

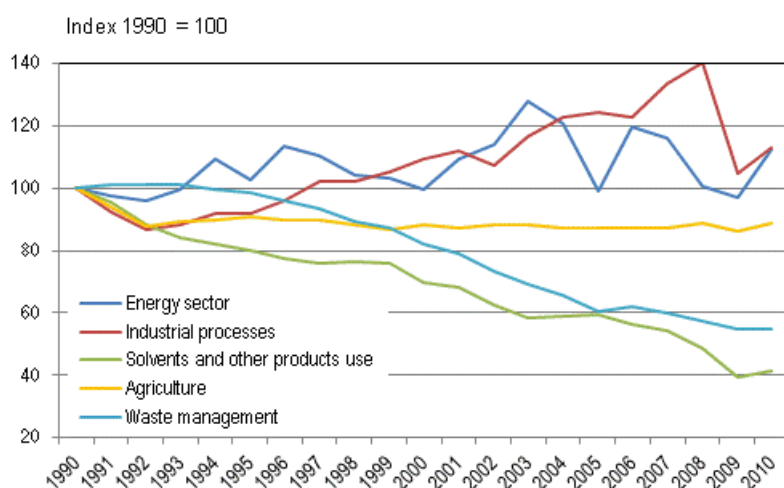
# Greenhouse gases 2010

## Greenhouse gas emissions in 2010 nearly at the level prior to the economic downturn

In 2010, Finland's greenhouse gas emissions amounted to 74.6 million tonnes of carbon dioxide (CO<sub>2</sub> eq.). They rose by a total of 8.5 million carbon dioxide tonnes from the year before, exceeding the commitment level of the Kyoto Protocol by around five per cent. The data are based on the preliminary estimate to be submitted by Statistics Finland to the European Commission on 15 January 2012 concerning emissions in 2010.

In the energy sector, emissions increased by 15 per cent from the previous year. Emissions from industrial processes rose by eight per cent. Emissions from agriculture and use of solvents and other products also increased slightly. Emissions in the waste sector remained unchanged. Net sinks in the Land use, Land-use Change and Forestry sector (LULUCF) dropped by 40 per cent mainly because of increased fellings.

### Development of greenhouse gas emissions by sector in Finland 1990-2010



**Finland's greenhouse gas emissions without the Land use, Land-Use Change and Forestry (LULUCF) sector (see table below). Emissions as amounts corresponding to million tonnes of CO<sub>2</sub>**

Year	Energy				Industrial processes		Solvents and other products use	Agriculture	Waste management	Emissions without LULUCF
	Energy industries	Manufacturing industries and construction (emissions from energy use of fuels)	Transport	Other fuel use <sup>1)</sup>	Other industrial processes	Consumption of F-gases				
1990	19.19	13.36	12.76	9.18	5.01	0.09	0.18	6.62	3.97	70.35
1991	18.96	12.83	12.40	8.85	4.64	0.07	0.17	6.23	4.01	68.17
1992	18.73	12.30	12.32	8.97	4.39	0.04	0.16	5.82	4.03	66.76
1993	21.47	12.41	11.85	8.55	4.46	0.03	0.15	5.91	4.02	68.86
1994	26.40	12.70	12.20	8.22	4.64	0.04	0.15	5.94	3.97	74.25
1995	24.12	12.14	11.99	7.78	4.59	0.10	0.14	6.03	3.91	70.81
1996	29.83	12.00	11.98	7.92	4.76	0.15	0.14	5.94	3.82	76.54
1997	27.44	12.27	12.55	7.87	4.98	0.24	0.14	5.95	3.72	75.16
1998	24.18	11.94	12.70	7.99	4.92	0.30	0.14	5.83	3.55	71.55
1999	23.66	11.92	12.94	7.74	4.98	0.40	0.14	5.75	3.48	71.01
2000	22.12	11.94	12.84	7.49	5.00	0.57	0.12	5.84	3.27	69.20
2001	27.51	11.48	12.96	7.73	4.99	0.72	0.12	5.77	3.14	74.43
2002	30.26	11.17	13.16	7.66	4.94	0.53	0.11	5.83	2.92	76.58
2003	37.23	11.54	13.34	7.72	5.24	0.71	0.10	5.84	2.75	84.48
2004	33.05	11.63	13.69	7.33	5.52	0.74	0.11	5.78	2.61	80.45
2005	21.93	11.33	13.71	7.13	5.42	0.91	0.11	5.79	2.40	68.73
2006	32.89	11.62	13.90	6.90	5.46	0.80	0.10	5.79	2.46	79.92
2007	30.83	11.44	14.26	6.71	5.86	0.95	0.10	5.78	2.38	78.31
2008	24.17	10.78	13.60	6.24	6.10	1.04	0.09	5.87	2.28	70.18
2009	25.22	8.39	12.92	6.20	4.40	0.94	0.07	5.72	2.19	66.05
2010	30.55	9.88	13.57	6.68	4.57	1.20	0.07	5.88	2.19	74.58

1) Other fuel use includes subcategories heating of buildings, other fuel use in agriculture, forestry and fisheries, other fuel use and fugitive emissions from fuels

**Emissions and removals of the LULUCF sector in Finland. Emissions and sinks as amounts corresponding to million tonnes of CO<sub>2</sub> (emissions are positive figures, removals negative)**

Year	Forest land	Cropland	Grassland	Wetlands	Settlements	Harvested wood products	Land use, land-use change and forestry (LULUCF)
1990	-23.26	5.57	0.80	1.30	0.82	-0.95	-15.71
1991	-37.48	4.97	0.80	1.34	0.86	0.31	-29.21
1992	-31.37	4.81	0.78	1.37	0.93	-0.22	-23.71
1993	-29.67	5.08	0.76	1.41	0.97	-0.09	-21.55
1994	-22.24	5.08	0.74	1.44	1.01	-0.76	-14.72
1995	-22.24	5.40	0.72	1.47	1.04	-0.87	-14.48
1996	-31.31	5.50	0.69	1.47	1.13	-1.05	-23.57
1997	-25.59	5.64	0.68	1.47	1.22	-2.12	-18.69
1998	-23.92	5.77	0.68	1.47	1.32	-1.77	-16.44
1999	-26.75	5.90	0.68	1.51	1.35	-2.04	-19.35
2000	-28.12	6.03	0.67	1.52	1.35	-1.27	-19.81
2001	-32.48	6.28	0.70	1.53	1.55	-0.31	-22.73
2002	-33.05	6.49	0.72	1.53	1.57	-0.44	-23.19
2003	-33.09	6.49	0.73	1.56	1.63	-0.89	-23.56
2004	-34.10	6.59	0.78	1.54	1.81	-0.83	-24.21
2005	-38.63	6.64	0.74	1.61	1.92	-0.34	-28.06
2006	-41.95	6.61	0.75	1.64	1.84	-0.45	-31.57
2007	-32.47	6.67	0.71	1.80	1.84	-1.73	-23.19
2008	-37.21	6.80	0.67	1.93	1.82	0.27	-25.71
2009	-48.15	6.73	0.67	1.99	1.81	1.76	-35.18
2010	-32.77	6.71	0.66	2.11	1.76	0.41	-21.12

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## Appendix tables

**Appendix table 1. Greenhouse gas emissions in Finland 1990–2010**

	Energy sector	Industrial processes	Solvents and other products use	Agriculture	Waste management	Emissions without LULUCF	Land use, land-use change and forestry (LULUCF) <sup>1)</sup>
	million tonnes CO2 eq.						
1990	54.48	5.10	0.18	6.62	3.97	70.35	-15.71
1991	53.05	4.71	0.17	6.23	4.01	68.17	-29.21
1992	52.32	4.43	0.16	5.82	4.03	66.76	-23.71
1993	54.28	4.50	0.15	5.91	4.02	68.86	-21.55
1994	59.52	4.68	0.15	5.94	3.97	74.25	-14.72
1995	56.04	4.69	0.14	6.03	3.91	70.81	-14.48
1996	61.73	4.91	0.14	5.94	3.82	76.54	-23.57
1997	60.13	5.22	0.14	5.95	3.72	75.16	-18.69
1998	56.81	5.22	0.14	5.83	3.55	71.55	-16.44
1999	56.26	5.38	0.14	5.75	3.48	71.01	-19.35
2000	54.40	5.57	0.12	5.84	3.27	69.20	-19.81
2001	59.68	5.72	0.12	5.77	3.14	74.43	-22.73
2002	62.25	5.47	0.11	5.83	2.92	76.58	-23.19
2003	69.84	5.96	0.10	5.84	2.75	84.48	-23.56
2004	65.70	6.26	0.11	5.78	2.61	80.45	-24.21
2005	54.11	6.33	0.11	5.79	2.40	68.73	-28.06
2006	65.31	6.26	0.10	5.79	2.46	79.92	-31.57
2007	63.25	6.81	0.10	5.78	2.38	78.31	-23.19
2008	54.79	7.15	0.09	5.87	2.28	70.18	-25.71
2009	52.74	5.34	0.07	5.72	2.19	66.05	-35.18
2010	60.67	5.77	0.07	5.88	2.19	74.58	-21.12

1) Emissions are positive figures, removals negative

**Appendix table 2. Carbon dioxide emissions in Finland 1990–2010**

	Energy industries	Manufacturing industries and construction (emissions from energy use of fuels)	Transport	Heating of buildings, other fuel use in agriculture, forestry and fisheries	Other fuel use	Fugitive emissions from fuels	Industrial processes	Solvents and other products use	Emissions without LULUCF	Land use, land-use change and forestry (LULUCF) <sup>1)</sup>
	million tonnes CO2 eq.									
1990	19.06	13.17	12.48	7.16	1.07	0.22	3.34	0.12	56.62	-15.85
1991	18.82	12.66	12.13	7.01	0.90	0.21	3.20	0.11	55.04	-29.34
1992	18.58	12.14	12.05	7.13	0.89	0.22	3.08	0.10	54.19	-23.84
1993	21.29	12.23	11.59	6.74	0.80	0.27	3.09	0.09	56.10	-21.66
1994	26.20	12.52	11.94	6.24	1.06	0.17	3.19	0.08	61.40	-14.85
1995	23.92	11.96	11.74	5.70	1.20	0.17	3.12	0.08	57.88	-14.60
1996	29.59	11.82	11.72	5.81	1.22	0.15	3.29	0.08	63.68	-23.70
1997	27.20	12.07	12.30	5.83	1.13	0.20	3.52	0.07	62.33	-18.83
1998	23.95	11.74	12.45	5.92	1.24	0.14	3.53	0.07	59.04	-16.58
1999	23.43	11.72	12.68	5.83	1.12	0.13	3.63	0.07	58.61	-19.49
2000	21.90	11.73	12.59	5.47	1.26	0.13	3.63	0.07	56.78	-19.95

	Energy industries	Manufacturing industries and construction (emissions from energy use of fuels)	Transport	Heating of buildings, other fuel use in agriculture, forestry and fisheries	Other fuel use	Fugitive emissions from fuels	Industrial processes	Solvents and other products use	Emissions without LULUCF	Land use, land-use change and forestry (LULUCF) <sup>1)</sup>
2001	27.23	11.29	12.71	5.69	1.23	0.12	3.69	0.07	62.04	-22.88
2002	29.94	10.98	12.91	5.64	1.22	0.12	3.60	0.07	64.49	-23.33
2003	36.88	11.35	13.10	5.56	1.35	0.12	3.82	0.06	72.24	-23.70
2004	32.71	11.44	13.45	5.43	1.12	0.11	4.02	0.06	68.34	-24.35
2005	21.66	11.15	13.48	5.24	1.13	0.13	3.79	0.06	56.63	-28.21
2006	32.53	11.44	13.67	5.05	1.09	0.11	4.01	0.06	67.97	-31.72
2007	30.48	11.27	14.04	4.94	1.01	0.13	4.37	0.06	66.30	-23.35
2008	23.84	10.61	13.38	4.44	1.05	0.14	4.52	0.05	58.04	-25.89
2009	24.92	8.26	12.71	4.46	1.03	0.12	3.60	0.05	55.12	-35.36
2010	30.17	9.72	13.36	4.73	1.16	0.14	4.39	0.05	63.71	-21.30

1) Emissions are positive figures, removals negative

**Appendix table 3. Methane emissions in Finland 1990–2010**

	Energy industries	Manufacturing industries and construction (emissions from energy use of fuels)	Transport	Heating of buildings, other fuel use in agriculture, forestry and fisheries	Other fuel use	Fugitive emissions from fuels	Industrial processes	Enteric fermentation	Manure management	Field burning of agricultural residues	Waste management	Emissions without LULUCF	Land use, land-use change and forestry (LULUCF)
1000 tonnes													
1990	0.4	0.6	4.7	8.7	0.1	0.5	0.2	92.0	11.8	0.09	181.4	300.7	1.9
1991	0.4	0.6	4.5	8.7	0.09	2.0	0.2	88.5	11.5	0.01	183.4	299.9	1.8
1992	0.4	0.6	4.4	8.8	0.08	2.7	0.2	85.5	11.6	0.01	184.2	298.5	1.9
1993	0.5	0.6	4.2	8.8	0.07	3.5	0.4	85.6	11.9	0.02	184.1	299.7	1.8
1994	0.6	0.7	4.0	8.8	0.1	3.8	0.5	85.7	12.5	0.01	181.4	298.0	1.9
1995	0.6	0.7	3.9	8.8	0.1	3.8	0.5	80.8	12.9	0.02	178.5	290.6	1.9
1996	0.7	0.7	3.7	9.2	0.1	3.9	0.5	81.0	13.0	0.03	174.1	286.9	1.9
1997	0.8	0.7	3.6	9.2	0.1	3.4	0.4	81.9	13.8	0.02	169.3	283.3	2.0
1998	0.8	0.7	3.5	9.3	0.1	3.5	0.5	80.0	13.5	0.01	161.7	273.6	2.0
1999	0.8	0.7	3.4	9.1	0.1	2.8	0.5	78.8	13.3	0.01	158.0	267.4	2.0
2000	0.7	0.7	3.2	8.9	0.1	2.6	0.5	78.9	13.6	0.04	148.2	257.4	2.0
2001	0.9	0.7	3.0	9.9	0.1	3.2	0.5	77.9	13.1	0.02	141.9	251.2	2.1
2002	1.2	0.7	2.9	10.2	0.1	2.7	0.5	78.6	13.7	0.02	131.7	242.3	2.1
2003	1.3	0.7	2.8	10.3	0.1	2.9	0.4	77.7	14.2	0.02	123.2	233.7	2.1
2004	1.2	0.7	2.6	10.3	0.1	2.6	0.5	76.9	14.2	0.02	116.7	225.7	2.0
2005	1.0	0.7	2.4	10.3	0.1	3.1	0.4	76.3	14.6	0.01	106.7	215.6	2.1
2006	1.2	0.7	2.2	10.6	0.09	2.6	0.4	76.4	14.6	0.02	109.5	218.3	2.1
2007	1.1	0.7	2.1	10.7	0.08	2.4	0.4	75.3	14.5	0.03	105.2	212.6	2.1
2008	1.0	0.6	1.9	11.1	0.08	2.3	0.4	74.7	14.6	0.03	100.7	207.5	2.2
2009	1.0	0.5	1.8	11.6	0.08	2.2	0.4	75.3	14.2	0.02	96.7	203.9	2.3
2010	1.1	0.6	1.8	12.8	0.09	1.9	0.4	76.4	14.3	0.02	96.4	205.9	2.4

**Appendix table 4. Nitrous oxide emissions in Finland 1990–2010**

	Energy industries	Manufacturing industries and construction (emissions from energy use of fuels)	Transport	Heating of buildings, other fuel use in agriculture, forestry and fisheries	Other fuel use	Industrial processes	Solvents and other products use	Manure management	Agricultural soils	Waste management	Emissions without LULUCF <sup>1)</sup>	Land use, land-use change and forestry (LULUCF)
1000 tonnes												
1990	0.4	0.6	0.6	0.3	1.4	5.3	0.2	1.6	12.7	0.5	23.6	0.3
1991	0.4	0.5	0.6	0.3	1.4	4.6	0.2	1.5	11.9	0.5	21.8	0.3
1992	0.5	0.5	0.6	0.3	1.3	4.2	0.2	1.4	10.8	0.5	20.2	0.3
1993	0.5	0.5	0.6	0.3	1.3	4.4	0.2	1.4	11.0	0.5	20.7	0.3
1994	0.6	0.5	0.6	0.3	1.3	4.6	0.2	1.5	11.1	0.5	21.1	0.3
1995	0.6	0.5	0.6	0.2	1.2	4.7	0.2	1.4	11.7	0.5	21.7	0.3
1996	0.7	0.5	0.6	0.3	1.2	4.7	0.2	1.5	11.3	0.5	21.6	0.3
1997	0.7	0.6	0.6	0.3	1.2	4.7	0.2	1.5	11.2	0.5	21.4	0.3
1998	0.7	0.6	0.6	0.3	1.1	4.4	0.2	1.5	11.0	0.5	20.9	0.3
1999	0.7	0.6	0.6	0.3	1.1	4.3	0.2	1.4	10.9	0.5	20.6	0.3
2000	0.7	0.6	0.6	0.2	1.0	4.4	0.2	1.4	11.2	0.5	20.8	0.3
2001	0.8	0.6	0.6	0.3	1.0	4.2	0.2	1.3	11.1	0.5	20.6	0.3
2002	0.9	0.6	0.6	0.3	1.0	4.3	0.1	1.4	11.2	0.5	20.9	0.3
2003	1.1	0.6	0.6	0.3	1.1	4.5	0.1	1.4	11.2	0.5	21.4	0.3
2004	1.0	0.6	0.6	0.3	1.0	4.8	0.1	1.4	11.1	0.5	21.4	0.3
2005	0.8	0.5	0.6	0.2	0.9	5.2	0.2	1.4	11.1	0.5	21.5	0.3
2006	1.1	0.5	0.6	0.2	1.0	4.6	0.1	1.3	11.2	0.5	21.2	0.4
2007	1.1	0.5	0.6	0.2	0.9	4.8	0.1	1.3	11.2	0.5	21.3	0.4
2008	1.0	0.5	0.6	0.2	0.8	5.1	0.1	1.3	11.6	0.5	21.7	0.4
2009	0.9	0.4	0.6	0.2	0.8	2.6	0.08	1.4	11.0	0.5	18.4	0.4
2010	1.2	0.5	0.6	0.3	0.8	0.5	0.09	1.4	11.4	0.5	17.2	0.4

1) Fugitive emissions from fuels and emissions from field burning of agricultural residues included in the total emissions are not presented in this table. Those emissions are annually under 0.005 thousand tonnes

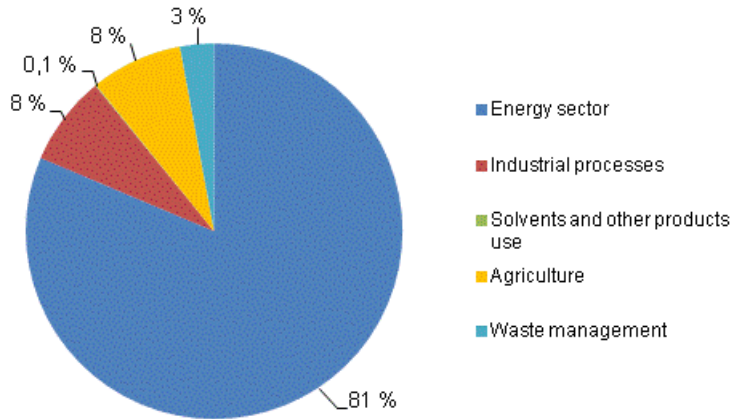
**Appendix table 5. Emissions of F-gases in Finland 1990–2010**

	HFC	PFC	SF6
	1000 tonnes CO2 eq.		
1990	0.02	0.07	94.4
1991	0.05	0.08	67.3
1992	0.1	0.09	36.6
1993	0.1	0.1	33.6
1994	6.5	0.1	34.9
1995	29.3	0.1	68.5
1996	77.3	0.2	72.2
1997	167.8	0.2	76.0
1998	245.2	0.2	53.2
1999	318.3	28.0	52.0
2000	491.8	22.5	51.5
2001	646.4	20.1	55.0
2002	463.2	13.4	51.3
2003	651.3	14.9	48.1
2004	693.7	12.2	33.8
2005	863.5	9.9	34.8
2006	747.2	15.4	40.2
2007	903.3	8.4	36.0
2008	993.2	11.2	40.4
2009	888.8	9.3	41.3
2010	1,164.0	0.7	31.2

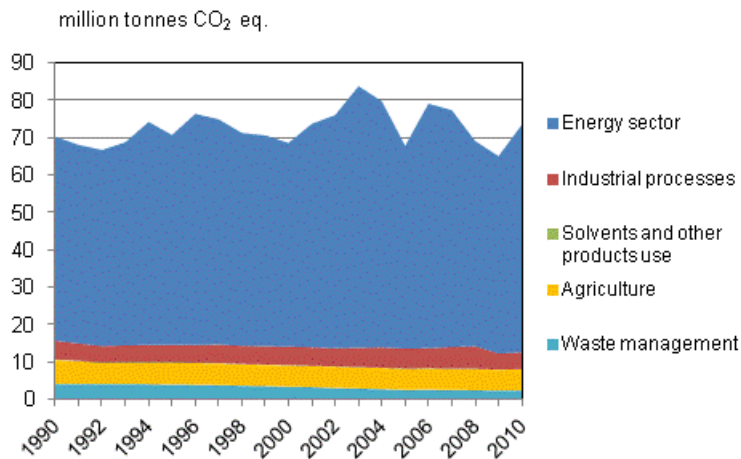


# Appendix figures

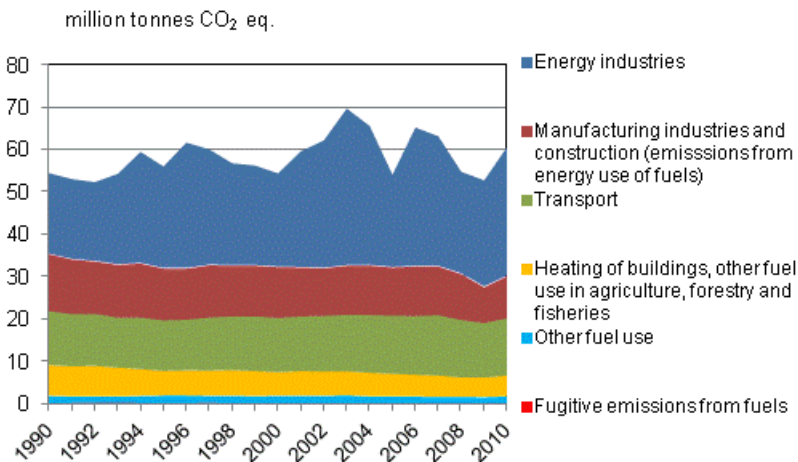
**Appendix figure 1: Greenhouse gas emissions in Finland by sectors in 2010**



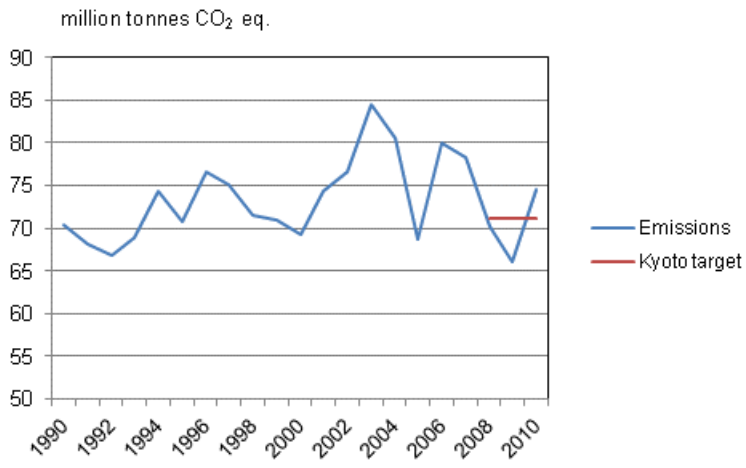
**Appendix figure 2: Greenhouse gas emissions in Finland in 1990 - 2010**



**Appendix figure 3: Development of emissions in Finland in the energy sector in 1990 - 2010**



**Appendix figure 4: Greenhouse gas emission in Finland in 1990 - 2010 in relation to the Kyoto target level**



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Suomen virallinen tilasto  
Finlands officiella statistik  
Official Statistics of Finland

Environment and Natural Resources 2011

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Source: Greenhouse gas inventory unit, Statistics Finland