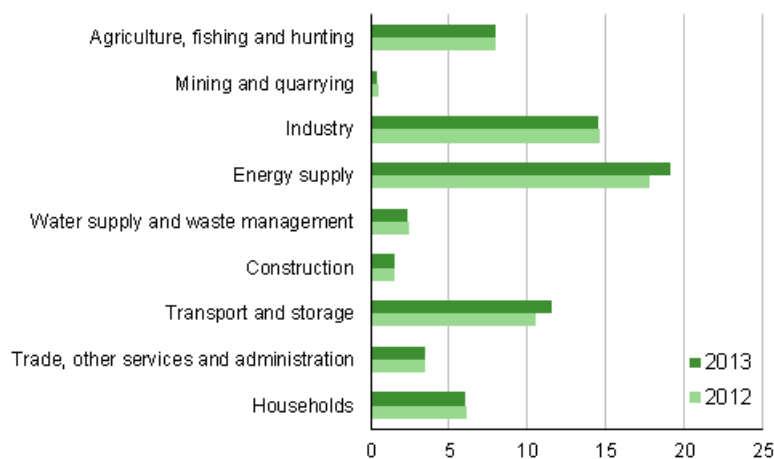


Emissions into air by industry 2013

Greenhouse gas emissions grew in energy supply and transportation in 2013

Greenhouse gas emissions produced by Finnish residents in Finland and abroad amounted to nearly 68 million tonnes in 2013. The growth from the year before was 2.8 per cent. In energy supply, the use of hard coal grew by over one-third, replacing the use of peat and natural gas, as a result of which greenhouse gas emissions in the industry increased by eight per cent. In water and air transport, the growth in the amount of fuel used by Finnish residents abroad increased the industry's greenhouse gas emissions by around ten per cent. The share of energy supply in greenhouse gas emissions was biggest, 28 per cent, the share of manufacturing was 21 per cent, that of transportation and storage 17 per cent, and that of agriculture 11 per cent. Households' share of greenhouse gas emissions was nine per cent.

Greenhouse gas emissions by industry 2012 and 2013, million tonnes CO₂ equivalent



Finnish residents produced 37 million tonnes of organic carbon dioxide emissions, which was two per cent more than in the year before. The growing use of biofuels has increased the carbon dioxide emissions generated by them. Emissions grew most in volume in the forest industry, where slightly over one-half of all organic carbon dioxide emissions are generated. Growth was also strong in waste management as incineration of waste is becoming more common. Organic carbon dioxide emissions are not included in greenhouse gases.

In other types of emissions, most significant changes concerned the growth of sulphur and nitrogen dioxide emissions in water and air transport. Sulphur dioxide emissions in water transport went up from 21,500 to 24,000 tonnes, which stands for one-third of all sulphur dioxide emissions. Nitrogen dioxide emissions in water and air transport grew by 17 per cent to around 70,000 tonnes, representing one-third of all nitrogen dioxide emissions.

In addition to the above, Statistics Finland's statistics on emissions into air by industry include particulate matter emissions and emissions of non-methane volatile organic compounds (NMVOC).

Emissions into air by industry groups 2013, tonnes

	Greenhouse gases (CO ₂ -foss, CH ₄ , N ₂ O, HFC, PFC, SF ₆) CO ₂ -eq.	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	7 659 406	847 782	996	9 311	20 651	33 793
A 02 Forestry	323 219	3 871	1	1 125	6 779	4
B Mining and quarrying	437 529	5927	142	2 516	1 841	0
C 10 - 12 Food industry, etc.	355 770	24 220	713	487	227	0
C 16, 17 Forest industry	3 228 489	19 576 099	5 112	1 9516	23 537	54
C 19, 20 Oil refining and manufacture of chemicals	4 564 092	113 883	8 645	5 631	1 343	320
C 24, 25 Manufacture of basic metals and fabricated metal products	4 804 190	2 094	4 251	3 716	1 471	83
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	1 560 547	83 429	1 285	3 331	355	176
D Energy management	19 164 030	9 530 841	21 194	31 661	13 312	3
E Water supply and waste management	2 381 070	345 300	50	1 149	1 005	509
F Construction	1 497 892	38 191	125	9 707	8 732	56
G Trade	820 546	30 646	89	389	791	8
H 49 Land transport	4 745 907	29 7619	64	21 416	7 217	398
H 50 Water transport	3 318 586	15 1871	23 075	55 907	9 494	4
H 51 Air transport	3 344 457	13 542	821	13 643	5 596	20
H 52, 53 Support activities for transportation, postal activities	103 632	14 424	43	398	599	4
L Real estate activities	880 431	2 781 121	1 005	3 557	54 074	407
I - K, M - S Other service activities and administration	1 804 623	166 562	416	5 681	27 420	135
Households	6 000 306	3 202 330	1037	17 571	175 513	1 136
TOTAL	66 994 720	37 229 751	69 066	206 711	359 956	37 109

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 residents' 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.

The calculation of greenhouse gas emissions has changed due to the revised, internationally agreed methodological and reporting guidelines in the second commitment period of the Kyoto Protocol (2013 to 2020). Finland's emissions level from 1990 onwards rose by one to three per cent, depending on the year.

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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 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	8 092 694	8 037 571	8 222 564	7 989 121	7 995 658	7 982 624
A 01, 03 Agriculture, fishing and aquaculture, hunting	7 785 530	7 753 071	7 920 631	7 675 439	7 679 649	7 659 405
A 02 Forestry	307 163	284 499	301 932	313 682	316 008	323 218
B Mining and quarrying	346 445	299 624	441 988	506 267	499 563	437 528
C Manufacturing	19 417 684	15 321 321	16 706 444	16 411 999	14 651 817	14 513 087
C 10 - 12 Food industry, etc.	267 811	357 718	383 709	377 423	337 248	355 770
C 16, 17 Forest industry	4 195 819	3 468 112	3 932 552	3 633 702	3 232 947	3 228 488
C 19, 20 Oil refining and manufacture of chemicals	6 305 327	5 268 510	4 673 659	4 696 423	4 381 277	4 564 091
C 24, 25 Manufacture of basic metals and fabricated metal products	6 488 293	4 755 503	6 009 780	5 934 153	5 137 066	4 804 189
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	2 160 432	1 471 477	1 706 741	1 770 297	1 563 276	1 560 547
D Energy management	21 105 259	22 278 803	27 703 141	21 512 693	17 759 517	19 164 029
E Water supply and waste management	2 579 318	2 538 256	2 537 699	2 435 089	2 448 079	2 381 070
F Construction	1 337 821	1 279 678	1 580 473	1 530 177	1 498 734	1 497 892
G Trade	673 396	700 768	979 526	823 566	789 175	820 546
H Transportation and storage	11 546 317	9 878 221	10 683 578	10 770 801	11 028 065	11 512 581
H 49 Land transport	4 769 836	4 572 464	4 703 360	4 720 271	4 889 154	4 745 906
H 50 Water transport	2 966 912	2 474 659	2 951 203	2 448 004	3 085 029	3 318 586
H 51 Air transport	3 578 274	2 648 632	2 905 761	3 505 232	2 947 394	3 344 456
H 52, 53 Support activities for transportation, postal activities	231 294	182 464	123 252	97 293	106 486	103 631
L Real estate activities	936 387	932 987	1 141 498	943 184	909 272	880 430
I - K, M - S Other service activities and administration	1 686 745	1 657 839	1 939 625	1 853 314	1 777 954	1 804 622
Households	7 312 784	6 871 878	6 893 743	6 138 540	6 097 783	6 000 305
TOTAL	75 034 856	69 796 950	78 830 284	70 914 758	65 455 621	66 994 720

Appendix table 2. Biomass carbon dioxide emissions (CO2-bio) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	566 582	641 307	751 109	648 873	762 133	851 653
A 01, 03 Agriculture, fishing and aquaculture, hunting	565 656	637 553	745 442	641 024	757 155	847 782
A 02 Forestry	925	3 753	5 667	7 848	4 977	3 870
B Mining and quarrying	0	2 007	4 210	6 140	5 244	5 926
C Manufacturing	19 689 286	15 845 409	18 707 134	18 640 898	19 030 571	19 799 725
C 10 - 12 Food industry, etc.	34 405	18 297	27 074	27 846	30 526	24 220
C 16, 17 Forest industry	19 536 795	15 683 338	18 504 932	18 444 196	18 821 478	19 576 098
C 19, 20 Oil refining and manufacture of chemicals	87 524	103 246	106 543	92 789	94 379	113 883
C 24, 25 Manufacture of basic metals and fabricated metal products	238	1 386	1 905	1 403	2 132	2 094
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	30 323	39 139	66 677	74 662	82 053	83 428
D Energy management	6 871 613	6 382 646	8 278 791	8 853 378	9 321 815	9 530 841
E Water supply and waste management	104 554	127 570	154 478	160 851	215 928	345 300
F Construction	3 140	20 282	31 534	44 041	31 615	38 191
G Trade	15 305	15 734	38 730	26 403	31 202	30 645
H Transportation and storage	201 756	326 002	321 377	398 669	403 474	477 455
H 49 Land transport	45 120	133 573	126 460	212 398	209 682	297 618
H 50 Water transport	110 980	147 712	165 975	159 858	165 037	151 870
H 51 Air transport	6 596	9 691	8 755	12 006	13 464	13 542
H 52, 53 Support activities for transportation, postal activities	39 059	35 025	20 186	14 406	15 289	14 424
L Real estate activities	2 370 920	2 506 839	3 049 007	2 956 400	2 897 550	2 781 121
I - K, M - S Other service activities and administration	107 505	116 980	133 058	156 925	164 966	166 561
Households	3 566 799	3 823 981	3 987 709	3 119 765	3 625 972	3 202 329
TOTAL	33 497 465	29 808 761	35 457 142	35 012 346	36 490 473	37 229 750

Appendix table 3. Ammonia emissions (NH₃) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	33 251	33 873	34 312	33 874	33 599	33 797
A 01, 03 Agriculture, fishing and aquaculture, hunting	33 244	33 868	34 307	33 869	33 595	33 792
A 02 Forestry	6	5	4	5	4	4
B Mining and quarrying	0	0	0	0	0	0
C Manufacturing	881	943	755	672	686	632
C 10 - 12 Food industry, etc.	0	0	0	0	0	0
C 16, 17 Forest industry	82	157	218	114	31	53
C 19, 20 Oil refining and manufacture of chemicals	198	475	255	258	332	320
C 24, 25 Manufacture of basic metals and fabricated metal products	392	195	129	95	155	83
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	207	113	152	203	167	175
D Energy management	0	1	1	1	4	3
E Water supply and waste management	494	498	496	503	510	508
F Construction	64	70	77	68	58	55
G Trade	7	5	10	8	7	7
H Transportation and storage	685	561	443	479	450	425
H 49 Land transport	649	524	413	448	421	397
H 50 Water transport	3	4	4	5	4	3
H 51 Air transport	20	22	19	21	21	19
H 52, 53 Support activities for transportation, postal activities	12	8	4	3	4	3
L Real estate activities	365	388	468	433	533	406
I - K, M - S Other service activities and administration	142	149	172	159	137	135
Households	1 335	1 414	1 454	1 191	1 362	1 135
TOTAL	37 230	37 906	38 192	37 391	37 352	37 108

Appendix table 4. Sulphur dioxide emissions (SO₂) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	1 296	1 293	1 335	1 130	1 006	997
A 01, 03 Agriculture, fishing and aquaculture, hunting	1 294	1 291	1 333	1 128	1 004	996
A 02 Forestry	1	1	1	1	1	1
B Mining and quarrying	202	118	172	176	190	142
C Manufacturing	33 558	25 987	27 115	27 064	22 443	20 005
C 10 - 12 Food industry, etc.	547	943	838	903	651	712
C 16, 17 Forest industry	7 218	5 274	5 844	4 738	5 171	5 111
C 19, 20 Oil refining and manufacture of chemicals	13 851	10 386	11 097	11 952	10 126	8 645
C 24, 25 Manufacture of basic metals and fabricated metal products	9 654	8 031	8 034	8 449	5 347	4 251
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	2 285	1 351	1 300	1 020	1 147	1 284
D Energy management	25 733	25 040	31 096	25 806	21 927	21 194
E Water supply and waste management	80	64	89	38	38	49
F Construction	126	129	148	98	116	124
G Trade	50	51	126	78	96	89
H Transportation and storage	24 325	18 309	20 913	16 495	21 684	24 003
H 49 Land transport	116	124	96	78	87	63
H 50 Water transport	23 197	17 423	20 041	15 515	20 829	23 075
H 51 Air transport	877	643	710	857	719	821
H 52, 53 Support activities for transportation, postal activities	133	116	65	43	47	43
L Real estate activities	988	997	1 248	1 078	1 044	1 005
I - K, M - S Other service activities and administration	332	344	379	373	438	415
Households	1 294	1 335	1 388	996	1 160	1 036
TOTAL	87 989	73 672	84 013	73 337	70 146	69 065

Appendix table 5. Nitrogen dioxide emissions (NO2) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	12 458	11 727	11 439	10 733	10 640	10 435
A 01, 03 Agriculture, fishing and aquaculture, hunting	10 596	10 186	9 988	9 394	9 428	9 311
A 02 Forestry	1 862	1 540	1 451	1 338	1 211	1 124
B Mining and quarrying	2 933	2 240	2 524	2 635	2 672	2 515
C Manufacturing	38 797	31 401	34 254	33 384	32 052	32 681
C 10 - 12 Food industry, etc.	535	597	561	595	503	486
C 16, 17 Forest industry	21 641	16 747	19 668	18 920	19 178	19 516
C 19, 20 Oil refining and manufacture of chemicals	6 830	7 049	5 972	5 795	5 265	5 631
C 24, 25 Manufacture of basic metals and fabricated metal products	4 727	3 782	4 640	4 516	4 035	3 715
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	5 063	3 224	3 411	3 556	3 069	3 331
D Energy management	36 634	35 679	43 249	35 668	32 046	31 660
E Water supply and waste management	903	1 069	1 049	968	1 032	1 149
F Construction	11 406	9 851	11 159	10 720	10 293	9 706
G Trade	285	234	542	388	400	389
H Transportation and storage	91 613	73 856	81 623	72 318	82 577	91 363
H 49 Land transport	27 323	24 316	23 102	22 394	22 659	21 416
H 50 Water transport	52 341	40 724	49 195	38 896	50 670	55 906
H 51 Air transport	11 033	8 139	8 811	10 598	8 810	13 642
H 52, 53 Support activities for transportation, postal activities	913	675	514	429	437	397
L Real estate activities	3 331	3 468	4 176	3 802	3 692	3 557
I - K, M - S Other service activities and administration	6 796	6 503	6 991	6 533	5 849	5 681
Households	31 547	26 866	24 682	20 756	19 836	17 570
TOTAL	236 708	202 899	221 693	197 911	201 095	206 710

Appendix table 6. Carbon monoxide emissions (CO) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	21 418	22 520	25 116	24 346	26 953	27 430
A 01, 03 Agriculture, fishing and aquaculture, hunting	16 452	17 219	19 162	16 663	19 137	20 651
A 02 Forestry	4 966	5 300	5 953	7 683	7 815	6 779
B Mining and quarrying	1 600	1 322	1 582	1 760	1 852	1 841
C Manufacturing	33 903	26 819	31 786	31 755	25 729	26 932
C 10 - 12 Food industry, etc.	249	189	244	249	237	226
C 16, 17 Forest industry	24 903	19 167	23 074	22 751	22 673	23 536
C 19, 20 Oil refining and manufacture of chemicals	1 567	1 485	1 447	1 492	1 342	1 343
C 24, 25 Manufacture of basic metals and fabricated metal products	6 696	5 611	6 618	6 851	1 120	1 470
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	485	364	401	409	355	354
D Energy management	12 792	12 262	15 095	13 809	13 673	13 311
E Water supply and waste management	1 576	1 479	1 145	944	913	1 005
F Construction	9 387	7 865	8 674	8 980	8 837	8 731
G Trade	1 002	669	1 092	771	838	790
H Transportation and storage	28 156	24 034	24 492	24 153	24 660	22 905
H 49 Land transport	8 429	7 820	7 383	7 247	7 492	7 216
H 50 Water transport	7 875	7 337	8 652	7 519	9 108	9 493
H 51 Air transport	9 880	7 621	7 671	8 785	7 417	5 596
H 52, 53 Support activities for transportation, postal activities	1 971	1 254	784	601	642	599
L Real estate activities	46 283	48 672	58 994	57 300	56 289	54 073
I - K, M - S Other service activities and administration	40 113	32 025	32 094	29 239	27 593	27 420
Households	227 641	221 187	213 474	184 165	187 522	175 512
TOTAL	423 876	398 858	413 549	377 227	374 863	359 956

Appendix table 7. Particulate matter emissions (PM 10) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	3 163	3 068	2 991	3 061	3 145	3 475
A 01, 03 Agriculture, fishing and aquaculture, hunting	3 045	2 958	2 876	2 937	3 023	3 353
A 02 Forestry	118	110	114	123	121	121
B Mining and quarrying	4 386	7 708	6 724	6 299	3 953	5 377
C Manufacturing	4 589	3 194	3 821	4 073	3 867	3 525
C 10 - 12 Food industry, etc.	119	45	100	192	130	96
C 16, 17 Forest industry	3 013	1 966	2 240	2 065	2 571	2 311
C 19, 20 Oil refining and manufacture of chemicals	307	228	172	413	509	536
C 24, 25 Manufacture of basic metals and fabricated metal products	974	854	1 178	1 163	421	354
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	174	100	128	238	234	226
D Energy management	1 976	1 678	1 941	1 698	1 439	1 366
E Water supply and waste management	104	143	119	116	119	128
F Construction	1 924	1 625	1 862	1 745	1 646	1 135
G Trade	69	65	139	101	111	87
H Transportation and storage	7 676	6 387	6 294	6 255	6 588	5 941
H 49 Land transport	4 070	3 447	2 864	3 227	3 212	2 745
H 50 Water transport	2 285	1 858	2 256	1 741	2 391	2 634
H 51 Air transport	415	338	349	399	322	264
H 52, 53 Support activities for transportation, postal activities	905	743	824	886	662	297
L Real estate activities	7 624	8 265	10 236	10 137	10 069	9 828
I - K, M - S Other service activities and administration	1 105	1 177	1 436	1 369	1 298	1 127
Households	16 346	17 778	19 046	15 669	17 581	15 731
TOTAL	48 966	51 093	54 612	50 529	49 820	47 725

Appendix table 8. Particulate matter emissions (PM 2.5) by industry in 2008 to 2013, tonnes

	2008	2009	2010	2011	2012	2013
A Agriculture, forestry and fishing	1 212	1 183	1 102	1 107	1 086	1 184
A 01, 03 Agriculture, fishing and aquaculture, hunting	1 114	1 091	1 005	991	982	1 080
A 02 Forestry	98	92	96	116	103	103
B Mining and quarrying	3 057	5 399	4 694	4 383	2 752	3 160
C Manufacturing	2 890	1 898	2 214	2 479	2 767	2 446
C 10 - 12 Food industry, etc.	75	24	61	121	88	58
C 16, 17 Forest industry	2 207	1 417	1 592	1 445	1 901	1 615
C 19, 20 Oil refining and manufacture of chemicals	141	102	79	197	286	319
C 24, 25 Manufacture of basic metals and fabricated metal products	383	298	412	537	342	290
C 13 - 15, 18, 21 - 23, 26 - 33 Other industries	82	56	69	177	149	163
D Energy management	677	598	690	555	514	500
E Water supply and waste management	62	86	73	74	76	74
F Construction	1 120	931	1 009	1 008	908	922
G Trade	37	34	70	52	56	41
H Transportation and storage	5 174	4 196	4 244	3 960	4 488	4 349
H 49 Land transport	2 528	2 133	1 775	1 979	1 963	1 626
H 50 Water transport	2 127	1 661	2 044	1 537	2 181	2 470
H 51 Air transport	364	277	293	335	254	205
H 52, 53 Support activities for transportation, postal activities	153	123	131	108	88	46
L Real estate activities	7 309	7 933	9 818	9 759	9 699	9 473
I - K, M - S Other service activities and administration	677	712	887	826	769	650
Households	14 069	15 269	16 360	13 212	15 011	13 423
TOTAL	36 290	38 245	41 166	37 419	38 130	36 226

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Source: Emissions into air by industry 2013, Statistics Finland