 275	7 501	775	10%	
EMEP West	8	S8	3 611	3 208	403	13%	2 722	2 756	- 34	-1%	2 868	2 564	304	12%	2 928	2 512	417	17%	2 259	2 249	9	0%	
EMEP West	9	S9	393	177	215	121%	391	167	224	134%	391	154	237	154%	387	159	228	143%	388	153	235	154%	
EMEP West	10	S10	3 059	1 247	1 812	145%	1 758	936	822	88%	1 256	864	392	45%	993	702	291	41%	998	792	206	26%	
EMEP East	1	S1	519	396	123	31%	380	273	107	39%	360	257	103	40%	440	263	177	67%	424	208	215	103%	
EMEP East	2	S2	5 765	4 812	953	20%	3 264	2 757	507	18%	2 696	2 333	363	16%	1 348	1 904	- 556	-29%	1 417	2 066	- 649	-31%	
EMEP East	3	S3	2 427	2 154	273	13%	1 203	1 119	84	7%	1 436	1 358	78	6%	1 690	1 630	60	4%	1 922	1 824	98	5%	
EMEP East	4	S4	3 823	1 847	1 976	107%	2 391	1 027	1 364	133%	2 689	1 322	1 368	103%	2 975	1 376	1 598	116%	3 600	1 716	1 884	110%	
EMEP East	5	S5	0	40	- 40	-100%	0	24	- 24	-100%	0	26	- 26	-100%	0	36	- 36	-100%	0	43	- 43	-100%	
EMEP East	6	S6	0	89	- 89	-100%	0	88	- 88	-100%	0	86	- 86	-100%	0	84	- 84	-100%	0	83	- 83	-100%	
EMEP East	7	S7	21 233	13 999	7 234	52%	14 366	8 871	5 495	62%	13 240	8 188	5 052	62%	12 907	7 479	5 427	73%	11 895	6 966	4 929	71%	
EMEP East	8	S8	7 917	5 644	2 272	40%	1 770	1 016	754	74%	1 672	994	678	68%	1 778	1 356	422	31%	2 000	1 116	884	79%	
EMEP East	9	S9	993	438	555	127%	615	255	361	142%	650	286	364	127%	853	437	416	95%	677	359	317	88%	
EMEP East	10	S10	2 599	4 422	- 1 823	-41%	2 512	3 449	- 937	-27%	2 476	3 555	- 1 080	-30%	2 489	4 126	- 1 637	-40%	2 493	4 549	- 2 056	-45%	
Turkey	1	S1	7	103	- 96	-93%	11	110	- 99	-90%	13	137	- 124	-90%	18	152	- 134	-88%	24	191	- 167	-87%	
Turkey	2	S2	1 312	1 675	- 363	-22%	1 181	1 642	- 461	-28%	1 039	1 418	- 379	-27%	975	1 306	- 332	-25%	1 492	1 923	- 431	-22%	
Turkey	3	S3	118	215	- 97	-45%	127	220	- 93	-42%	147	407	- 260	-64%	148	413	- 265	-64%	136	406	- 270	-67%	
Turkey	4	S4	98	9	89	1039%	109	9	100	1144%	108	9	100	1166%	111	8	102	1261%	106	8	98	1279%	
Turkey	5	S5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Turkey	6	S6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Turkey	7	S7	1 395	1 197	198	17%	1 868	1 664	204	12%	1 388	1 550	- 161	-10%	791	1 208	- 417	-35%	624	848	- 224	-26%	
Turkey	8	S8	43	5	38	836%	55	5	50	928%	391	5	386	7465%	365	8	358	4601%	98	12	87	749%	
Turkey	9	S9	42	16	26	158%	47	23	25	109%	53	20	33	166%	59	10	50	510%	65	7	57	764%	
Turkey	10	S10	289	455	- 166	-37%	320	423	- 103	-24%	320	484	- 164	-34%	318	454	- 136	-30%	314	454	- 140	-31%	
Sum of parties	1	S1	981	1 277	- 296	-23%	818	1 057	- 239	-23%	1 882	999	883	88%	1 776	1 046	730	70%	2 802	1 062	1 740	164%	
Sum of parties	2	S2	16 001	21 027	- 5 025	-24%	12 393	14 584	- 2 191	-15%	10 410	12 471	- 2 061	-17%	8 586	11 590	- 3 004	-26%	10 127	13 428	- 3 301	-25%	
Sum of parties	3	S3	4 947	6 673	- 1 726	-26%	3 475	4 958	- 1 482	-30%	3 349	4 911	- 1 562	-32%	3 476	5 086	- 1 611	-32%	3 419	4 634	- 1 216	-26%	
Sum of parties	4	S4	7 452	5 813	1 638	28%	5 529	4 998	531	11%	9 033	5 593	3 439	61%	9 896	5 008	4 889	98%	10 763	4 906	5 857	119%	
Sum of parties	5	S5	0	151	- 151	-100%	0	116	- 116	-100%	0	122	- 122	-100%	0	109	- 109	-100%	0	111	- 111	-100%	
Sum of parties	6	S6	0	142	- 142	-100%	0	149	- 149	-100%	0	163	- 163	-100%	0	153	- 153	-100%	0	134	- 134	-100%	
Sum of parties	7	S7	58 379	53 102	5 277	10%	51 020	39 671	11 349	29%	36 738	29 664	7 075	24%	28 216	21 189	7 026	33%	20 793	15 314	5 479	36%	
Sum of parties	8	S8	11 571	8 857	2 714	31%	4 548	3 778	770	20%	4 931	3 563	1 368	38%	5 071	3 875	1 196	31%	4 357	3 377	980	29%	
Sum of parties	9	S9	1 428	632	796	126%	1 053	444	609	137%	1 094	460	634	138%	1 299	606	693	114%	1 129	519	610	117%	
Sum of parties	10	S10	5 947	6 124	- 177	-3%	4 590	4 808	- 218	-5%	4 052	4 903	- 851	-17%	3 800	5 283	- 1 482	-28%	3 805	5 795	- 1 990	-34%	
EMEP West		Total	58 126	66 282	- 8 155	-12%	53 207	51 587	1 621	3%	42 810	40 415	2 396	6%	34 857	31 694	3 163	10%	29 910	26 503	3 407	13%	
EMEP East		Total	45 275	33 842	11 433	34%	26 502	18 880	7 622	40%	25 218	18 405	6 813	37%	24 479	18 692	5 787	31%	24 427	18 930	5 497	29%	
Turkey		Total	3 305	3 675	- 370	-10%	3 718	4 096	- 378	-9%	3 460	4 030	- 570	-14%	2 785	3 559	- 774	-22%	2 858	3 848	- 990	-26%	
Total		Total	106 706	103 799	2 907	3%	83 427	74 562	8 865	12%	71 488	62 849	8 639	14%	62 121	53 945	8 175	15%	57 196	49 282	7 914	16%	

Table 6: Comparison of Convention data (2015) with ECLIPSEV data – PM_{2.5} emissions

PM _{2.5} (kt)			Eclipse V	CEIP data	Diff 2000	Diff 2000 (%)	Eclipse V	CEIP data	Diff 2005	Diff 2005 (%)	Eclipse V	CEIP data	Diff 2010	Diff 2010 (%)
			2000				2005				2010			
EMEP West	1	S1	228	206	23	11%	171	141	30	21%	130	93	37	40%
EMEP West	2	S2	695	680	15	2%	666	707	- 41	-6%	779	769	10	1%
EMEP West	3	S3	137	116	21	18%	94	106	- 12	-11%	83	86	- 3	-3%
EMEP West	4	S4	333	195	138	71%	242	141	101	72%	219	112	107	95%
EMEP West	5	S5	9	24	- 15	-62%	10	18	- 8	-45%	9	15	- 7	-44%
EMEP West	6	S6	0	46	- 46	-100%	0	42	- 42	-100%	0	42	- 42	-100%
EMEP West	7	S7	343	312	30	10%	317	271	45	17%	252	223	29	13%
EMEP West	8	S8	160	174	- 14	-8%	136	146	- 10	-7%	110	102	8	8%
EMEP West	9	S9	95	29	66	232%	95	28	67	240%	96	22	74	342%
EMEP West	10	S10	197	107	91	85%	170	74	96	129%	170	73	97	133%
EMEP East	1	S1	295	193	102	53%	270	229	41	18%	227	244	- 18	-7%
EMEP East	2	S2	346	295	52	17%	245	258	- 14	-5%	256	265	- 9	-4%
EMEP East	3	S3	97	86	11	12%	124	112	12	11%	137	132	6	4%
EMEP East	4	S4	686	519	168	32%	721	545	177	32%	748	579	169	29%
EMEP East	5	S5	7	4	4	104%	7	3	4	105%	7	4	3	88%
EMEP East	6	S6	0	25	- 25	-100%	0	25	- 25	-100%	0	24	- 24	-100%
EMEP East	7	S7	99	40	59	147%	102	48	54	112%	110	53	57	107%
EMEP East	8	S8	114	60	54	91%	121	77	44	57%	108	71	38	53%
EMEP East	9	S9	147	56	90	161%	190	86	103	119%	152	69	83	121%
EMEP East	10	S10	314	257	57	22%	316	260	55	21%	316	263	53	20%
Turkey	1	S1	35	74	- 39	-52%	28	79	- 51	-65%	41	121	- 80	-66%
Turkey	2	S2	149	123	27	22%	135	111	24	22%	186	147	39	27%
Turkey	3	S3	55	69	- 14	-20%	48	77	- 29	-37%	55	79	- 24	-30%
Turkey	4	S4	68	94	- 27	-28%	63	89	- 26	-29%	55	110	- 55	-50%
Turkey	5	S5	2	0	1	272%	1	0	1	223%	2	0	1	237%
Turkey	6	S6	0	0	0	0%	0	0	0	0%	0	0	0	0%
Turkey	7	S7	14	30	- 16	-53%	13	32	- 19	-60%	13	31	- 18	-59%
Turkey	8	S8	13	7	6	85%	14	15	- 1	-6%	18	20	- 1	-8%
Turkey	9	S9	14	68	- 54	-80%	15	34	- 19	-55%	16	26	- 10	-37%
Turkey	10	S10	38	6	32	528%	39	6	33	563%	39	7	32	440%
Sum of parties	1	S1	558	472	86	18%	468	448	20	4%	397	458	- 60	-13%
Sum of parties	2	S2	1 190	1 097	93	8%	1 046	1 076	- 30	-3%	1 222	1 182	40	3%
Sum of parties	3	S3	289	271	18	6%	267	296	- 29	-10%	275	296	- 21	-7%
Sum of parties	4	S4	1 087	808	279	35%	1 026	775	252	33%	1 023	801	222	28%
Sum of parties	5	S5	18	28	- 10	-36%	18	22	- 4	-17%	17	19	- 2	-12%
Sum of parties	6	S6	0	72	- 72	-100%	0	67	- 67	-100%	0	66	- 66	-100%
Sum of parties	7	S7	456	383	73	19%	431	352	80	23%	375	307	68	22%
Sum of parties	8	S8	288	241	47	19%	271	238	33	14%	236	192	44	23%
Sum of parties	9	S9	255	152	103	67%	300	148	152	103%	264	116	148	127%
Sum of parties	10	S10	550	370	180	49%	524	340	184	54%	524	343	181	53%
EMEP West		Total	2 198	1 889	308	16%	1 900	1 674	226	13%	1 847	1 537	310	20%
EMEP East		Total	2 105	1 534	571	37%	2 095	1 644	451	27%	2 062	1 704	358	21%
Turkey		Total	388	471	- 83	-18%	356	443	- 87	-20%	425	541	- 116	-21%
Total		Total	4 691	3 894	797	20%	4 351	3 761	590	16%	4 334	3 782	552	15%