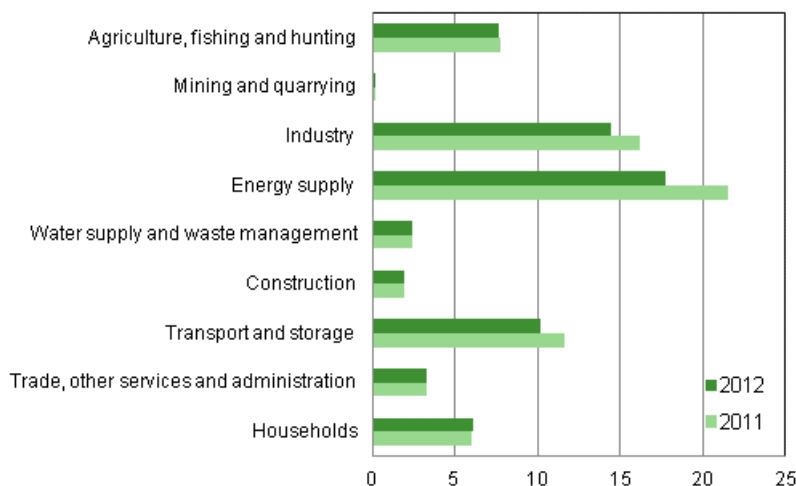


Emissions into air by industry 2012

Greenhouse gas emissions decreased in manufacturing and energy supply in 2012

The fallen industrial production and the lower use of fossil fuels and peat decreased greenhouse gas emissions in Finland in 2012. Besides imported electricity, the use of oil, coal, natural gas and peat was replaced by wood fuels, whose carbon dioxide emissions are not counted in greenhouse gas emissions. In contrast, households' greenhouse gas emissions grew slightly. These data derive from Statistics Finland's statistics on emissions into air by industry, where emissions are calculated according to the industrial classification used in national accounts.

Greenhouse gas emissions by industry 2011 and 2012, million tonnes CO2 equivalent



Carbon dioxide emissions originating from biofuels grew in almost all industry groups as the use of wood fuels and liquid biofuels increased. Greenhouse gas emissions in transportation and storage went down by nearly 13 per cent mainly as transports decreased, but the increase in liquid biofuels also contributed to this.

In addition to greenhouse gas emissions, the division of air emissions by industry is included in the statistics on many different emission types. In 2012, 39 per cent of nitrogen dioxide was produced by the transportation and storage industry, 17 per cent by energy supply and 16 per cent by manufacturing. Over

50 per cent of carbon monoxide emissions originated from households. Energy supply and manufacturing both produced good 30 per cent of sulphur dioxide emissions, and transportation and storage slightly under 30 per cent.

Emissions into air by industry groups 2012, tonnes

	Greenhouse gases (CO ₂ -foss, CH ₄ , N ₂ O, HFC, PFC, SF ₆) CO ₂ -eq. ¹⁾²⁾³⁾	Biomass carbon dioxide (CO ₂ -bio)	Sulphur dioxide (SO ₂)	Nitrogen dioxide (NO ₂)	Carbon monoxide (CO)	Ammonia (NH ₃)
A 01, 03 Agriculture, fishing and aquaculture, hunting	7 303 443	682 216	970	9 550	17 191	33 364
A 02 Forestry	392 519	8 397	2	1 585	16 419	7
B Mining and quarrying	200 477	3 265	188	274	80	0
C 10 - 12 Food industry, etc.	283 192	30 454	620	395	137	0
C 16, 17 Forest industry	3 126 208	18 599 125	5 138	18 109	21 245	32
C 19, 20 Oil refining and manufacture of chemicals	4 320 865	94 468	10 114	4 966	1 332	333
C 24, 25 Manufacture of basic metals and fabricated metal products	5 121 099	2 005	5 365	3 893	946	152
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	1 555 535	15 424	1 147	2 985	256	168
D Energy management	17 759 792	8 868 138	22 032	32 076	13 632	5
E Water supply and waste management	2 439 871	78 255	39	1 030	1 477	152
F Construction	1 899 833	49 714	120	12 055	9 851	99
G Trade	551 589	31 706	144	353	4 801	13
H 49 Land transport	4 446 729	331 504	135	16 795	11 930	728
H 50 Water transport	2 859 164	179 580	18 662	47 475	7 018	8
H 51 Air transport	2 724 123	14 229	674	7 949	8 142	34
H 52, 53 Support activities for transportation, postal activities	121 334	18 860	79	263	12 962	6
L Real estate activities	966 505	2 819 388	1 087	3 756	65 171	11
I - K, M - S Other service activities and administration	1 753 746	195 617	710	5 532	23 037	270
Households	6 060 217	3 578 854	1 147	19 195	228 232	1 355
TOTAL	63 886 242	35 601 199	68 376	188 237	443 859	36 735

1) Greenhouse gases: fossil carbon dioxide (CO₂-fos), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbon (HFC), perfluorocarbon (PFC), sulphur hexafluoride (SF₆).

2) Greenhouse gases do not include organic carbon dioxide. In the greenhouse gas inventory, organic carbon dioxide emissions are reported in the land use, land-use change and forestry sector, where the amount of carbon dioxide absorbed by forest or other vegetation is also taken into account in the net emissions.

3) CO₂ equivalent has been calculated for methane, nitrous oxide and F-gases using GWP multipliers of the IPCC's 2nd assessment report.

The statistics on emissions into air by industry are part of environmental accounts, where the main principle is to describe the interaction between the environment and the economy. In the statistics, emissions are presented according to the industrial classification used in national accounts. In this way, the data on emissions into air can be directly connected to various monetary variables of national accounts, such as total output and value added. Data on emissions into air by industry can also be connected to data on environmental taxes by industry.

The statistics on emissions into air by industry are calculated according to the EU Regulation on environmental accounts. The industrial classification and division used in the statistics differ from the

sector division used in the reporting of the greenhouse gas emissions to the UNFCCC. The statistics do not take into consideration the amount of carbon dioxide absorbed by forest or other vegetation either.

Differing from the greenhouse gas inventory and greenhouse gas reporting, the statistics on emissions into air by industry also contain Finnish citizens' emissions from land, water and air transport abroad. In turn, emissions by foreign citizens from transport on Finnish territory are subtracted from the emissions into air by industry. The definition of transport corresponds with the methods of national accounts in which households' transport is included in private consumption. Due to definitional differences, the total volume of greenhouse gas emissions by industry is higher than in the Greenhouse Gas Inventory reported to the UNFCCC.

Contents

Tables

Appendix tables

Appendix table 1. Greenhouse gas emissions (CO ₂ -fos, CH ₄ , N ₂ O, HFC, PFC, SF ₆) by industry as carbon dioxide equivalents (CO ₂ eq.) in 2008 to 2012, tonnes.....	5
Appendix table 2. Fossil carbon dioxide emissions (CO ₂) by industry in 2008 to 2012, tonnes.....	6
Appendix table 3. Biomass carbon dioxide emissions (CO ₂ -bio) by industry in 2008 to 2012, tonnes.....	7
Appendix table 4. Nitrous oxide emissions (N ₂ O) by industry in 2008 to 2012, tonnes.....	8
Appendix table 5. Methane emissions (CH ₄) by industry in 2008 to 2012, tonnes.....	9
Appendix table 6. Ammonia emissions (NH ₃) by industry in 2008 to 2012, tonnes.....	10
Appendix table 7. Sulphur dioxide emissions (SO ₂) by industry in 2008 to 2012, tonnes.....	11
Appendix table 8. Nitrogen dioxide emissions (NO ₂) by industry in 2008 to 2012, tonnes.....	12
Appendix table 9. Carbon monoxide emissions (CO) by industry in 2008 to 2012, tonnes.....	13

Appendix tables

Appendix table 1. Greenhouse gas emissions (CO₂-fos, CH₄, N₂O, HFC, PFC, SF₆) by industry as carbon dioxide equivalents (CO₂ eq.) in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	7 849 992	7 613 049	7 901 216	7 737 401	7 695 961
A 01, 03 Agriculture, fishing and aquaculture, hunting	7 462 952	7 258 670	7 527 341	7 347 585	7 303 443
A 02 Forestry	387 039	354 378	373 875	389 816	392 519
B Mining and quarrying	79 828	87 348	190 480	228 299	200 477
C Manufacturing	19 180 154	15 092 108	16 439 541	16 157 657	14 406 900
C 10 - 12 Food industry, etc.	231 721	311 438	323 220	322 959	283 192
C 16, 17 Forest industry	4 068 051	3 359 634	3 821 013	3 524 048	3 126 208
C 19, 20 Oil refining and manufacture of chemicals	6 246 962	5 213 982	4 607 331	4 631 540	4 320 865
C 24, 25 Manufacture of basic metals and fabricated metal products	6 481 556	4 746 052	5 999 278	5 923 814	5 121 099
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	2 151 864	1 461 001	1 688 699	1 755 296	1 555 535
D Energy management	21 088 506	22 241 288	27 718 369	21 520 610	17 759 792
E Water supply and waste management	2 576 453	2 529 769	2 527 337	2 418 017	2 439 871
F Construction	1 727 310	1 594 453	1 938 222	1 920 639	1 899 833
G Trade	539 843	483 540	718 775	601 085	551 589
H Transportation and storage	11 442 297	9 789 994	10 558 022	11 628 874	10 151 351
H 49 Land transport	4 614 228	4 415 808	4 521 648	4 559 351	4 446 729
H 50 Water transport	2 987 949	2 507 281	2 990 255	3 269 405	2 859 164
H 51 Air transport	3 582 625	2 655 992	2 898 277	3 678 521	2 724 123
H 52, 53 Support activities for transportation, postal activities	257 495	210 913	147 841	121 597	121 334
L Real estate activities	978 526	968 833	1 181 598	981 762	966 505
I - K, M - S Other service activities and administration	1 498 376	1 494 282	1 777 665	1 715 407	1 753 746
Households	7 214 485	6 739 112	6 725 660	5 990 857	6 060 217
TOTAL	74 175 770	68 633 777	77 676 886	70 900 606	63 886 242

Appendix table 2. Fossil carbon dioxide emissions (CO2) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	1 965 365	1 870 371	1 956 178	1 901 493	1 947 453
A 01, 03 Agriculture, fishing and aquaculture, hunting	1 584 368	1 521 694	1 588 555	1 518 502	1 561 649
A 02 Forestry	380 997	348 676	367 623	382 991	385 804
B Mining and quarrying	79 070	86 743	189 730	227 476	199 714
C Manufacturing	17 234 966	13 975 368	15 917 759	15 684 952	13 916 867
C 10 - 12 Food industry, etc.	161 474	247 634	240 371	249 403	217 160
C 16, 17 Forest industry	3 952 872	3 262 941	3 713 030	3 419 963	3 017 887
C 19, 20 Oil refining and manufacture of chemicals	4 596 650	4 354 452	4 370 070	4 426 473	4 089 898
C 24, 25 Manufacture of basic metals and fabricated metal products	6 447 430	4 717 031	5 963 494	5 889 731	5 089 936
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	2 076 541	1 393 310	1 630 794	1 699 383	1 501 986
D Energy management	20 772 570	21 944 816	27 348 102	21 180 731	17 450 725
E Water supply and waste management	286 844	335 421	331 356	295 228	359 610
F Construction	1 693 732	1 561 262	1 893 849	1 880 255	1 862 742
G Trade	104 050	93 642	204 496	148 113	145 030
H Transportation and storage	11 081 016	9 474 849	10 210 954	11 282 132	9 835 060
H 49 Land transport	4 343 866	4 174 377	4 256 694	4 306 524	4 206 993
H 50 Water transport	2 957 051	2 479 940	2 957 749	3 234 385	2 827 913
H 51 Air transport	3 532 112	2 617 547	2 856 229	3 626 069	2 684 859
H 52, 53 Support activities for transportation, postal activities	247 987	202 985	140 282	115 154	115 295
L Real estate activities	866 059	850 971	1 039 020	844 523	830 733
I - K, M - S Other service activities and administration	1 410 613	1 410 800	1 670 862	1 618 457	1 662 264
Households	6 791 783	6 324 784	6 250 565	5 597 300	5 663 033
TOTAL	62 286 070	57 929 025	67 012 871	60 660 662	53 873 231

Appendix table 3. Biomass carbon dioxide emissions (CO2-bio) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	567 833	643 714	754 367	620 529	690 613
A 01, 03 Agriculture, fishing and aquaculture, hunting	565 652	638 224	746 683	609 945	682 216
A 02 Forestry	2 180	5 490	7 684	10 584	8 397
B Mining and quarrying	0	141	280	1 111	3 265
C Manufacturing	19 468 708	15 564 863	18 426 327	18 357 079	18 741 474
C 10 - 12 Food industry, etc.	34 403	18 080	26 915	27 662	30 454
C 16, 17 Forest industry	19 321 520	15 418 575	18 263 853	18 219 447	18 599 125
C 19, 20 Oil refining and manufacture of chemicals	87 498	103 178	106 409	92 634	94 468
C 24, 25 Manufacture of basic metals and fabricated metal products	199	1 241	1 617	1 072	2 005
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	25 088	23 788	27 533	16 265	15 424
D Energy management	6 564 547	6 057 896	8 005 262	8 610 967	8 868 138
E Water supply and waste management	15 151	23 916	47 278	68 323	78 255
F Construction	3 370	23 266	37 326	51 356	49 714
G Trade	16 413	17 378	41 792	28 800	31 706
H Transportation and storage	210 785	342 113	334 596	410 991	544 173
H 49 Land transport	46 182	134 760	126 252	211 485	331 504
H 50 Water transport	115 563	158 163	176 296	169 707	179 580
H 51 Air transport	6 708	10 003	9 009	12 242	14 229
H 52, 53 Support activities for transportation, postal activities	42 332	39 187	23 039	17 557	18 860
L Real estate activities	2 282 708	2 412 770	2 934 667	2 850 778	2 819 388
I - K, M - S Other service activities and administration	107 767	119 360	135 390	158 727	195 617
Households	3 431 897	3 678 984	3 833 910	3 008 845	3 578 854
TOTAL	32 669 178	28 884 399	34 551 195	34 167 504	35 601 199

Appendix table 4. Nitrous oxide emissions (N₂O) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	13 155	12 658	13 195	12 920	12 695
A 01, 03 Agriculture, fishing and aquaculture, hunting	13 145	12 649	13 185	12 910	12 685
A 02 Forestry	10	9	10	10	10
B Mining and quarrying	2	2	2	3	2
C Manufacturing	5 628	3 018	1 036	927	1 024
C 10 - 12 Food industry, etc.	8	10	11	11	10
C 16, 17 Forest industry	343	289	322	310	324
C 19, 20 Oil refining and manufacture of chemicals	5 215	2 672	648	551	644
C 24, 25 Manufacture of basic metals and fabricated metal products	34	27	32	32	27
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	28	20	22	22	20
D Energy management	884	831	1 058	972	880
E Water supply and waste management	555	514	530	533	526
F Construction	52	53	66	65	64
G Trade	4	3	8	6	6
H Transportation and storage	436	393	413	465	424
H 49 Land transport	201	208	207	221	230
H 50 Water transport	79	68	81	88	78
H 51 Air transport	148	110	120	152	113
H 52, 53 Support activities for transportation, postal activities	8	7	4	3	3
L Real estate activities	66	68	83	76	75
I - K, M - S Other service activities and administration	57	60	71	69	71
Households	325	309	304	259	264
TOTAL	21 165	17 910	16 765	16 294	16 031

Appendix table 5. Methane emissions (CH4) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	85 795	86 404	88 057	86 920	86 123
A 01, 03 Agriculture, fishing and aquaculture, hunting	85 699	86 305	87 949	86 790	85 989
A 02 Forestry	96	99	107	130	135
B Mining and quarrying	2	2	2	2	2
C Manufacturing	1 506	1 349	1 410	1 454	1 427
C 10 - 12 Food industry, etc.	5	7	8	8	7
C 16, 17 Forest industry	420	339	382	375	371
C 19, 20 Oil refining and manufacture of chemicals	596	588	552	588	564
C 24, 25 Manufacture of basic metals and fabricated metal products	460	394	443	455	464
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	24	21	25	28	20
D Energy management	923	855	1 023	911	852
E Water supply and waste management	100 750	96 784	96 620	93 118	91 194
F Construction	111	98	112	115	116
G Trade	36	33	52	40	41
H Transportation and storage	2 469	2 317	2 067	1 858	1 884
H 49 Land transport	1 990	1 885	1 606	1 370	1 438
H 50 Water transport	280	268	309	322	301
H 51 Air transport	100	78	80	99	76
H 52, 53 Support activities for transportation, postal activities	98	86	71	67	69
L Real estate activities	4 310	4 533	5 470	5 343	5 294
I - K, M - S Other service activities and administration	235	201	229	225	228
Households	7 334	7 641	7 876	6 189	7 080
TOTAL	203 470	200 217	202 918	196 177	194 242

Appendix table 6. Ammonia emissions (NH₃) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	34 044	33 151	34 041	33 692	33 371
A 01, 03 Agriculture, fishing and aquaculture, hunting	34 035	33 144	34 033	33 683	33 364
A 02 Forestry	9	8	7	8	7
B Mining and quarrying	0	0	0	0	0
C Manufacturing	897	964	752	670	685
C 10 - 12 Food industry, etc.	0	0	0	0	0
C 16, 17 Forest industry	83	158	218	115	32
C 19, 20 Oil refining and manufacture of chemicals	199	477	256	259	333
C 24, 25 Manufacture of basic metals and fabricated metal products	389	193	126	92	152
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	225	136	152	204	168
D Energy management	1	9	2	2	5
E Water supply and waste management	148	156	153	158	152
F Construction	95	109	127	115	99
G Trade	11	9	17	14	13
H Transportation and storage	1 023	877	734	822	775
H 49 Land transport	967	821	685	769	728
H 50 Water transport	6	7	8	9	8
H 51 Air transport	31	36	33	37	34
H 52, 53 Support activities for transportation, postal activities	19	14	8	6	6
L Real estate activities	13	14	14	11	11
I - K, M - S Other service activities and administration	213	234	285	273	270
Households	1 216	1 347	1 449	1 335	1 355
TOTAL	37 660	36 870	37 574	37 091	36 735

Appendix table 7. Sulphur dioxide emissions (SO₂) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	1 298	1 295	1 336	1 125	972
A 01, 03 Agriculture, fishing and aquaculture, hunting	1 296	1 293	1 334	1 123	970
A 02 Forestry	2	2	2	2	2
B Mining and quarrying	201	118	171	175	188
C Manufacturing	34 657	25 962	27 058	27 006	22 386
C 10 - 12 Food industry, etc.	547	943	809	871	620
C 16, 17 Forest industry	7 187	5 248	5 815	4 709	5 138
C 19, 20 Oil refining and manufacture of chemicals	14 979	10 381	11 084	11 938	10 114
C 24, 25 Manufacture of basic metals and fabricated metal products	9 659	8 040	8 050	8 468	5 365
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	2 286	1 351	1 300	1 020	1 147
D Energy management	25 695	25 028	31 141	25 867	22 032
E Water supply and waste management	81	64	89	39	39
F Construction	129	132	151	102	120
G Trade	86	88	215	133	144
H Transportation and storage	24 655	18 508	21 181	23 749	19 550
H 49 Land transport	185	200	149	118	135
H 50 Water transport	23 359	17 453	20 203	22 648	18 662
H 51 Air transport	884	655	717	909	674
H 52, 53 Support activities for transportation, postal activities	227	200	111	74	79
L Real estate activities	1 049	1 041	1 334	1 104	1 087
I - K, M - S Other service activities and administration	516	542	597	603	710
Households	1 261	1 299	1 350	971	1 147
TOTAL	89 629	74 076	84 625	80 874	68 376

Appendix table 8. Nitrogen dioxide emissions (NO2) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	12 811	11 948	11 798	11 238	11 136
A 01, 03 Agriculture, fishing and aquaculture, hunting	10 771	10 231	10 095	9 562	9 550
A 02 Forestry	2 041	1 717	1 703	1 676	1 585
B Mining and quarrying	338	251	277	296	274
C Manufacturing	36 895	29 864	32 440	32 709	30 348
C 10 - 12 Food industry, etc.	406	500	444	482	395
C 16, 17 Forest industry	20 254	15 682	18 522	17 824	18 109
C 19, 20 Oil refining and manufacture of chemicals	6 811	6 941	5 704	5 606	4 966
C 24, 25 Manufacture of basic metals and fabricated metal products	4 516	3 629	4 478	4 365	3 893
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	4 907	3 112	3 291	4 431	2 985
D Energy management	36 608	35 615	43 345	35 842	32 076
E Water supply and waste management	833	989	977	936	1 030
F Construction	13 548	11 336	12 753	12 450	12 055
G Trade	260	231	516	378	353
H Transportation and storage	84 178	69 131	78 082	84 633	72 482
H 49 Land transport	19 542	18 704	17 719	17 147	16 795
H 50 Water transport	53 530	42 092	51 540	56 478	47 475
H 51 Air transport	10 489	7 844	8 490	10 736	7 949
H 52, 53 Support activities for transportation, postal activities	617	491	332	273	263
L Real estate activities	3 356	3 471	4 167	3 816	3 756
I - K, M - S Other service activities and administration	5 127	5 278	5 929	5 696	5 532
Households	25 777	23 459	22 596	20 071	19 195
TOTAL	219 732	191 573	212 880	208 067	188 237

Appendix table 9. Carbon monoxide emissions (CO) by industry in 2008 to 2012, tonnes

	2008	2009	2010	2011	2012
A Agriculture, forestry and fishing	29 429	29 929	32 382	31 629	33 610
A 01, 03 Agriculture, fishing and aquaculture, hunting	15 939	16 528	18 473	15 696	17 191
A 02 Forestry	13 490	13 401	13 909	15 933	16 419
B Mining and quarrying	82	65	72	75	80
C Manufacturing	31 932	25 199	30 020	29 944	23 916
C 10 - 12 Food industry, etc.	140	101	147	150	137
C 16, 17 Forest industry	23 400	17 927	21 730	21 342	21 245
C 19, 20 Oil refining and manufacture of chemicals	1 522	1 447	1 397	1 469	1 332
C 24, 25 Manufacture of basic metals and fabricated metal products	6 502	5 455	6 448	6 678	946
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	367	270	297	305	256
D Energy management	12 832	12 230	15 314	14 043	13 632
E Water supply and waste management	2 171	2 200	1 734	1 468	1 477
F Construction	10 774	9 304	10 093	10 047	9 851
G Trade	5 161	4 553	5 013	4 761	4 801
H Transportation and storage	44 029	40 288	39 948	42 497	40 052
H 49 Land transport	11 882	12 077	11 529	11 877	11 930
H 50 Water transport	6 112	6 063	7 009	7 327	7 018
H 51 Air transport	11 202	8 808	8 848	10 658	8 142
H 52, 53 Support activities for transportation, postal activities	14 834	13 341	12 561	12 635	12 962
L Real estate activities	55 115	56 873	66 693	65 376	65 171
I - K, M - S Other service activities and administration	30 421	22 928	26 158	24 124	23 037
Households	256 252	261 137	255 448	232 266	228 232
TOTAL	478 198	464 707	482 875	456 229	443 859

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Source: Emissions into air by industry 2012, Statistics Finland