

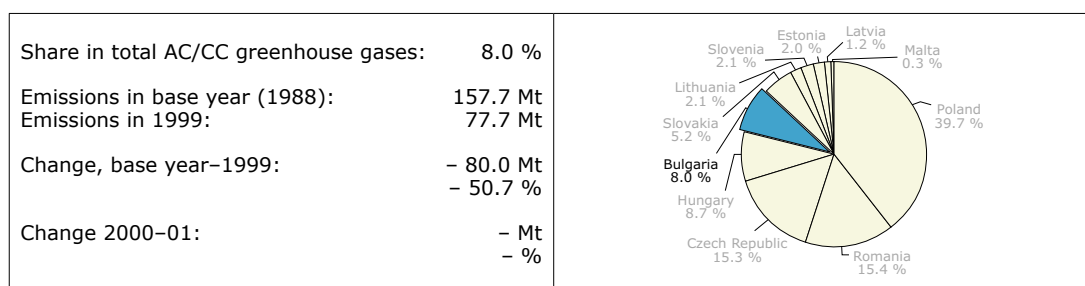
Annex 3: Greenhouse gas emission indicators for the acceding and candidate countries

This annex presents a short analysis for each of the 10 AC and CC plus Malta, including the sectoral emission trend indicators. The emissions presented in the key source tables in Annex 3 are limited to the data reported by countries, so no gap filling is made in these tables. The outline of this annex is similar to Annex 1 for the EU Member States.

Note: For the sectoral analysis in this annex, the same key source categories are used as identified for the EU, in order to facilitate the comparison between EU Member States and acceding and candidate countries ⁽¹⁾. IPCC key source categories for national reporting under the UNFCCC have to be identified by the acceding and candidate countries themselves and may differ from those of the EU.

⁽¹⁾ A description of the selection of the EC key sources is provided in 2.2.1.

Bulgaria



After a sharp decline between 1990 and 1994, Bulgarian GHG emissions increased until 1996 and have been decreasing again since then. Data after 1999 were not available. Bulgaria has chosen 1988 as the base year.

Distance-to-target indicator: In 1999, Bulgarian GHG emissions were 50.7 % below base-year levels. After declining sharply from 1990 to 1994, Bulgarian GHG emissions increased until 1996 and decreased after that. In 1999, total GHG emissions decreased by 4.5 %, compared with 1998, and were 46.9 index points below the Kyoto target path.

Greenhouse gas emissions by sector: The most important source category in 1999 was the combustion of fossil fuels (53 % stationary sources, plus 8 % transport), but agriculture contributed also significantly (23 %) to national total emissions. The waste sector with 7 %, and fugitive emissions with 3 %, were less significant. Emissions in all sectors dropped significantly between the base year and 1999. All energy subcategories (including transport) decreased by more than 50 %, agriculture by 23 % and waste by 70 %. Between 1990 and 1997, the emission trend followed the GDP development. However, after 1997 the GDP was growing, but CO₂ emissions still declined. Emission trends of CO₂ were almost the same as trends in gross inland energy consumption.

Greenhouse gas emissions by gas: The share of CO₂ in total GHG emissions is about 63 %. Emissions of CO₂ decreased by about 53 % between the base year and 1999. Emissions from energy

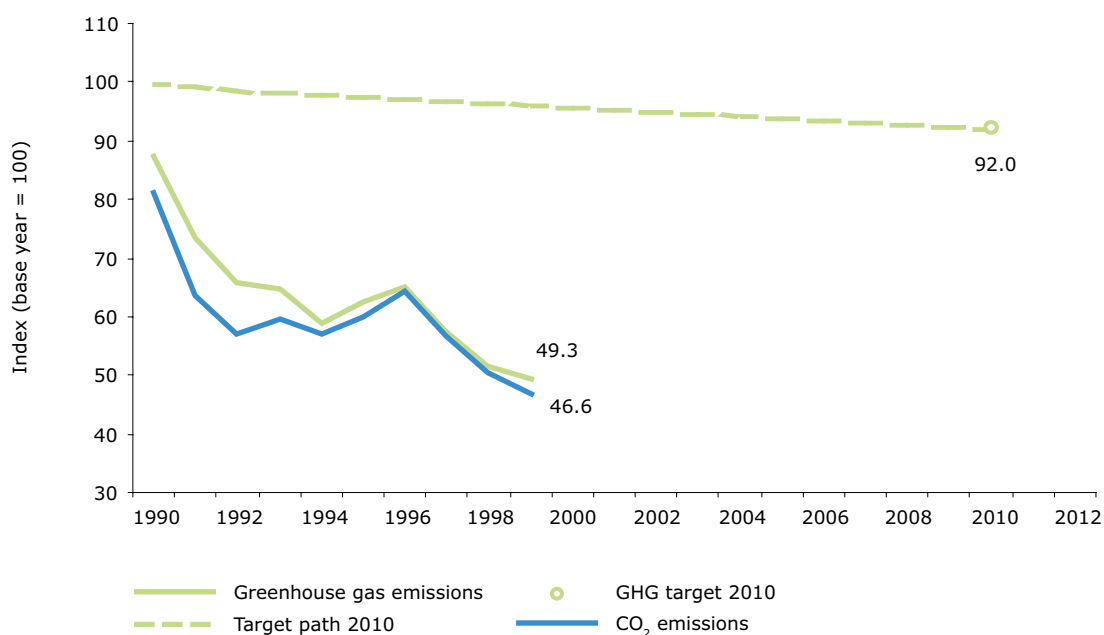
industries decreased almost steadily and were 30 % below the base-year level in 1999. Emissions from energy use in manufacturing industries and from transport decreased rapidly between 1990 and 1991 and were 73 and 51 % below the base-year level in 1999.

Emissions of CO₂ from metal production show large variations. The emissions from mineral products decreased by more than 50 % by 1992, but have not changed significantly since then.

Emissions of CH₄ decreased by 64 % between the base year and 1999. Agricultural emissions and fugitive emissions from oil and natural gas dropped by more than 50 %, emissions from solid waste disposal on land even by 70 %. One reason for such a sharp emission decrease could have been significant changes in waste management practices (e.g. the utilisation of methane or an increased proportion of waste incineration).

A relatively high share of GHG emissions is accounted for by N₂O (24 %). Emissions of N₂O show slightly different trends than the other two gases: after a decline in 1991 and 1992, the trend stabilised, and in 1999, emissions were higher than in 1991. Emissions from transport decreased by 46 % and from the chemical industry by 70 % between the base year and 1999. The N₂O emission trend seems to have been influenced significantly by emissions from other fuel combustion. In 1996, there seems to have been a change in allocation of emission to the sectors.

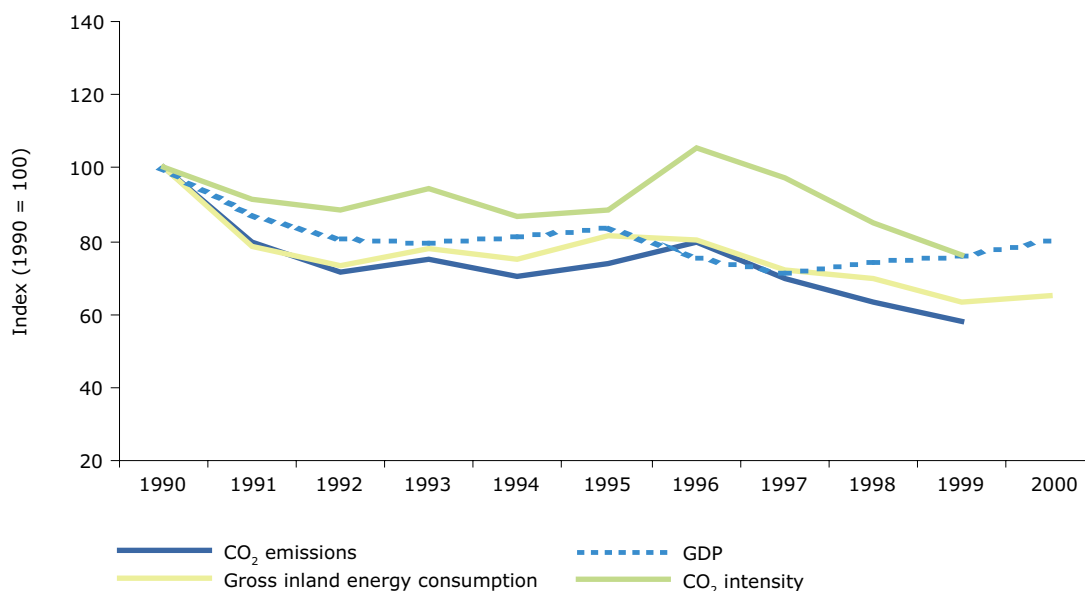
Figure A.46 Bulgarian GHG emissions compared with Kyoto target for 2008–12 (excluding LUCF)



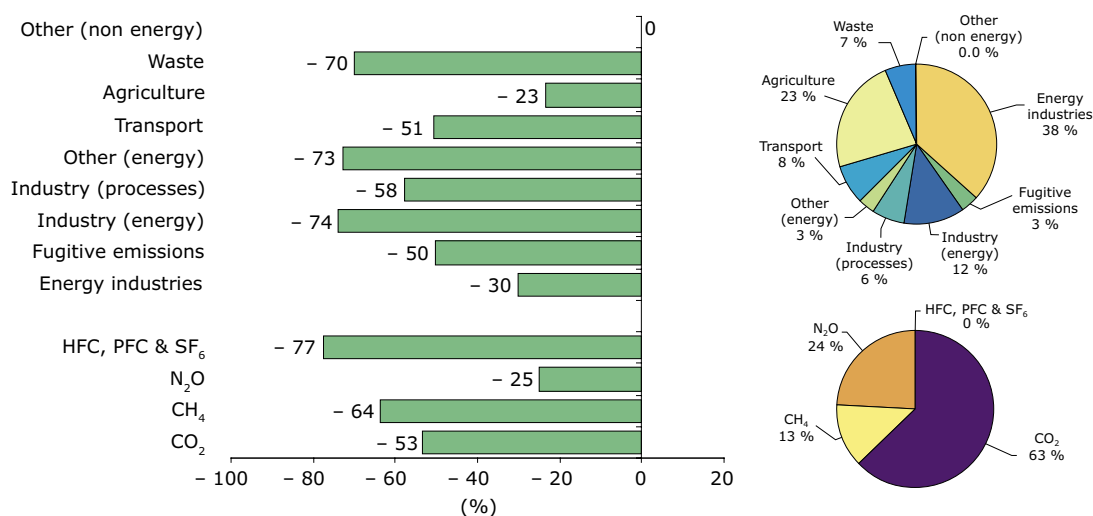
Source: Submissions by country (CRF tables).

Note: The emissions in 1990 are below the 1990 levels because Bulgaria's base year is 1988.

Figure A.47 Bulgarian CO₂ emission trends, 1990–99 (exl. LUCF), in relation to GDP and gross inland energy consumption (GIEC)



Source: Submissions by country (CRF tables), IEA, Eurostat.

Figure A.48 Bulgarian GHG emissions by gas and sector (excluding LUCF) in 1999 (% change, BY–1999)

Source: Submissions by country (CRF tables).

Table A.49 Greenhouse gases and distance-to-target indicators for Bulgaria

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	157.7	137.7	115.7	103.7	102.1	92.6	98.7	102.5	90.5	81.4	77.7	NA	NA
CO ₂ (without LUCF)	103.9	84.1	66.0	59.2	61.9	59.2	62.3	66.8	58.7	52.3	48.4	NA	NA
CH ₄ (without LUCF)	28.0	29.6	28.4	26.2	23.6	17.2	18.6	17.4	14.8	13.7	10.1	NA	NA
N ₂ O (without LUCF)	25.2	24.0	21.2	18.3	16.7	16.2	17.1	17.7	16.3	14.7	19.0	NA	NA
F-gases	0.6	NA	NA	NA	NA	NA	NA	NA	NA	0.6	0.1	NA	NA

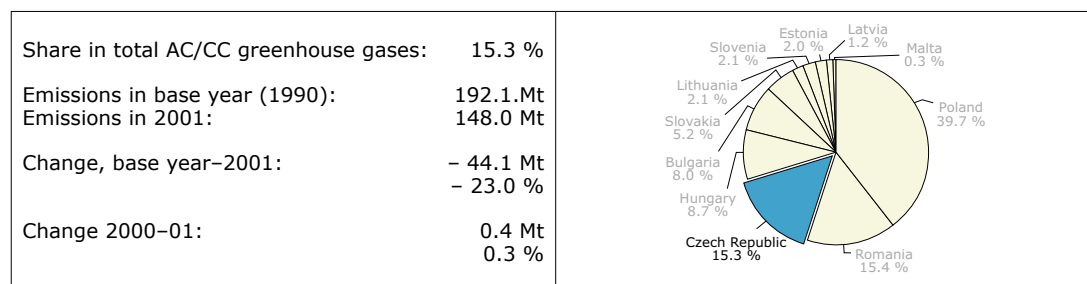
	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	87.3	73.3	65.7	64.7	58.7	62.6	65.0	57.3	51.6	49.3	NA	NA
DTI 2010	0.0	-12.3	-25.9	-33.1	-33.8	-39.4	-35.1	-32.3	-39.6	-45.0	-46.9	NA	NA
CO ₂ (without LUCF)	100.0	81.0	63.6	57.0	59.6	57.0	60.0	64.3	56.6	50.3	46.6	NA	NA
CH ₄ (without LUCF)	100.0	105.7	101.5	93.5	84.1	61.3	66.6	62.1	52.7	49.1	36.2	NA	NA
N ₂ O (without LUCF)	100.0	95.0	84.1	72.7	66.1	64.3	67.8	70.1	64.6	58.3	75.2	NA	NA
F-gases	100.0	NA	NA	NA	NA	NA	NA	NA	NA	100.0	22.6	NA	NA

Table A.50 Sectoral emission indicators (key sources) for Bulgaria

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	104.9	99.5	90.2	91.6	83.5	85.3	82.7	83.2	73.0	69.6	NA	NA
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	55.6	33.7	27.1	30.1	33.5	40.8	39.2	39.1	31.9	26.5	NA	NA
1.A.3. Transport	CO ₂	100.0	86.0	51.6	50.9	58.9	51.8	54.2	49.9	42.1	51.2	49.1	NA	NA
1.A.3. Transport	N ₂ O	100.0	111.1	66.4	63.2	72.1	60.2	62.3	57.5	50.7	55.5	54.0	NA	NA
1.A.4. Other sectors	CO ₂	100.0	70.7	53.7	60.6	54.1	43.7	34.4	122.9	35.2	39.3	32.7	NA	NA
1.A.4. Other sectors	CH ₄	100.0	82.5	45.1	45.0	27.8	36.3	40.7	288.1	47.5	100.0	117.4	NA	NA
1.A.5. Other	CO ₂	100.0	60.4	53.0	11.8	44.0	48.6	18.9	15.7	6.7	2.9	0.0	NA	NA
1.B.1. Solid fuels	CH ₄	100.0	82.5	70.9	77.9	77.7	72.7	75.3	73.3	66.1	69.4	61.0	NA	NA
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
1.B.2. Oil and natural gas	CH ₄	100.0	106.0	90.6	79.9	75.0	75.3	90.2	91.9	72.8	64.6	43.7	NA	NA
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
2. Industrial processes	PFC	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	62.7	NA	NA
2. Industrial processes	HFC	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	17.8	NA	NA
2. Industrial processes	SF ₆	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
2.A. Mineral products	CO ₂	100.0	92.1	53.4	42.7	37.7	41.4	50.3	52.8	44.2	30.5	40.6	NA	NA
2.B. Chemical industry	N ₂ O	100.0	93.1	67.1	54.7	46.8	55.2	79.3	81.0	66.7	40.0	30.2	NA	NA
2.B. Chemical industry	CO ₂	100.0	98.2	80.5	66.0	63.6	71.3	86.0	85.3	70.5	38.1	27.1	NA	NA
2.C. Metal production	CO ₂	100.0	74.2	56.2	53.0	66.1	85.9	93.5	84.6	90.9	75.5	68.8	NA	NA
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
4.A. Enteric fermentation	CH ₄	100.0	93.2	85.4	70.1	54.0	45.2	42.7	41.1	39.4	42.4	43.0	NA	NA
4.B. Manure management	CH ₄	100.0	98.5	86.6	70.4	56.4	47.8	47.6	43.5	38.5	40.8	41.8	NA	NA
4.B. Manure management	N ₂ O	100.0	97.6	87.2	71.9	57.4	48.2	46.9	43.7	40.0	42.8	44.2	NA	NA
4.D. Agricultural soils	N ₂ O	100.0	100.1	91.3	77.7	70.1	67.4	68.6	66.1	66.1	62.5	90.6	NA	NA
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
6.A. Solid waste disposal on land	CH ₄	100.0	112.1	118.8	112.7	102.5	63.1	62.2	55.4	50.0	44.2	30.4	NA	NA
6.B. Waste-water handling	N ₂ O	100.0	95.3	83.4	76.9	73.2	69.9	70.6	68.4	68.4	65.9	58.8	NA	NA
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA

Source: Submission by country (CRF tables).

Czech Republic



The decline of the Czech GHG emissions in the first half of the 1990s ended in 1994. Emissions did not decrease significantly after 1994. In 2000, total emissions increased by 3.5 %, compared with 1999 and in 2001 they stayed at the same level. Emissions from transport increased by 70 % between 1990 and 2001.

Distance-to-target indicator: The Czech GHG emissions decreased from 1990 to 2001 by 23 %. GHG emissions dropped significantly in the period 1990–94, but since 1994 they have not shown a significant decline. Between 1999 and 2000, total GHG emissions increased by 3.5 % and were 19.6 index points below the Kyoto target path. In 2001, it was – 18.6 index points.

Greenhouse gas emissions by sector: The most important source category in 2001 was the combustion of fossil fuels (65 % stationary sources, plus 9 % transport). Agriculture (5 %), industrial processes (5 %), the waste sector (2 %) and fugitive emissions (4 %) were less significant. However, industrial processes have been increasing significantly since 1990 (+ 43 %), as well as transport (+ 70 %). Emissions in other sectors decreased between the base year and 2001. The emission trend followed the GDP development. However, between 1997 and 1999, the GDP was growing significantly faster than the emissions. Intensity of CO₂ decreased between 1990 and 1996. Since 1996, the development of CO₂ emissions and gross inland energy consumption have been parallel.

Greenhouse gas emissions by gas: CO₂ is the most important GHG with a share

of more than 86 % in the total GHG emissions. Emissions of CO₂ decreased by 22 % between 1990 and 2001. The large fuel combustion-related sources show different trends: CO₂ emissions from households and services and from energy use in manufacturing industries decreased by 54 % and 41 % respectively, whereas CO₂ emissions from transport increased by 66 %. Emissions from energy industries increased slightly as well. Process-related CO₂ emissions from mineral products decreased by more than 40 % between 1990 and 2001, due to the decrease of cement and lime production.

Emissions of CH₄ declined by 38 % between 1990 and 2001. Emissions from manure management decreased by 34 %, emissions from enteric fermentation by 48 %. The main reason for this decline was the decreasing animal numbers, in particular cattle and pigs. Emissions from solid waste disposal sites decreased as well (– 21 %).

Emissions of N₂O declined by 26 % between 1990 and 2001. This was mainly due to a decline of emissions from agricultural soil (– 36.5 %). Emissions of N₂O from the chemical industry did not change significantly during this period, whereas emissions from transport increased by 576 %.

The emissions of fluorinated gases have been reported since 1995. During this period, fluorinated gas emissions increased by more than a factor of five, but their share in national totals is only about 1 %.

Figure A.49 Czech GHG emissions compared with Kyoto target for 2008–12 (excluding LUCF)

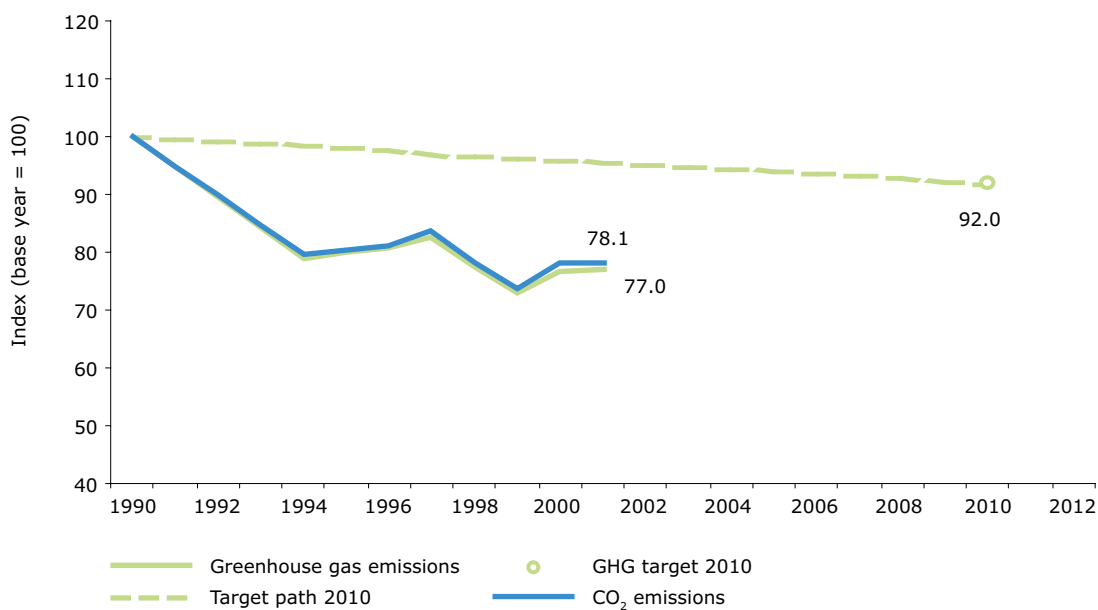
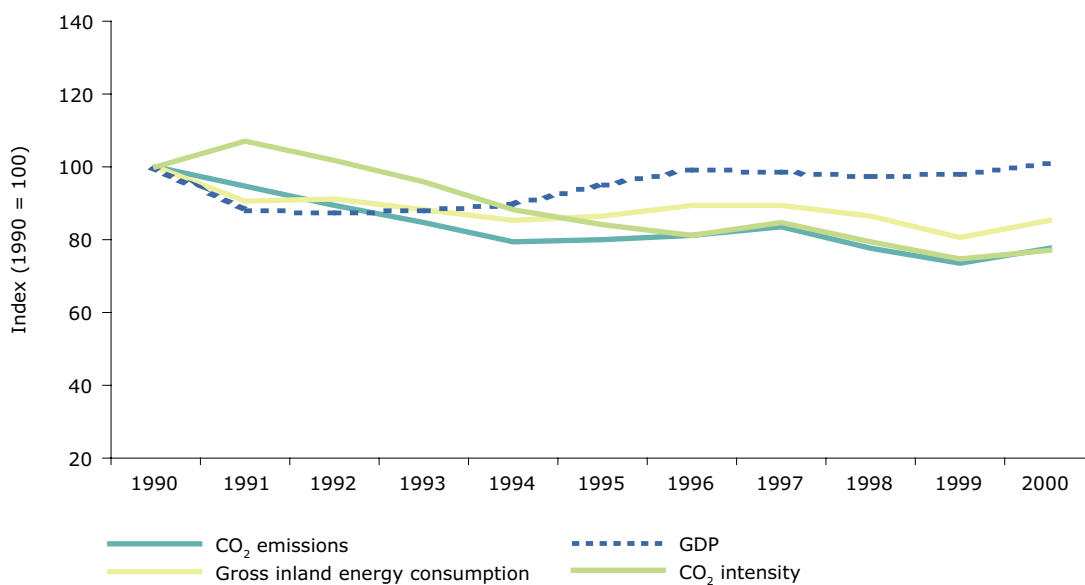
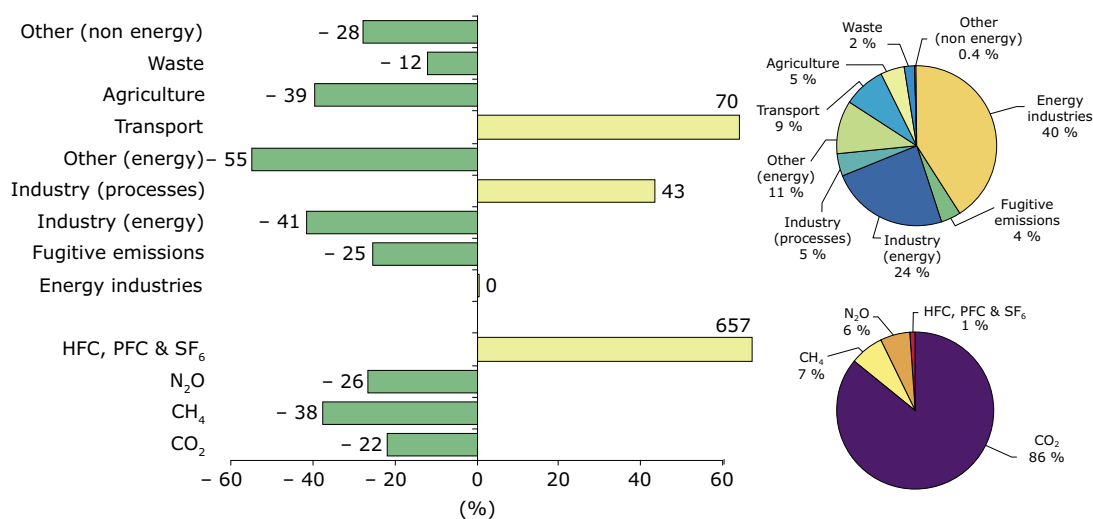


Figure A.50 Czech CO₂ emission trends (1990–2000) compared with GDP and GIEC



Note: Emissions from 1991 to 1993 and 1995 are interpolated.

Source: Submissions by country (CRF tables), IEA, Eurostat.

**Figure A.51 Czech GHG emissions by gas and sector (excluding LUCF) in 2001
(% change, BY–2001)**

Note: Emissions from 1991 to 1993 and 1995 are interpolated.

Source: Submissions by country (CRF tables).

Table A.51 Greenhouse gases and distance-to-target indicators for Czech Republic

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	192.1	192.0	NA	NA	NA	151.9	NA	154.9	158.8	148.6	140.4	147.6	148.0
CO ₂ (without LUCF)	164.0	164.0	NA	NA	NA	130.6	NA	132.8	137.4	128.3	121.1	127.9	128.0
CH ₄ (without LUCF)	16.7	16.7	NA	NA	NA	13.0	NA	12.5	12.0	11.4	10.6	10.7	10.4
N ₂ O (without LUCF)	11.3	11.3	NA	NA	NA	8.3	NA	9.2	8.8	8.4	8.1	8.2	8.3
F-gases	0.2	NA	NA	NA	NA	NA	0.2	0.3	0.6	0.5	0.5	0.9	1.3

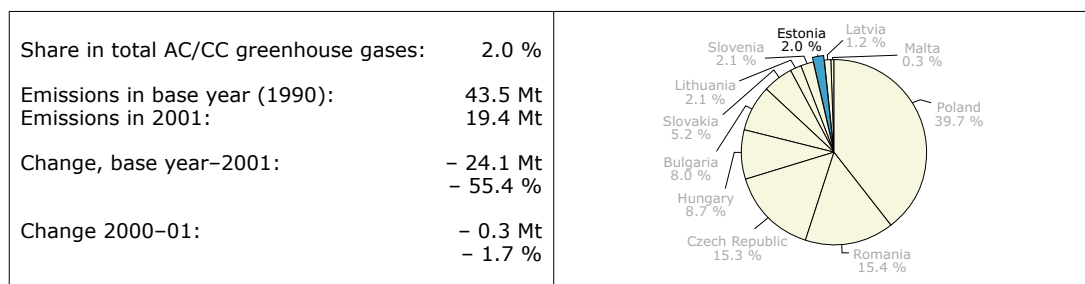
	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	99.9	NA	NA	NA	79.0	NA	80.6	82.7	77.3	73.1	76.8	77.0
DTI 2010	0.0	100.0	NA	NA	NA	-19.4	NA	-17.0	-14.5	-19.5	-23.3	-19.2	-18.6
CO ₂ (without LUCF)	100.0	100.0	NA	NA	NA	79.7	NA	81.0	83.8	78.2	73.8	78.0	78.1
CH ₄ (without LUCF)	100.0	100.0	NA	NA	NA	77.6	NA	75.1	72.0	68.1	63.7	63.8	62.4
N ₂ O (without LUCF)	100.0	100.0	NA	NA	NA	73.5	NA	81.8	78.2	74.5	72.0	72.6	73.6
F-gases	100.0	NA	NA	NA	NA	NA	100.0	190.0	369.4	308.5	310.2	525.2	757.4

Table A.52 Sectoral emission indicators (key sources) for Czech Republic

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	100.0	NA	NA	NA	94.3	NA	97.7	100.0	99.2	91.0	101.7	100.6
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	100.0	NA	NA	NA	74.3	NA	73.8	72.9	59.5	57.4	60.8	58.7
1.A.3. Transport	CO ₂	100.0	100.0	NA	NA	NA	104.5	NA	136.0	156.6	148.2	165.2	152.7	165.8
1.A.3. Transport	N ₂ O	100.0	100.0	NA	NA	NA	216.8	NA	683.2	748.2	541.6	608.6	639.6	675.8
1.A.4. Other sectors	CO ₂	100.0	100.0	NA	NA	NA	57.2	NA	52.5	58.6	57.4	51.1	49.8	46.1
1.A.4. Other sectors	CH ₄	100.0	100.0	NA	NA	NA	53.6	NA	56.0	48.5	35.9	33.6	31.4	21.8
1.A.5. Other	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
1.B.1. Solid fuels	CH ₄	100.0	100.0	NA	NA	NA	77.9	NA	74.2	72.8	69.9	63.3	66.0	67.6
1.B.1. Solid fuels	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
1.B.2. Oil and natural gas	CH ₄	100.0	100.0	NA	NA	NA	116.8	NA	100.3	108.7	87.6	89.4	89.4	72.3
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	PFC	100.0	0.0	NA	NA	NA	0.0	100.0	1 202.6	2 000.0	2 600.0	771.4	2 690.3	4 138.9
2. Industrial processes	HFC	100.0	0.0	NA	NA	NA	0.0	100.0	6 086.4	13 376.5	17 275.3	18 636.5	30 512.3	47 293.0
2. Industrial processes	SF ₆	100.0	0.0	NA	NA	NA	0.0	100.0	109.7	193.7	78.9	66.4	123.4	133.8
2.A. Mineral products	CO ₂	100.0	100.0	NA	NA	NA	82.0	NA	73.3	73.9	78.7	69.9	66.6	59.2
2.B. Chemical industry	N ₂ O	100.0	100.0	NA	NA	NA	82.1	NA	85.3	92.3	98.8	82.5	92.9	91.9
2.B. Chemical industry	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
2.C. Metal production	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	100.0
2.G. Other	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
4.A. Enteric fermentation	CH ₄	100.0	100.0	NA	NA	NA	63.6	NA	62.8	59.6	55.1	54.7	52.0	51.9
4.B. Manure management	CH ₄	100.0	100.0	NA	NA	NA	72.0	NA	74.3	74.9	72.9	73.0	67.6	66.2
4.B. Manure management	N ₂ O	100.0	100.0	NA	NA	NA	71.6	NA	72.2	71.1	67.1	67.1	63.4	62.9
4.D. Agricultural soils	N ₂ O	100.0	100.0	NA	NA	NA	68.3	NA	77.9	72.6	65.3	64.3	62.5	63.5
4.D. Agricultural soils	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
6.A. Solid waste disposal on land	CH ₄	100.0	100.0	NA	NA	NA	99.4	NA	102.0	86.8	87.9	81.5	81.5	78.8
6.B. Waste-water handling	N ₂ O	100.0	100.0	NA	NA	NA	100.0	NA	99.9	99.9	99.9	99.9	100.0	99.3
6.D. Other	CO ₂	0.0	0.0	NA	NA	NA	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0

Source: Submissions by country (CRF tables).

Estonia



Estonian GHG dropped sharply in the early 1990s; since 1993 the decline has been slowing down. In 2000, emissions increased by 0.2 %, compared with 1999. In 2001, national total emissions decreased slightly.

Distance-to-target indicator: Estonian GHG emissions decreased from 1990 to 2001 by 55.4 %. Emissions dropped significantly in the period 1990–93 (– 46 %) and declined by a further 10 % between 1994 and 2000. In 2000, Estonian GHG emissions increased by 0.2 %, compared with 1999, but were still 50.6 index points below the Kyoto target path. In 2001, national total emissions decreased again slightly.

Greenhouse gas emissions by sector: The most important source category in 2001 was the combustion of fossil fuels (76 % stationary sources, plus 10 % transport). Agriculture (4 %), industrial processes (2 %), the waste sector (4 %) and fugitive emissions (4 %) were less significant. Emissions in all sectors decreased by more than 29 % between the base year and 2001. GDP decreased from 1990 to 1994 as well, but since 1995 the trends in emissions and GDP have been opposite. Trends of CO₂ emissions

and gross inland energy consumption have been parallel.

Greenhouse gas emissions by gas:

The most important GHG in Estonia is CO₂ with a share of 88 % in total GHG emissions in 2001. Emissions of CO₂ declined by 55 % between 1990 and 2001. Emissions from energy industries decreased by 53 % and from transport by 29 %. In manufacturing industries and households and services, CO₂ from energy use decreased even more rapidly, by 78 and 87 %, respectively.

Ten percent of total GHG emissions are accounted for by CH₄. Emissions of CH₄ declined by 55 % between 1990 and 2001. Emissions from enteric fermentation and from waste disposal on land declined by 65 %, and CH₄ from manure management decreased by 84 %.

Contributions of N₂O count for 2 % of total GHG emissions. They decreased by 64 % between 1990 and 2001.

Emissions of fluorinated gases have not been reported by Estonia.

Figure A.52 Estonian GHG emissions compared with Kyoto target for 2008–12 (excluding fluorinated gases and LUCF)

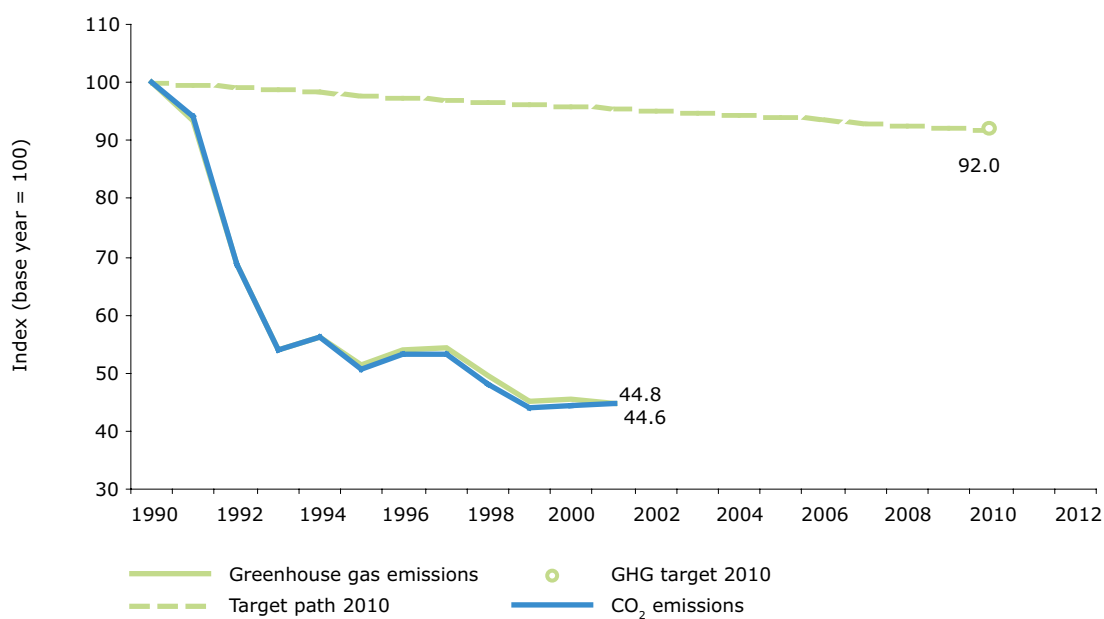
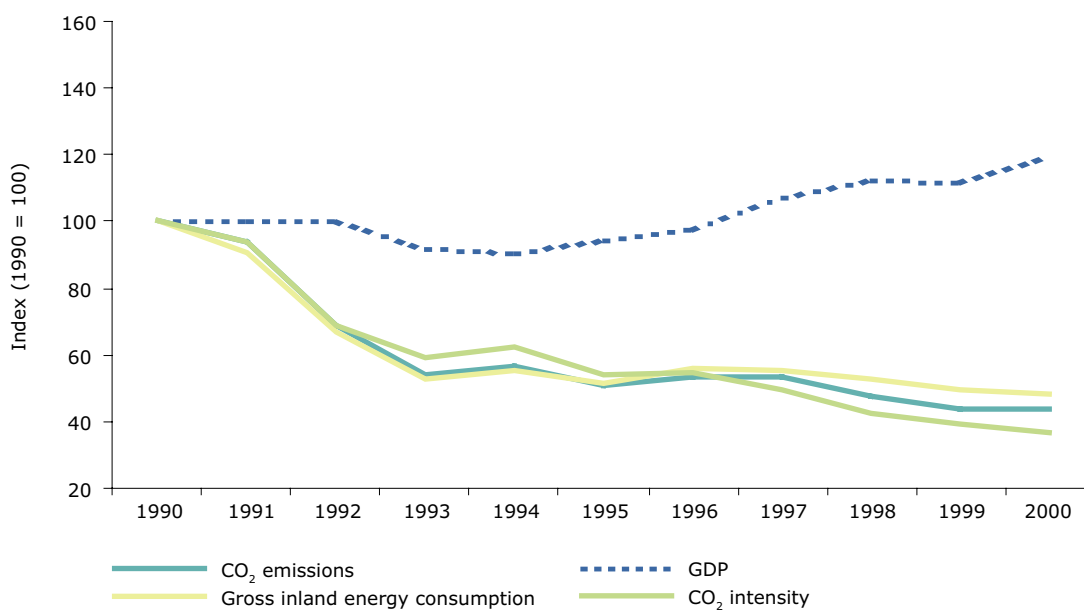


Figure A.53 Estonian CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Source: Submissions by country (CRF tables), IEA, Eurostat.

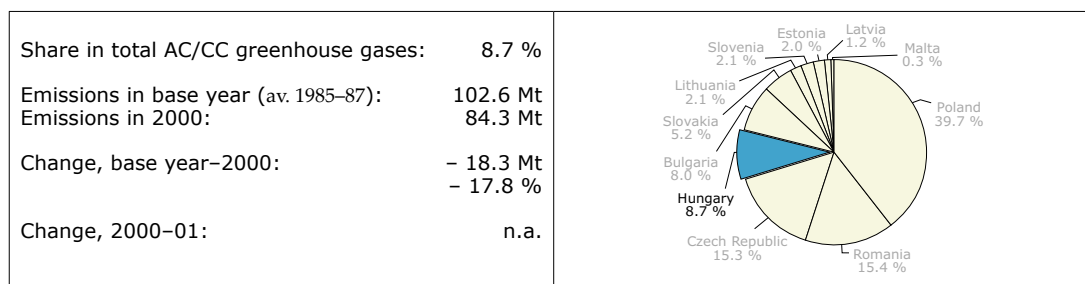
Note: GDP data for 1990 and 1991 are extrapolated (copy of 1992).

Table A.54 Sectoral emission indicators (key sources) for Estonia

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	100.0	96.3	74.2	57.2	59.7	55.0	57.6	56.6	49.7	45.3	46.9	46.8
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	100.0	71.7	46.4	24.6	34.2	23.9	27.5	24.7	25.1	24.9	18.2	22.2
1.A.3. Transport	CO ₂	100.0	100.0	114.3	55.6	63.6	56.5	41.0	38.9	45.0	50.2	44.7	38.3	71.3
1.A.3. Transport	N ₂ O	100.0	100.0	104.1	55.3	62.8	57.5	42.1	40.2	47.1	50.2	46.7	40.2	70.2
1.A.4. Other sectors	CO ₂	100.0	100.0	69.6	43.2	41.3	40.5	41.5	48.2	53.5	47.7	45.3	43.3	12.8
1.A.4. Other sectors	CH ₄	100.0	100.0	118.2	85.6	73.2	88.6	161.6	188.9	189.7	145.7	142.7	141.1	133.3
1.A.5. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.1. Solid fuels	CH ₄	100.0	100.0	90.4	83.7	69.0	67.8	62.5	69.4	67.1	55.4	50.2	57.9	56.8
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.2. Oil and natural gas	CH ₄	100.0	100.0	99.7	58.1	28.5	41.2	47.4	52.5	51.1	48.3	47.0	53.9	58.0
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	PFC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Industrial processes	HFC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Industrial processes	SF ₆	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.A. Mineral products	CO ₂	100.0	100.0	100.2	51.1	31.5	35.0	36.1	33.7	36.8	59.9	56.5	57.7	57.9
2.B. Chemical industry	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.B. Chemical industry	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.C. Metal production	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.A. Enteric fermentation	CH ₄	100.0	100.0	93.7	90.2	69.9	64.9	51.0	46.8	49.5	42.3	36.9	35.0	35.4
4.B. Manure management	CH ₄	100.0	100.0	93.3	75.6	58.9	56.6	51.6	45.2	42.0	41.2	35.9	35.2	16.2
4.B. Manure management	N ₂ O	100.0	100.0	93.3	79.7	62.0	57.2	50.9	45.7	44.0	42.0	36.7	35.0	43.3
4.D. Agricultural soils	N ₂ O	100.0	100.0	98.1	80.3	50.7	44.6	37.3	34.4	38.1	39.6	32.4	38.4	32.7
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.A. Solid waste disposal on land	CH ₄	100.0	100.0	40.8	40.8	42.2	58.5	65.5	71.7	75.4	70.6	72.3	69.0	35.6
6.B. Waste-water handling	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Submission by country (CRF tables).

Hungary



Hungarian GHG emissions declined until 1992 and were almost stable until 1997. In 2000, emissions were above 1997 levels. Hungary did not yet finalise the updated GHG inventory with 2001 data.

Distance-to-target indicator: Hungarian GHG emissions decreased from the base year to 2000 by 17.8 %. Emissions decreased by 22 % between the base year and 1992, and were almost stable between 1992 and 1997, before increasing again in 1998 and 1999. In 2000, Hungarian GHG emissions dropped slightly and were 14.6 index points below the Kyoto target path. Hungary has chosen to use the 1985–87 average as base-year emissions.

Greenhouse gas emissions by sector: The most important source categories in 2000 were the combustion of fossil fuels (55 % stationary sources, plus 11 % transport) and agriculture (17 %). Industrial processes (5 %), the waste sector (5 %) and fugitive emissions (7 %) were less significant. Emissions in most sectors decreased, but the transport sector and agriculture show opposing trends. GHG emissions and GDP show the same trend, but since 1996, GDP has been growing faster than the GHG emissions.

Greenhouse gas emissions by gas:

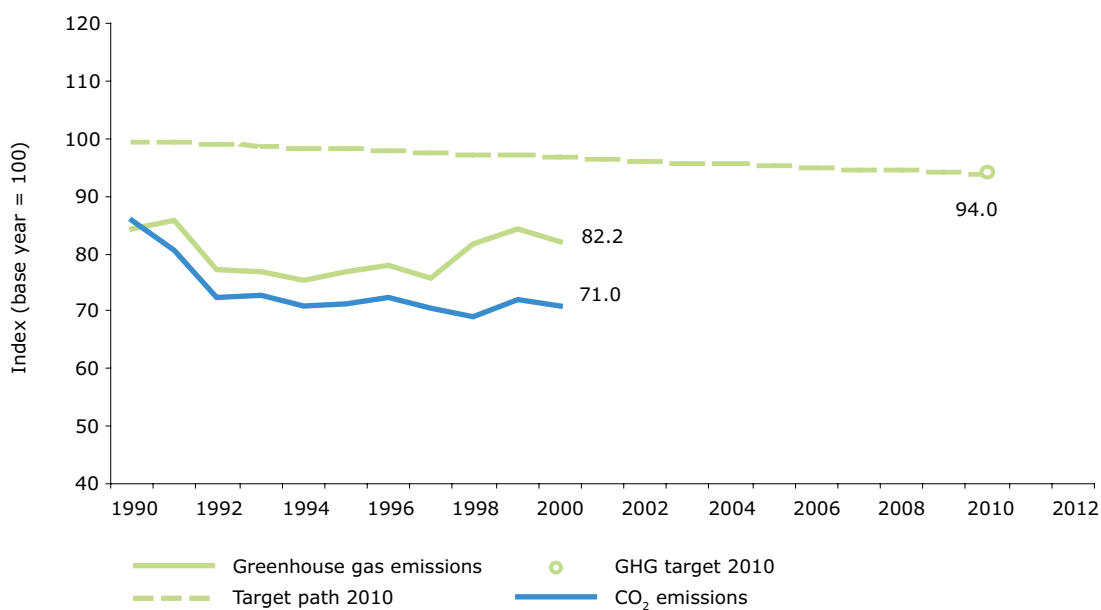
CO₂ is the most important GHG with a share of 70 % in the total GHG emissions. Emissions of CO₂ declined by 29 % between the base year and 2000. Emissions from energy industries and households and services were 39 and 49 % below the base-year levels in 2000. Emissions of CO₂ from energy use in manufacturing industries were again at the base-year level in 2000. Emissions from transport increased by 22 % between the base year and 2000.

Emissions of CH₄ increased from the base year to 1991 by 39 % and since then emissions have been decreasing. In 2000, emissions were 17 % below the base-year level. Emissions of CH₄ from solid waste disposal on land have been reported since 1991 only. They increased by 35 %.

The application of different estimation methods for emissions from agricultural soil might be responsible for the dramatic change in the N₂O emissions trend in 1998.

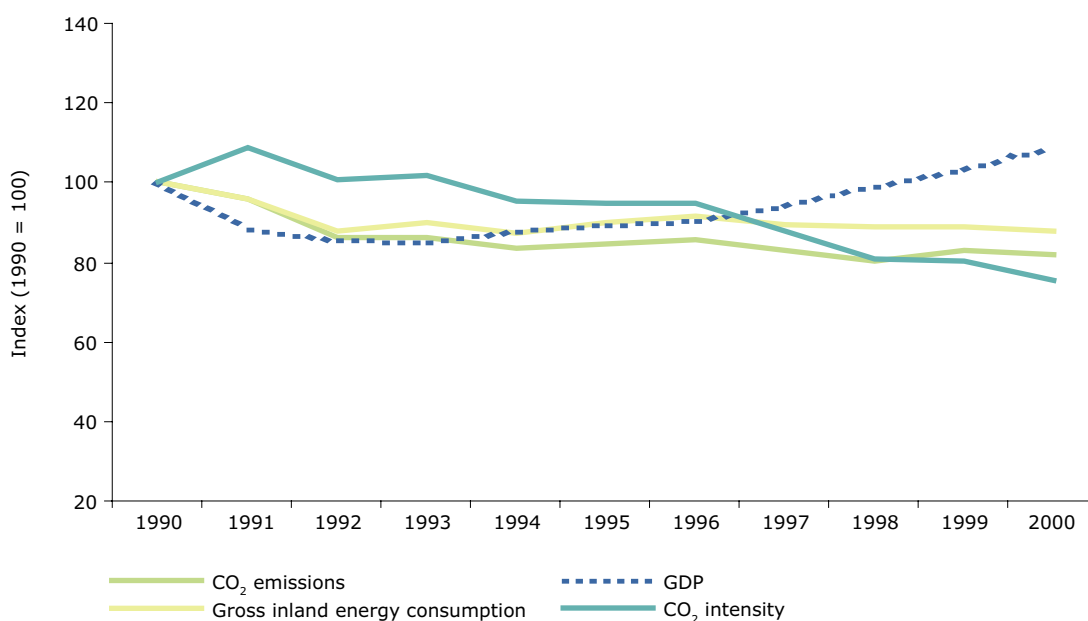
Fluorinated gas emissions have been reported for 1998 and 1999 only. The emissions contribute less than 1 % to the national total emissions.

Figure A.55 Hungarian GHG emissions compared with Kyoto target for 2008–12 (excluding LUCF)

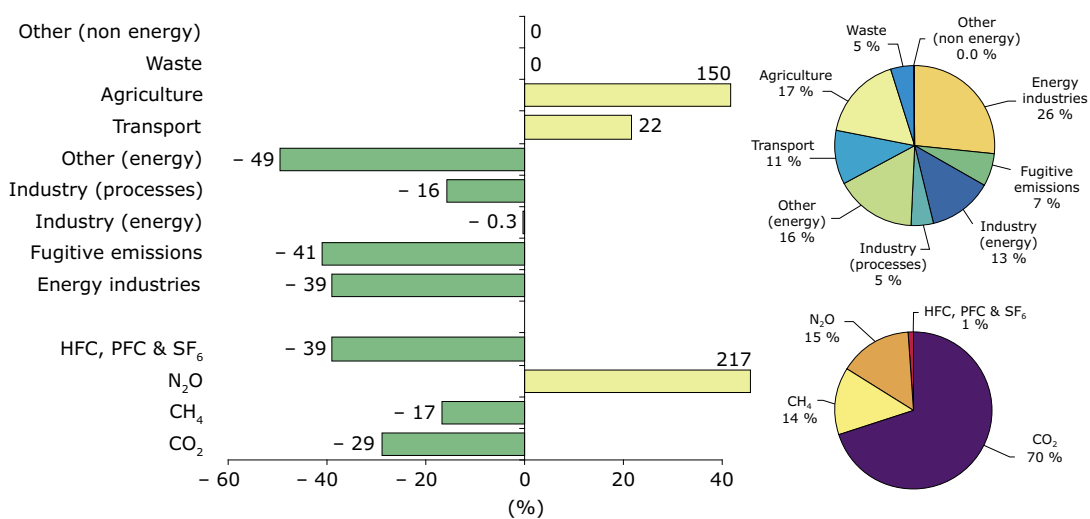


Note: The emissions in 1990 are below 1990 levels because Hungary’s base year is the average of 1985–87.

Figure A.56 Hungarian CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Source: Submission by country (CRF tables), IEA, Eurostat.

**Figure A.57 Hungarian GHG emissions by gas and sector (excluding LUCF) in 2000
(% change, BY–2000)**

Source: Submission country (CRF tables).

Table A.55 Greenhouse gases and distance-to-target indicators for Hungary

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	102.6	86.6	87.9	79.1	79.0	77.2	78.9	80.1	77.8	83.7	86.5	84.3	NA
CO ₂ (without LUCF)	83.7	71.7	67.4	60.6	60.8	59.2	59.8	60.5	58.9	57.6	60.1	59.4	NA
CH ₄ (without LUCF)	14.0	11.4	19.2	17.0	16.6	16.3	16.6	17.1	16.6	14.3	14.3	11.6	NA
N ₂ O (without LUCF)	4.0	3.5	1.3	1.5	1.5	1.7	1.5	1.6	1.4	10.9	11.3	12.7	NA
F-gases	1.0	NA	NA	NA	NA	NA	NA	NA	NA	1.0	0.8	0.6	NA

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	84.4	85.7	77.1	77.0	75.2	76.9	78.1	75.8	81.6	84.4	82.2	NA
DTI 2010	0.0	-15.3	-13.7	-22.1	-21.9	-23.4	-21.4	-19.9	-21.9	-15.9	-12.8	-14.7	NA
CO ₂ (without LUCF)	100.0	85.7	80.5	72.4	72.7	70.7	71.4	72.3	70.4	68.8	71.8	71.0	NA
CH ₄ (without LUCF)	100.0	82.0	137.6	121.7	119.2	116.8	119.1	122.7	118.9	102.3	102.8	83.2	NA
N ₂ O (without LUCF)	100.0	87.8	32.9	38.5	37.8	41.6	38.3	39.5	34.0	271.2	281.1	317.0	NA
F-gases	100.0	NA	NA	NA	NA	NA	NA	NA	NA	100.0	87.0	61.1	NA

Table A.56 Sectoral emission indicators (key sources) for Hungary

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	80.6	77.2	74.4	74.7	71.2	71.6	72.1	71.9	65.4	63.9	60.7	NA
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	72.5	58.6	47.1	50.9	57.9	58.3	56.9	45.0	79.2	91.1	99.4	NA
1.A.3. Transport	CO ₂	100.0	106.0	95.4	92.9	92.2	93.2	90.4	85.4	100.0	108.3	123.6	120.5	NA
1.A.3. Transport	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	109.3	105.9	NA
1.A.4. Other sectors	CO ₂	100.0	90.1	93.8	74.7	75.9	73.2	72.3	78.1	70.0	58.0	57.8	56.9	NA
1.A.4. Other sectors	CH ₄	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	102.3	95.4	NA
1.A.5. Other	CO ₂	100.0	102.1	90.5	113.4	66.5	20.5	75.5	49.0	84.9	0.0	0.0	0.0	NA
1.B.1. Solid fuels	CH ₄	100.0	74.9	72.1	55.8	49.1	47.0	47.5	48.4	48.3	42.3	40.1	34.6	NA
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
1.B.2. Oil and natural gas	CH ₄	100.0	88.3	129.6	114.9	122.3	121.7	129.7	140.8	133.0	135.4	128.3	83.3	NA
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
2. Industrial processes	PFC	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	96.1	36.0	NA
2. Industrial processes	HFC	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	87.4	NA
2. Industrial processes	SF ₆	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	50.2	115.1	NA
2.A. Mineral products	CO ₂	100.0	99.5	35.3	31.2	35.3	38.9	40.1	38.3	39.2	55.0	57.2	58.5	NA
2.B. Chemical industry	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
2.B. Chemical industry	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	5 192.5	6 954.7	NA
2.C. Metal production	CO ₂	0.0	0.0	100.0	42.4	44.0	0.0	0.0	148.5	155.1	145.6	136.1	52.0	NA
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
4.A. Enteric fermentation	CH ₄	100.0	80.2	78.1	67.1	57.8	54.4	53.3	52.3	50.4	51.8	51.1	48.5	NA
4.B. Manure management	CH ₄	100.0	92.1	86.7	77.2	70.7	69.7	66.8	68.0	64.2	71.8	71.4	67.5	NA
4.B. Manure management	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	97.5	159.3	NA
4.D. Agricultural soils	N ₂ O	100.0	89.9	36.8	35.7	32.0	39.5	35.3	36.8	36.7	721.7	727.1	802.2	NA
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
6.A. Solid waste disposal on land	CH ₄	0.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	106.3	149.8	135.4	NA
6.B. Waste-water handling	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA

Source: Submission by country (CRF tables).

Latvia

Share in total AC/CC greenhouse gases:	1.2 %
Emissions in base year (1990):	29.0 Mt
Emissions in 2001:	11.4 Mt
Change, base year–2001:	– 17.7 Mt – 60.8 %
Change, 2000–01:	1.6 Mt 16.9 %

Latvian GHG emissions have been decreasing almost every year since 1990, but the reduction rates are declining. In 2001, emissions increased by 17 % compared with 2000. Emissions of CH₄ from solid waste disposal on land increased significantly from 1990 to 2001.

Distance-to-target indicator: Latvian GHG emissions decreased from 1990 to 2001 by 60.8 %. Most of this reduction occurred prior to 1994. Also in 2000, GHG emissions decreased and were 61.9 index points below the Kyoto target path in 2000. This was the largest deviation from the Kyoto target path of all acceding and candidate countries. However, in 2001 emissions increased by 17 % compared with 2000. GDP has been increasing in Latvia since 1995.

Greenhouse gas emissions by sector: The most important source category in 2001 was the combustion of fossil fuels (about 45 % stationary sources, plus 24 % transport). Agriculture (14 %), industrial processes (2 %), the waste sector (12 %) and fugitive emissions (1 %) were less significant. However, emissions from the waste sector have been increasing significantly since 1990 (+ 47 %). Emissions in other sectors decreased between the base year and 2001.

Greenhouse gas emissions by gas:

The most important GHG in Latvia is CO₂, with a share of 69 % in the total GHG emissions in 2001 (76 % in 1990). Emissions of CO₂ decreased by 65 % between 1990 and 2001. Emissions of CO₂ from energy industries decreased by about 75 %, and emissions from mineral production by about 78 %.

Emissions of CH₄ declined by 34 % between 1990 and 2001. Emissions of CH₄ from enteric fermentation and manure management decreased by more than 70 %, but emissions from solid waste disposal on land increased by about 110 %, with a leap between 2000 and 2001.

Emissions of N₂O declined by 65 % between 1990 and 2001. There was a 66 % decrease in N₂O from agricultural soil. Emissions of N₂O from manure management have been reported since 1998 only. Emissions of N₂O in the transport sector decreased twice more than CO₂ emissions, which is in contrast to most other acceding and candidate countries.

Emissions of fluorinated gases (particularly SF₆) have been reported only for the years 1995–2001. During this period, the emissions increased by 243 %.

Figure A.58 Latvian GHG emissions compared with Kyoto target for 2008–12 (excluding LUCF)

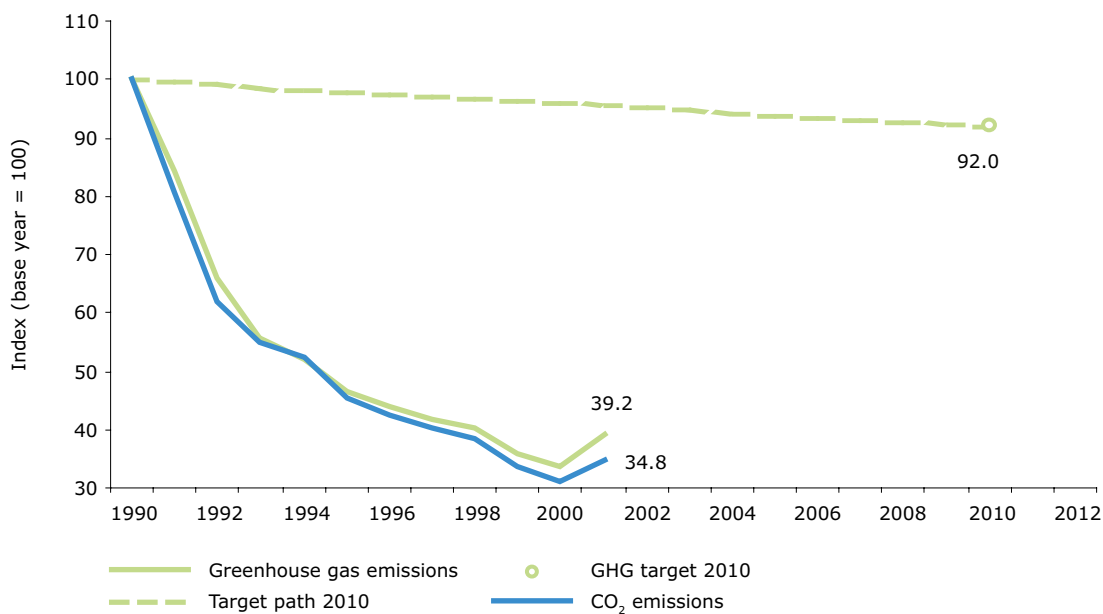
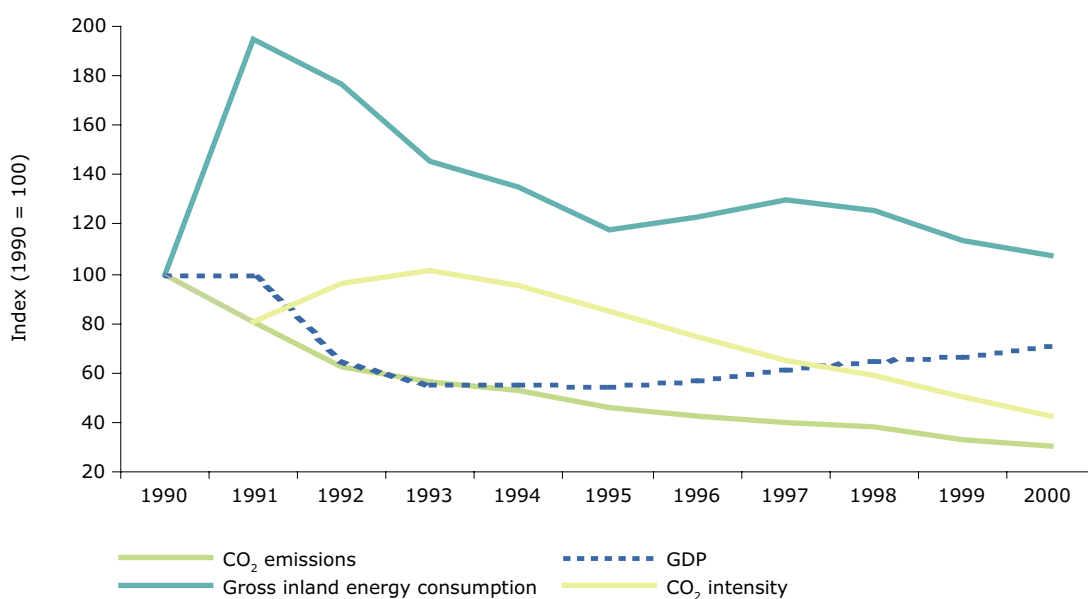


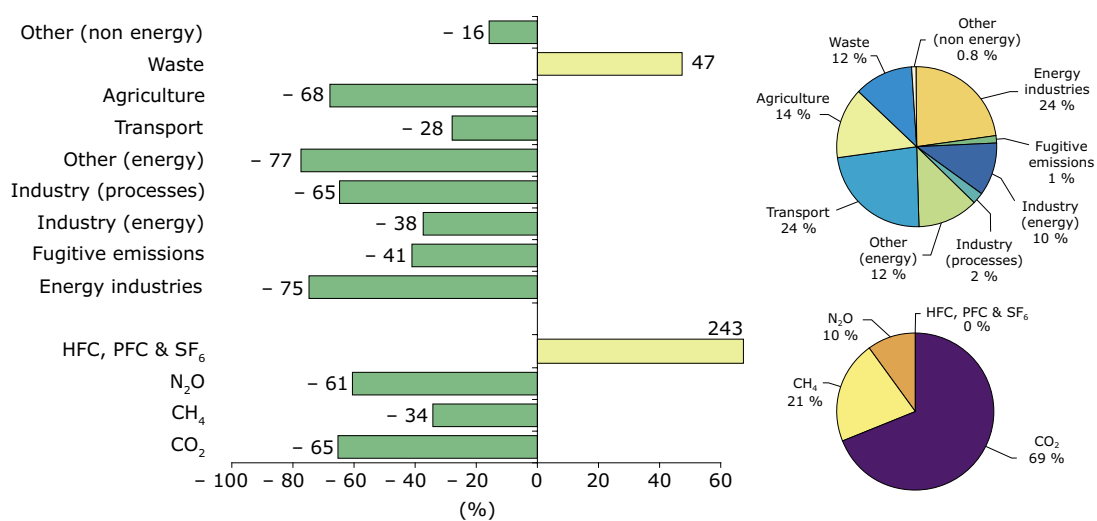
Figure A.59 Latvian CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Note: GDP for 1990 was not available.

Source: Submissions by country (CRF tables), IEA, Eurostat.

Figure A.60 Latvian GHG emissions by gas and sector (excluding LUCF) in 2001
(% change, BY–2001)



Source: Submission by country (CRF tables).

Table A.57 Greenhouse gases and distance-to-target indicators for Latvia

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	29.0	29.0	24.5	19.1	16.2	15.2	13.6	12.8	12.2	11.7	10.4	9.7	11.4
CO ₂ (without LUCF)	22.4	22.4	18.1	13.8	12.3	11.8	10.2	9.5	9.0	8.6	7.6	6.9	7.8
CH ₄ (without LUCF)	3.7	3.7	3.6	3.2	2.3	2.2	2.3	2.2	2.1	2.0	1.9	1.8	2.4
N ₂ O (without LUCF)	3.0	3.0	2.9	2.2	1.5	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.2
F-gases	0.0	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0

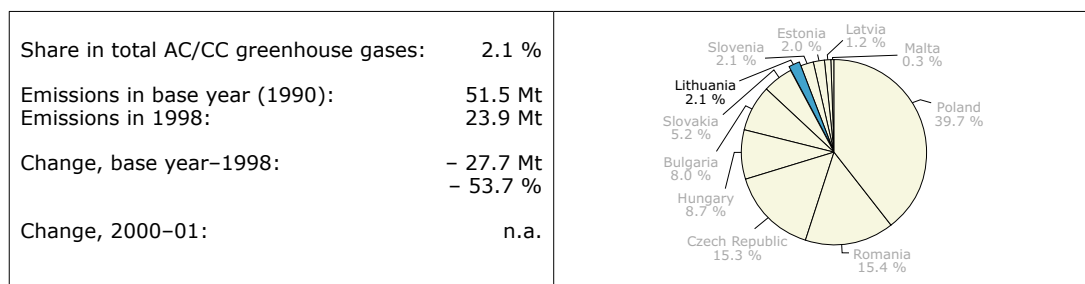
	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	100.0	84.4	65.9	55.7	52.2	46.7	44.1	41.9	40.2	35.8	33.5	39.2
DTI 2010	0.0	0.0	- 15.2	- 33.3	- 43.1	- 46.2	- 51.3	- 53.5	- 55.3	- 56.6	- 60.6	- 62.5	- 56.4
CO ₂ (without LUCF)	100.0	100.0	80.6	61.8	55.1	52.5	45.6	42.3	40.1	38.5	33.8	31.0	34.8
CH ₄ (without LUCF)	100.0	100.0	97.1	85.3	63.3	58.2	61.8	60.6	56.6	54.4	50.2	48.6	65.8
N ₂ O (without LUCF)	100.0	100.0	96.8	72.9	51.3	42.0	36.0	36.4	37.0	35.5	32.8	34.2	39.3
F-gases	100.0	NA	NA	NA	NA	NA	100.0	116.0	161.7	192.0	237.3	287.0	343.3

Table A.58 Sectoral emission indicators (key sources) for Latvia

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	100.0	88.2	66.4	58.5	46.4	46.6	41.4	33.4	32.7	26.9	23.8	25.4
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	100.0	80.5	68.1	49.0	90.0	67.9	66.8	103.9	88.3	78.2	65.8	61.5
1.A.3. Transport	CO ₂	100.0	100.0	65.0	55.9	65.6	56.4	63.5	58.6	58.3	57.7	55.9	56.7	73.1
1.A.3. Transport	N ₂ O	100.0	100.0	70.1	56.3	52.3	17.9	21.8	20.5	21.7	22.3	41.3	42.2	54.0
1.A.4. Other sectors	CO ₂	100.0	100.0	75.9	58.2	49.0	50.9	28.6	26.3	19.6	18.7	16.1	14.2	18.6
1.A.4. Other sectors	CH ₄	100.0	100.0	98.5	84.3	91.6	96.2	130.0	157.4	134.3	126.2	105.4	79.2	147.0
1.A.5. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.1. Solid fuels	CH ₄	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.2. Oil and natural gas	CH ₄	100.0	100.0	96.3	87.8	84.0	82.1	79.9	77.0	71.9	69.0	65.7	60.8	59.0
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	PFC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	HFC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	SF ₆	100.0	0.0	0.0	0.0	0.0	0.0	100.0	116.0	161.7	192.0	237.3	287.0	343.3
2.A. Mineral products	CO ₂	100.0	100.0	103.2	42.7	15.9	27.1	22.6	32.9	27.1	41.7	28.6	23.0	22.1
2.B. Chemical industry	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.B. Chemical industry	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.C. Metal production	CO ₂	100.0	100.0	24.9	12.6	45.2	68.9	11.4	63.2	94.6	86.8	94.7	126.3	86.8
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.A. Enteric fermentation	CH ₄	100.0	100.0	96.6	80.9	49.9	41.4	40.1	37.9	35.4	32.3	28.1	27.4	28.7
4.B. Manure management	CH ₄	100.0	100.0	93.7	71.4	43.0	38.9	40.0	35.9	33.6	31.5	28.8	28.0	30.0
4.B. Manure management	N ₂ O	100.0	100.0	105.4	98.6	73.5	63.8	63.5	59.3	55.4	50.8	44.7	43.5	46.2
4.D. Agricultural soils	N ₂ O	100.0	100.0	97.3	69.9	46.8	38.2	30.2	30.8	32.1	31.0	27.9	30.0	34.1
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.A. Solid waste disposal on land	CH ₄	100.0	100.0	101.4	104.5	105.8	106.8	127.0	123.2	116.0	117.6	115.5	118.0	209.5
6.B. Waste-water handling	N ₂ O	100.0	100.0	99.7	98.5	96.8	95.4	94.2	93.6	92.9	92.1	91.3	89.0	88.5
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Submission by country (CRF tables).

Lithuania



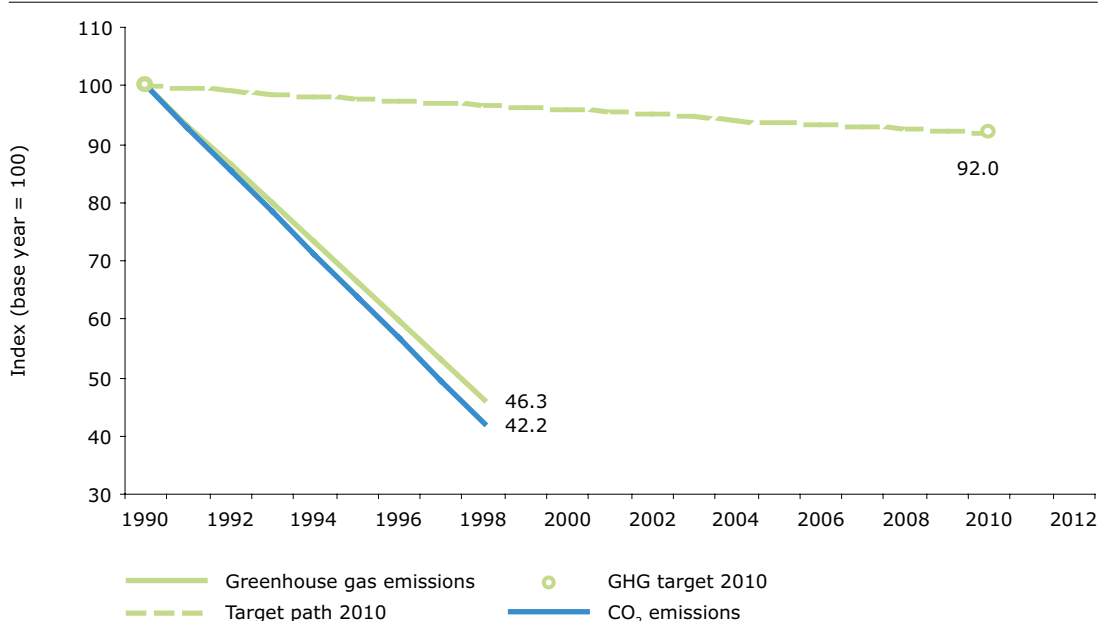
Lithuanian GHG emissions dropped sharply between 1990 and 1998. Partly consistent data are available from the UNFCCC database for 1990 and 1998 only.

Distance-to-target indicator: Lithuanian GHG emissions decreased from 1990 to 1998 by 53.7 %. National totals were available for the years 1990 and 1995–98 only. The missing values for 1991–94 were interpolated. In 1998, Lithuania was 50.5 index points below its Kyoto target path. Also GDP decreased from 1990 to 1994, but since 1995, the trends in emissions and GDP have been opposing.

Greenhouse gas emissions by sector: Combustion of fossil fuels is the most significant activity (43 % from electricity and heat production, transport contributes 16 %). The share of industrial processes, with a contribution of 23 %, is also significant.

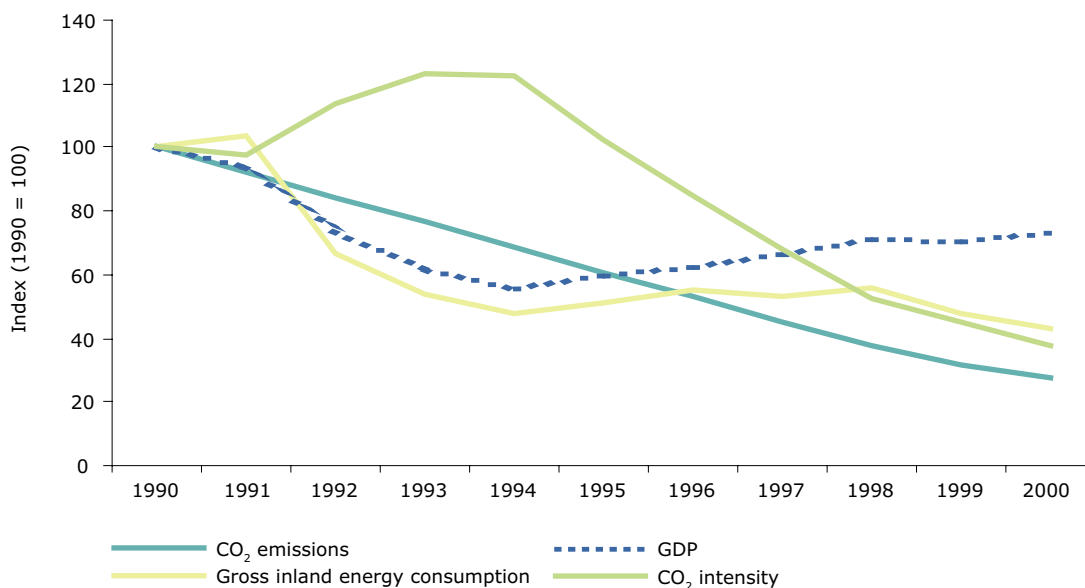
Greenhouse gas emissions by gas: The most important GHG is CO₂ with a share of 70 % in total GHG emissions. Emissions of CO₂ decreased faster than the other gases. Emissions of fluorinated gases are not reported. The data availability from Lithuania is very limited, so no more details can be given.

Figure A.61 Lithuanian GHG emissions compared with Kyoto target for 2008–12 (excluding fluorinated gases and LUCF)



Note: Emission data for years 1991 to 1997 are interpolated.

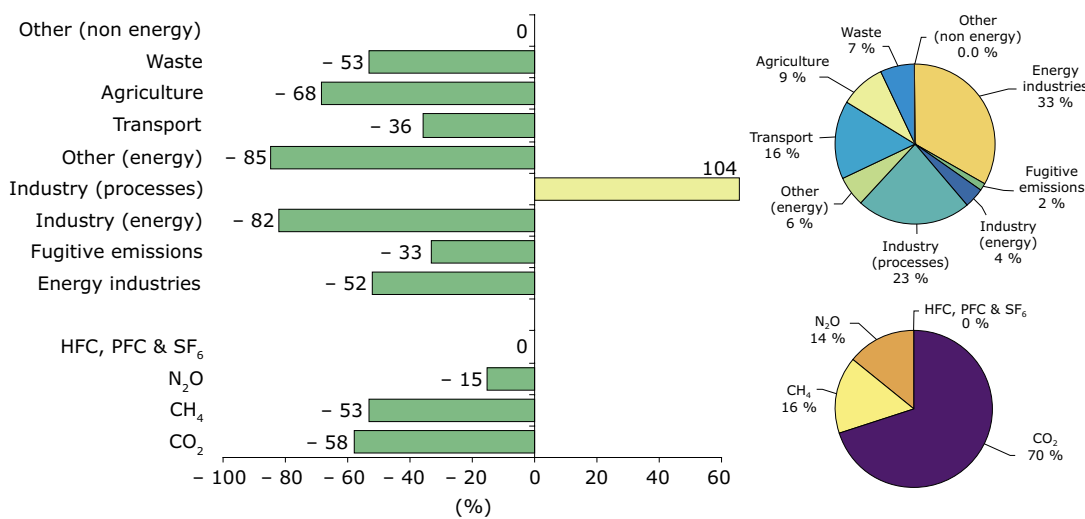
Figure A.62 Lithuanian CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Source: Submissions by country (CRF tables), IEA, Eurostat.

Note: CO₂ emissions for 1999 and 2000 extrapolated with energy indicators.

Figure A.63 Lithuanian greenhouse gas emissions by gas and sector (excluding fluorinated gases and LUCF) in 1998 (% change, BY–1998)



Source: UNFCCC database.

Table A.59 Greenhouse gases and distance-to-target indicators for Lithuania

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO ₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	51.5	51.5	NA	NA	NA	NA	NA	NA	NA	23.9	NA	NA	NA
CO ₂ (without LUCF)	39.5	39.5	NA	NA	NA	NA	NA	NA	NA	16.7	NA	NA	NA
CH ₄ (without LUCF)	7.9	7.9	NA	NA	NA	NA	NA	NA	NA	3.7	NA	NA	NA
N ₂ O (without LUCF)	4.1	4.1	NA	NA	NA	NA	NA	NA	NA	3.4	NA	NA	NA
F-gases	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

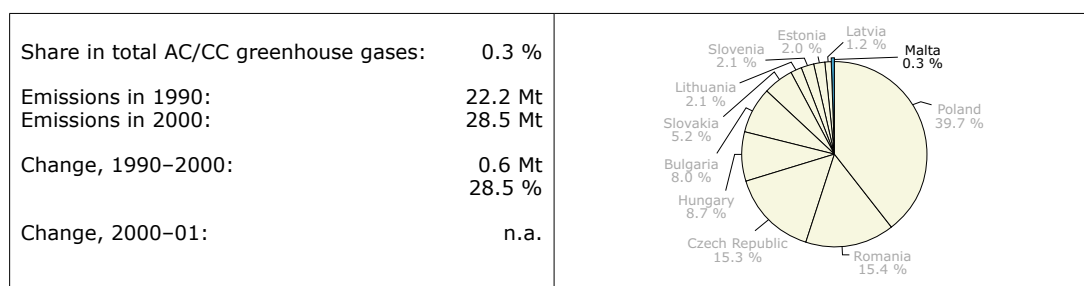
	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	46.3	NA	NA	NA
DTI 2010	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	-50.5	NA	NA	NA
CO ₂ (without LUCF)	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	42.2	NA	NA	NA
CH ₄ (without LUCF)	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	46.8	NA	NA	NA
N ₂ O (without LUCF)	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	84.5	NA	NA	NA
F-gases	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A.60 Sectoral emission indicators (key sources) for Lithuania

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	48.2	NA	NA	NA
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	17.9	NA	NA	NA
1.A.3. Transport	CO ₂	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	64.8	NA	NA	NA
1.A.3. Transport	N ₂ O	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	11.8	NA	NA	NA
1.A.4. Other sectors	CO ₂	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	19.7	NA	NA	NA
1.A.4. Other sectors	CH ₄	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	306.4	NA	NA	NA
1.A.5. Other	CO ₂	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
1.B.1. Solid fuels	CH ₄	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
1.B.1. Solid fuels	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
1.B.2. Oil and natural gas	CH ₄	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	66.6	NA	NA	NA
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
2. Industrial processes	PFC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Industrial processes	HFC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Industrial processes	SF ₆	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.A. Mineral products	CO ₂	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	80.5	NA	NA	NA
2.B. Chemical industry	N ₂ O	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	662.1	NA	NA	NA
2.B. Chemical industry	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	100.0	NA	NA	NA
2.C. Metal production	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
2.G. Other	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
4.A. Enteric fermentation	CH ₄	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	46.3	NA	NA	NA
4.B. Manure management	CH ₄	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	43.2	NA	NA	NA
4.B. Manure management	N ₂ O	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
4.D. Agricultural soils	N ₂ O	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	15.3	NA	NA	NA
4.D. Agricultural soils	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
6.A. Solid waste disposal on land	CH ₄	100.0	100.0	NA	NA	NA	NA	NA	NA	NA	42.0	NA	NA	NA
6.B. Waste-water handling	N ₂ O	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA
6.D. Other	CO ₂	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	0.0	NA	NA	NA

Source: UNFCCC database.

Malta



Malta's GHG emissions have increased significantly since 1990. The share of Malta in the regional GHG emissions is only 0.3 %. Presented emissions are the result of the first GHG inventory performed by Malta. The inventory was prepared according to the 1996 IPCC guidelines.

Distance-to-target indicator: Malta's GHG emissions increased from the base year to 2000 by 28.5 %. Malta has no Kyoto target.

Greenhouse gas emissions by sector: The most important source categories in 2000 were energy production (64 %), transport (18 %) and the waste sector (11 %). Industry (energy) (2 %) and

agriculture (3 %) were less significant. Emissions in all sectors increased between 1990 and 2000. GHG emissions and GDP show the same trend, but since 1994, GDP has been growing faster than the GHG emissions.

Greenhouse gas emissions by gas: CO₂ is the most important GHG with a share of 85 % in total GHG emissions. Emissions of CO₂ increased by 29 % between the base year and 2000. Emissions of CH₄ increased from the base year to 2000 by 28 %. The N₂O emissions have decreased by 4 % since 1990. Fluorinated gas emissions have not been reported by Malta.

Figure A.64 Malta's greenhouse gas emissions (excluding fluorinated gases and LUCF)

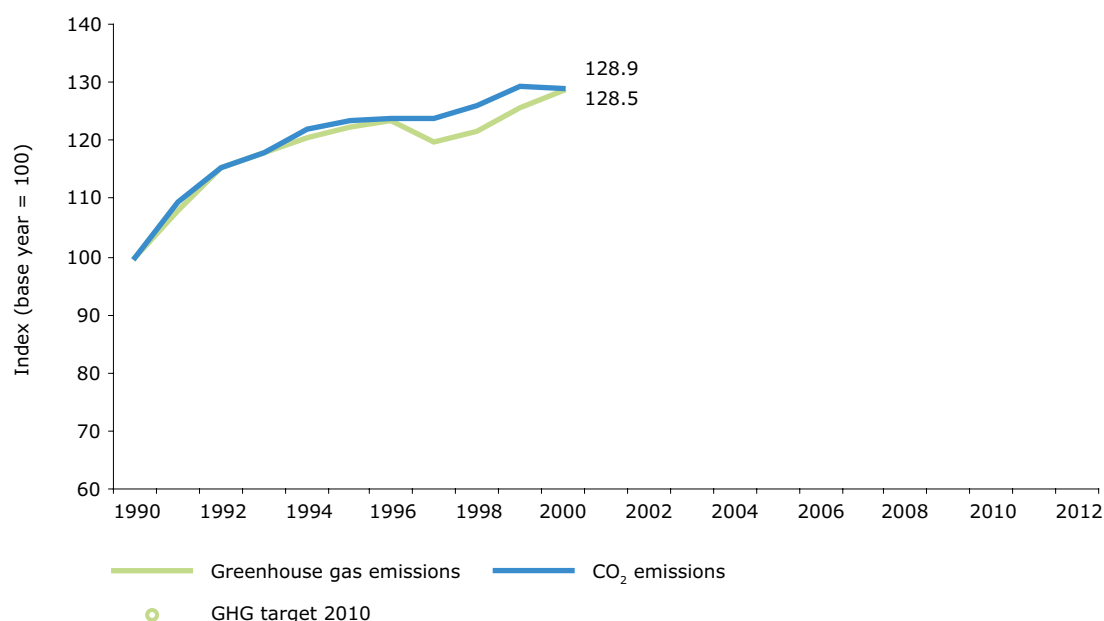
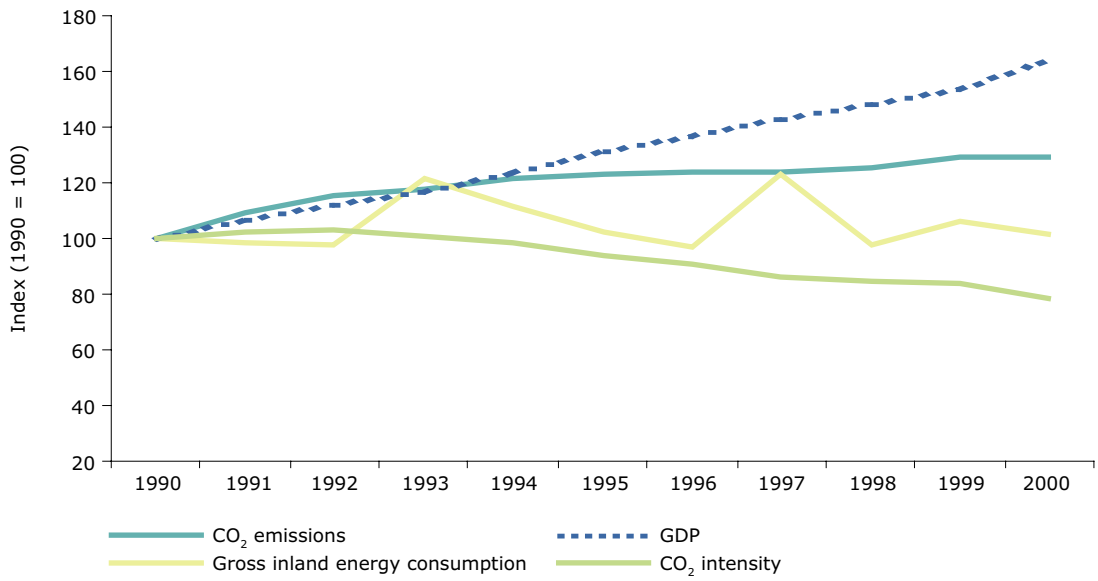


Figure A.65 Malta's CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Source: Submission by country (CRF tables), IEA, Eurostat.

Figure A.66 Malta's greenhouse gas emissions by gas and sector (excluding LUCF) in 2000 (% change, BY–2000)

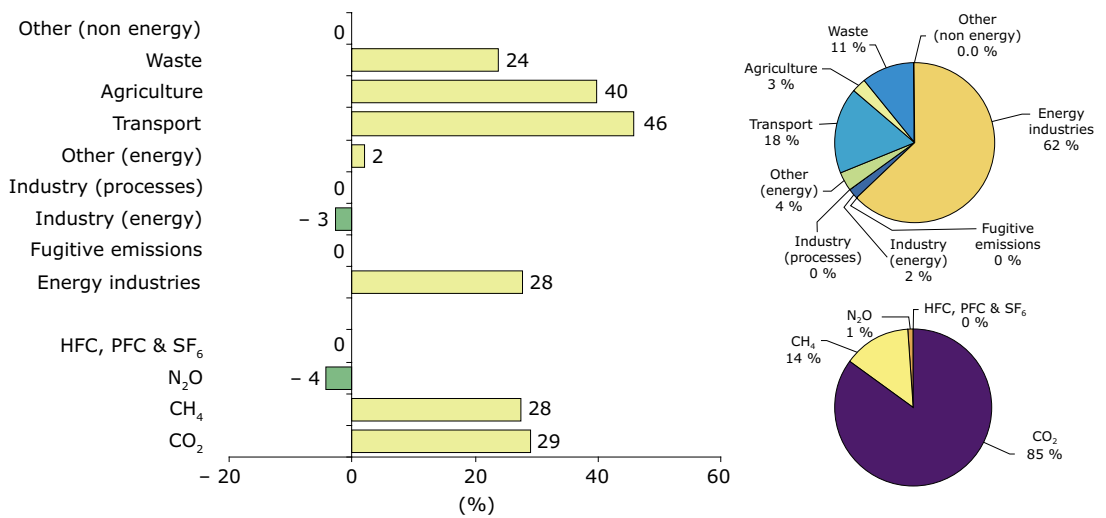


Table A.61 Sectoral emission indicators (key sources) for Malta

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO ₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)		2.2	2.4	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.8	2.8	NA
CO ₂ (without LUCF)		1.9	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.5	2.4	NA
CH ₄ (without LUCF)		0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.4	NA
N ₂ O (without LUCF)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
F-gases		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

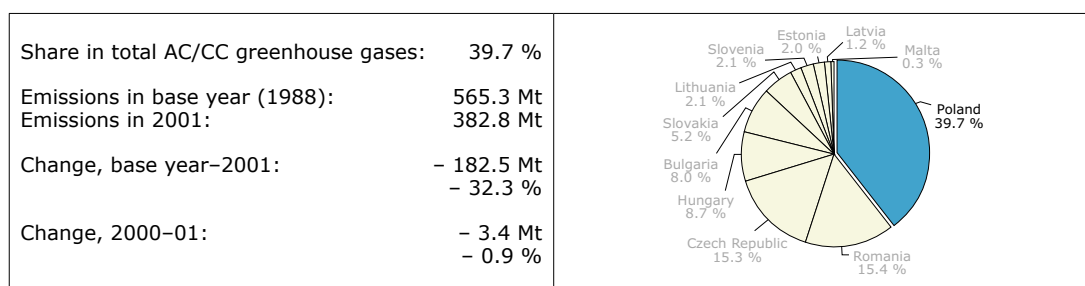
	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)		100.0	107.9	115.3	117.8	120.5	122.3	123.3	119.7	121.6	125.5	128.5	NA
DTI 2010	-	-	-	-	-	-	-	-	-	-	-	-	-
CO ₂ (without LUCF)		100.0	109.5	115.4	117.9	121.9	123.3	123.7	123.8	125.8	129.3	128.9	NA
CH ₄ (without LUCF)		100.0	98.6	115.4	117.6	113.1	117.4	123.0	95.6	96.6	103.8	127.6	NA
N ₂ O (without LUCF)		100.0	100.2	103.1	103.7	102.8	94.4	92.4	92.5	93.1	95.3	95.6	NA
F-gases		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A.62 Sectoral emission indicators (key sources) for Malta

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	100.0	110.7	117.2	119.3	123.4	123.6	122.3	122.6	125.1	129.0	127.6	NA
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	100.0	105.3	99.4	98.0	96.7	101.0	105.2	99.0	94.3	92.1	97.0	NA
1.A.3. Transport	CO ₂	100.0	100.0	105.8	113.0	119.1	124.9	128.7	135.2	138.4	140.6	143.2	145.1	NA
1.A.3. Transport	N ₂ O	100.0	100.0	363.0	394.3	418.5	444.0	469.9	490.3	490.2	497.6	511.2	531.2	NA
1.A.4. Other sectors	CO ₂	100.0	100.0	107.8	106.8	107.2	105.3	112.0	111.9	103.2	101.4	106.6	109.7	NA
1.A.4. Other sectors	CH ₄	100.0	100.0	880.8	824.4	813.8	804.1	876.3	895.3	815.2	646.8	724.9	799.3	NA
1.A.5. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
1.B.1. Solid fuels	CH ₄	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
1.B.2. Oil and natural gas	CH ₄	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
2. Industrial processes	PFC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Industrial processes	HFC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2. Industrial processes	SF ₆	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.A. Mineral products	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	100.0	94.0	88.3	55.5	26.6	22.7	NA
2.B. Chemical industry	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
2.B. Chemical industry	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	100.0	79.1	95.7	94.7	60.4	47.6	NA
2.C. Metal production	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
4.A. Enteric fermentation	CH ₄	100.0	100.0	100.0	162.3	159.3	148.4	174.3	160.3	172.5	117.3	125.4	148.4	NA
4.B. Manure management	CH ₄	100.0	100.0	100.0	164.2	162.6	158.6	169.8	154.2	137.4	103.5	106.9	129.8	NA
4.B. Manure management	N ₂ O	100.0	100.0	100.0	173.0	170.5	163.4	181.8	170.8	162.4	115.1	121.1	147.5	NA
4.D. Agricultural soils	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
6.A. Solid waste disposal on land	CH ₄	100.0	100.0	98.2	103.0	106.4	102.7	103.1	114.1	79.6	92.7	100.0	124.5	NA
6.B. Waste-water handling	N ₂ O	100.0	100.0	101.0	105.4	104.6	105.8	105.3	105.9	107.0	107.7	108.6	108.0	NA
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA

Source: IPCC tables submitted by country.

Poland



Polish GHG emissions dropped by 23 % between 1988 and 1991 and declined by a further 7 % by 1999. Emissions of CO₂ from transport have increased by 11 % since 1998. Total emissions were, in 2001, still decreasing slightly, however, CO₂ emissions show opposing trends. With a 40 % share, Poland is the largest GHG emission producer in the acceding and candidate countries region.

Distance-to-target indicator: GHG emissions in Poland decreased from the base year to 2001 by 32.3 %. Emissions dropped between the base year and 1991 by 22.5 %, and from 1992 to 1999 by a further 7 %. Polish GHG emissions were 28.9 index points below the Kyoto target path in 2001. Poland has chosen 1988 as the base year. GDP has been increasing

since 1992. The increase from 1990 to 1999 was almost 40 %. Since 1994, the trends in emissions and in GDP go in opposite directions.

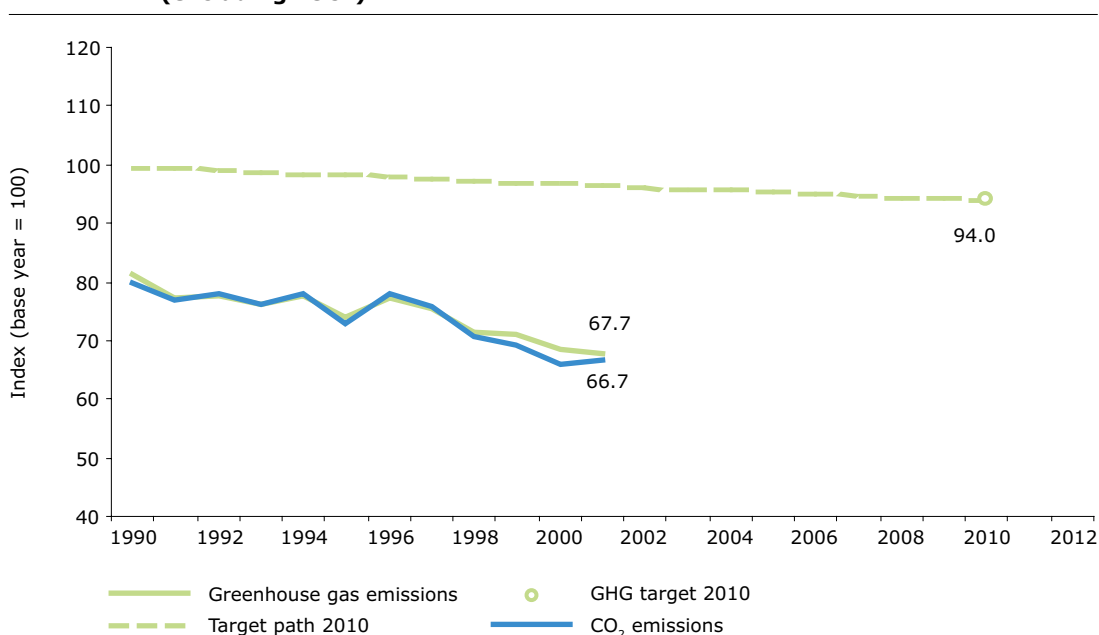
Greenhouse gas emissions by sector:

The most important source category in Poland is stationary combustion of energy (73 %), plus transport (8 %). Agriculture contributes by 7 %, industrial processes by 5 %. Transport emissions have increased since the base year by 7 %. In all other sectors the emissions are decreasing.

Greenhouse gas emissions by gas:

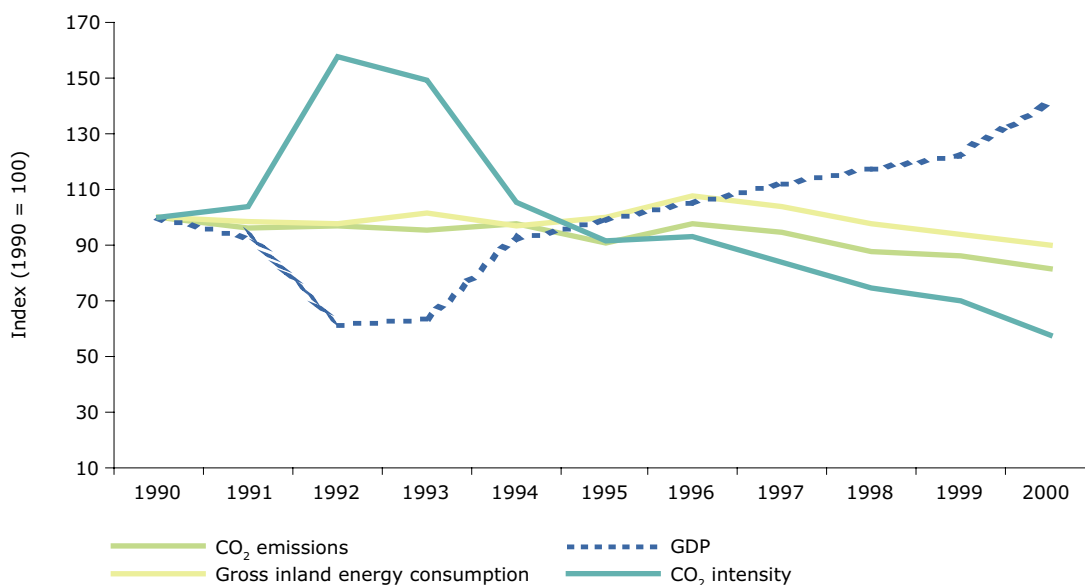
CO₂ is the most important GHG with a share of 83 % in total GHG emissions. Emissions of CH₄ and N₂O are less important.

Figure A.67 Polish greenhouse gas emissions compared with Kyoto target for 2008–12 (excluding LUCF)



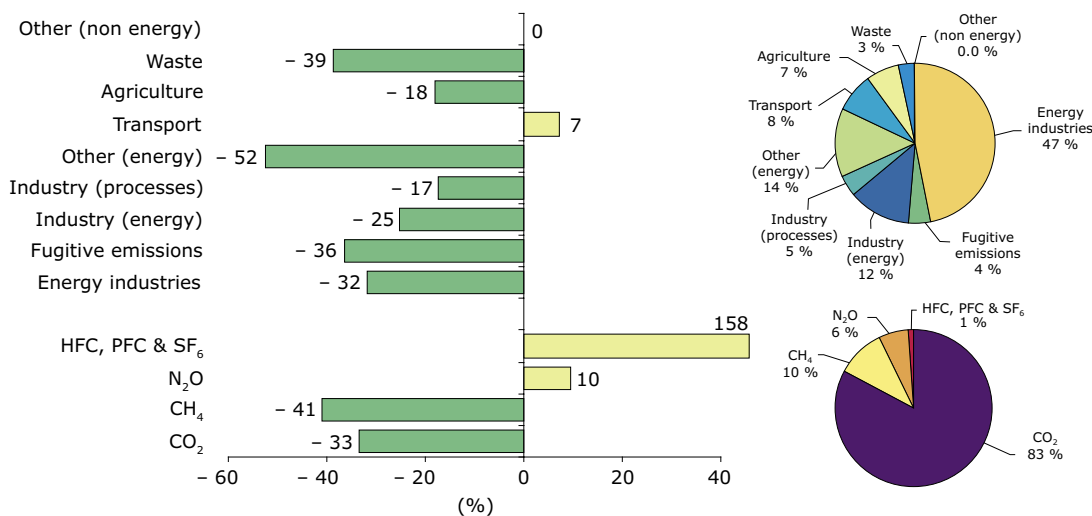
Note: The emissions in 1990 are below 1990 levels because Poland's base year is 1988.

Figure A.68 Polish CO₂ emission trends (1990–2000) compared with GDP and GIEC



Source: Submissions by country (CRF tables), IEA, Eurostat.

Figure A.69 Polish greenhouse gas emissions by gas and sector (excluding LUCF) in 2001 (% change, BY–2001)



Source: Country submission, CRF tables.

Table A.63 Greenhouse gases and distance-to-target indicators for Poland

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO ₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	565.3	458.9	437.4	439.1	429.6	439.0	417.3	437.4	427.2	403.5	401.6	386.2	382.8
CO ₂ (without LUCF)	476.6	380.7	367.0	371.6	363.1	371.6	348.2	372.5	361.6	337.4	329.7	314.8	317.8
CH ₄ (without LUCF)	65.9	58.8	54.4	52.0	51.1	51.8	51.6	47.3	47.8	49.0	47.3	45.8	38.8
N ₂ O (without LUCF)	21.8	19.4	16.1	15.6	15.4	15.6	16.7	16.7	16.7	16.0	23.3	23.9	23.9
F-gases	0.8	NA	NA	NA	NA	NA	0.8	0.8	1.0	1.0	1.3	1.6	2.2

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	81.2	77.4	77.7	76.0	77.7	73.8	77.4	75.6	71.4	71.0	68.3	67.7
DTI 2010	0.0	- 18.5	- 22.0	- 21.5	- 22.9	- 20.9	- 24.5	- 20.6	- 22.1	- 26.0	- 26.1	- 28.5	- 28.9
CO ₂ (without LUCF)	100.0	79.9	77.0	78.0	76.2	78.0	73.0	78.2	75.9	70.8	69.2	66.1	66.7
CH ₄ (without LUCF)	100.0	89.2	82.4	78.8	77.4	78.6	78.2	71.7	72.6	74.4	71.7	69.5	58.9
N ₂ O (without LUCF)	100.0	89.0	73.8	71.3	70.6	71.3	76.6	76.5	76.7	73.2	106.6	109.4	109.6
F-gases	100.0	NA	NA	NA	NA	NA	100.0	99.8	121.2	123.0	159.6	192.5	258.1

Table A.64 Sectoral emission indicators (key sources) for Poland

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	90.8	89.4	85.6	77.8	76.9	71.9	75.2	74.0	71.0	69.1	67.7	68.3
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	79.4	59.0	59.1	83.9	108.1	108.1	118.6	111.2	100.3	84.6	82.6	74.9
1.A.3. Transport	CO ₂	100.0	103.1	98.5	107.9	98.0	104.6	89.5	99.5	94.4	99.6	111.1	99.9	106.7
1.A.3. Transport	N ₂ O	100.0	105.4	93.1	106.9	92.3	94.6	100.8	110.8	104.6	128.5	143.8	145.4	153.7
1.A.4. Other sectors	CO ₂	100.0	50.1	53.6	63.1	63.6	57.7	50.6	57.6	54.7	45.0	48.6	40.8	45.0
1.A.4. Other sectors	CH ₄	100.0	58.8	134.5	18.4	432.1	277.6	415.7	407.9	399.4	394.7	380.7	370.8	411.1
1.A.5. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	100.0	72.3	63.5	60.8	34.5	34.1	213.0
1.B.1. Solid fuels	CH ₄	100.0	76.6	72.7	60.2	67.6	69.4	71.1	71.5	71.4	60.0	56.2	54.3	54.6
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.2. Oil and natural gas	CH ₄	100.0	95.3	81.2	80.1	83.6	84.0	90.6	95.9	94.0	95.5	93.4	100.4	105.4
1.B.2. Oil and natural gas	CO ₂	100.0	98.1	94.3	115.1	132.1	156.6	162.3	177.4	162.3	198.1	235.8	346.9	407.3
2. Industrial processes	PFC	100.0	0.0	0.0	0.0	0.0	0.0	100.0	94.4	101.1	98.7	94.7	87.8	107.4
2. Industrial processes	HFC	100.0	0.0	0.0	0.0	0.0	0.0	100.0	301.1	855.1	997.7	2 472.2	3 960.7	5 709.4
2. Industrial processes	SF ₆	100.0	0.0	0.0	0.0	0.0	0.0	100.0	50.0	120.0	240.0	700.0	716.0	734.8
2.A. Mineral products	CO ₂	100.0	64.1	69.0	78.4	70.4	68.9	77.8	68.1	82.0	81.3	82.9	87.8	73.5
2.B. Chemical industry	N ₂ O	100.0	80.3	65.1	64.3	65.1	71.2	78.6	80.6	78.2	64.2	60.0	69.8	71.5
2.B. Chemical industry	CO ₂	100.0	100.0	1 082.8	86.2	693.1	100.0	686.2	562.1	469.0	272.4	210.3	4 356.6	4 185.9
2.C. Metal production	CO ₂	100.0	73.7	85.8	45.7	78.6	48.6	78.7	78.9	88.9	83.6	76.6	69.1	62.1
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.A. Enteric fermentation	CH ₄	100.0	98.4	88.7	80.3	75.2	74.0	70.1	67.6	68.3	66.3	58.2	53.6	51.3
4.B. Manure management	CH ₄	100.0	98.3	100.2	98.9	86.4	87.1	87.5	79.7	82.2	82.7	69.2	64.2	63.6
4.B. Manure management	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	92.8	90.5
4.D. Agricultural soils	N ₂ O	100.0	94.4	75.5	72.9	69.5	68.8	72.8	70.6	72.3	72.3	82.3	80.2	80.2
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.A. Solid waste disposal on land	CH ₄	100.0	91.8	88.0	101.1	88.1	91.1	90.9	67.3	70.4	93.9	98.8	97.0	53.5
6.B. Waste-water handling	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	99.5
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Submissions by country (CRF tables).

Romania

Share in total AC/CC greenhouse gases:	15.4 %	
Emissions in base year (1988):	264.8 Mt	
Emissions in 2001:	148.3 Mt	
Change, base year–2001:	- 116.6 Mt - 44.0 %	
Change, 2000–01:	- 7.6 Mt - 4.9 %	

Romanian GHG emissions declined sharply in 1991, but emission reductions seem to have levelled off. The quality of the submitted data in 2003 improved significantly compared with the previous submission.

Distance-to-target indicator: Romanian GHG emissions decreased from 1989 to 2001 by 44 %. Romanian GHG emissions were 39.4 index points below the Kyoto target path in 2001. Trends of GDP, CO₂ emissions and gross inland energy consumption were nearly parallel.

Greenhouse gas emissions by sector:

The most important source category in Romania is stationary combustion of energy (63 %) plus transport (8 %). Agriculture contributes 9 % and industrial processes 5 %. Transport emissions have increased since the base year by 46 %. The waste sector emissions increased by 91 %. In all other sectors the emissions are decreasing.

Greenhouse gas emissions by gas:

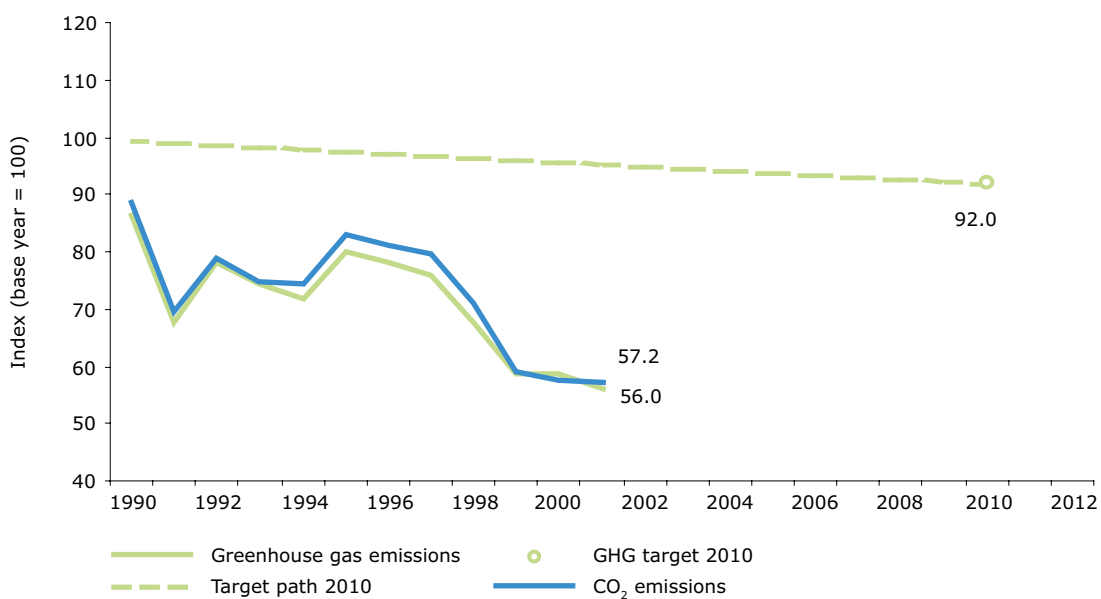
The most important GHG is CO₂ with a share of about 76 % in the total GHG emissions. Emissions of CO₂ declined by 43 % between the base year and 2001. Emissions of CO₂ from energy industries decreased by 30 %, whereas emissions from transport increased by 47 %. Emissions of CO₂ from mineral products decreased by about 52 %.

About 19 % of total GHG emissions is contributed by CH₄. These emissions decreased by 42 % between the base year and 2001. Emissions from waste disposal increased by more than 50 %. Those from enteric fermentation declined by 50 %, however, emissions from manure management increased in the same period by 2 %. Fugitive CH₄ emissions from oil and natural gas and the emissions from mining decreased by more than 50 % each.

The share of N₂O is about 5 % of total GHG emissions. Between the base year and 2001, N₂O decreased by 63 %. That from the chemical industry decreased by 93 %, whereas emissions from transport decreased by 60 %. Emissions of N₂O from manure management were not reported for the base year.

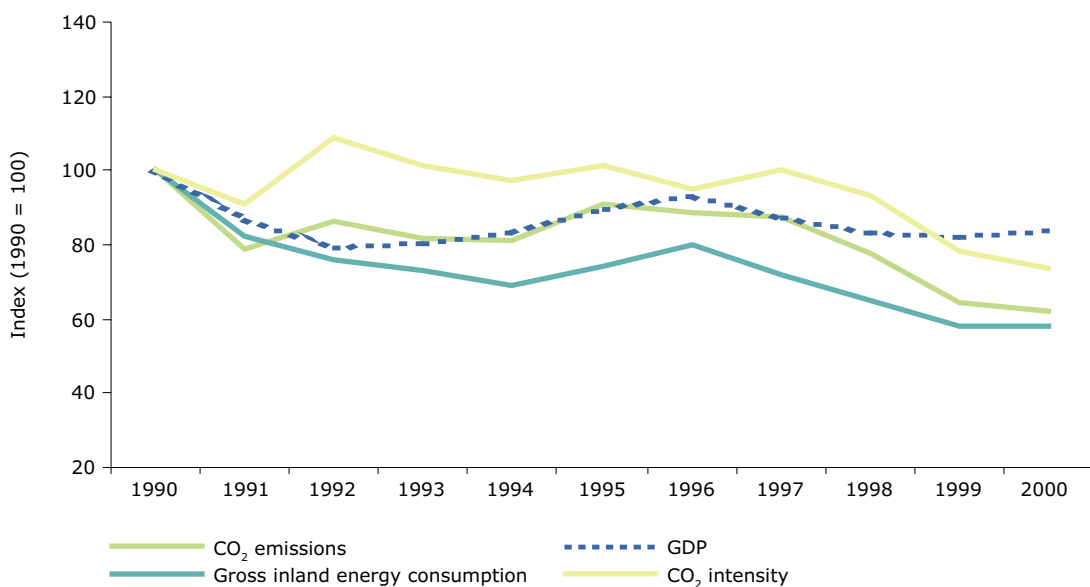
The emissions of fluorinated gases have been reported since 1992 and their contribution to national totals is less than 0.5 %. Fluorinated gas emissions have increased more than 27 % since 1992.

Figure A.70 Romanian greenhouse gas emissions compared with Kyoto target for 2008–12 (excluding LUCF)

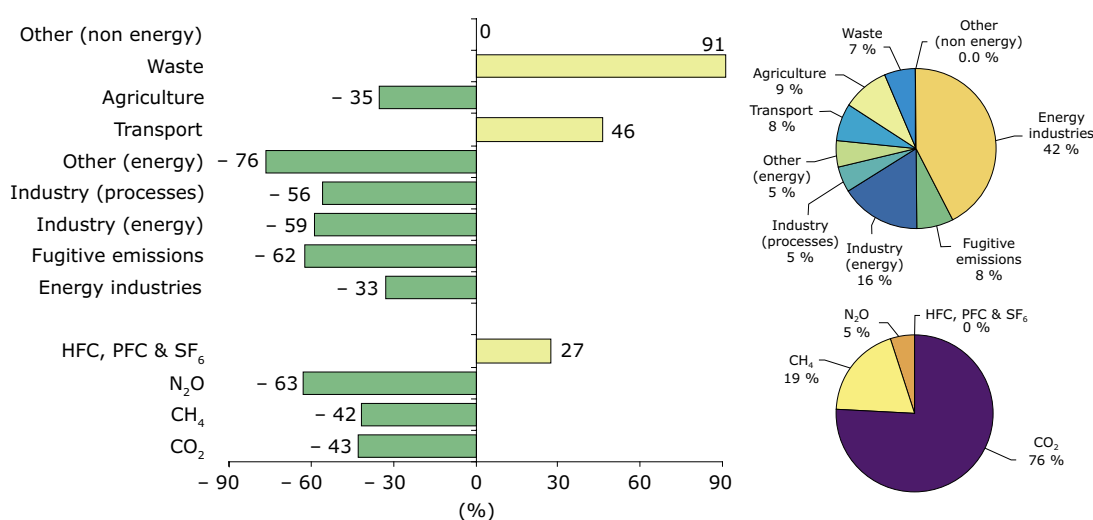


Note: The emissions in 1990 are below 1990 levels because Romania’s base year is 1988.

Figure A.71 Romania CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Source: Submissions by country (CRF tables), IEA, Eurostat.

Figure A.72 Romanian greenhouse gas emissions by gas and sector (excluding LUCF) in 2001 (% change, BY–2001)**Table A.65 Greenhouse gases and distance-to-target indicators for Romania**

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	264.8	228.5	179.3	207.0	197.1	190.4	212.3	206.9	201.1	179.1	155.1	155.8	148.3
CO ₂ (without LUCF)	194.8	172.5	135.7	153.9	145.8	144.9	161.9	158.3	155.3	138.0	115.4	112.2	111.4
CH ₄ (without LUCF)	49.0	41.0	36.1	44.8	42.9	39.3	42.1	41.2	38.3	35.1	33.9	34.8	28.6
N ₂ O (without LUCF)	20.5	15.0	7.6	7.9	7.9	5.7	7.7	6.9	6.9	5.3	5.1	8.2	7.6
F-gases	0.5	NA	NA	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.6	0.7	0.7

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	86.3	67.7	78.2	74.4	71.9	80.2	78.1	75.9	67.6	58.6	58.9	56.0
DTI 2010	0.0	-13.3	-31.5	-20.7	-24.1	-26.2	-17.5	-19.2	-21.0	-29.0	-37.6	-37.0	-39.4
CO ₂ (without LUCF)	100.0	88.5	69.6	79.0	74.8	74.4	83.1	81.3	79.7	70.9	59.2	57.6	57.2
CH ₄ (without LUCF)	100.0	83.8	73.6	91.5	87.6	80.2	86.1	84.1	78.2	71.7	69.2	71.1	58.3
N ₂ O (without LUCF)	100.0	73.1	36.9	38.3	38.7	28.0	37.8	33.7	33.5	25.7	24.9	40.0	37.2
F-gases	100.0	NA	NA	83.6	81.8	84.8	100.0	100.6	113.9	122.4	121.8	126.0	127.3

Table A.66 Sectoral emission indicators (key sources) for Romania

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	83.9	64.9	60.6	61.6	60.8	59.3	60.7	67.5	46.5	47.3	40.3	69.7
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	87.5	65.6	134.6	121.9	123.5	154.0	141.7	127.0	131.4	95.4	97.8	41.8
1.A.3. Transport	CO ₂	100.0	119.3	95.3	96.6	84.8	84.1	76.8	98.7	97.7	96.3	78.2	87.6	147.3
1.A.3. Transport	N ₂ O	100.0	127.6	101.5	36.0	31.2	30.6	26.2	35.0	34.4	33.7	27.1	30.6	39.1
1.A.4. Other sectors	CO ₂	100.0	102.9	90.6	16.8	14.8	12.3	14.4	14.0	17.1	17.4	14.8	15.1	25.8
1.A.4. Other sectors	CH ₄	100.0	99.3	75.9	109.6	110.2	284.8	426.2	531.6	354.0	317.3	293.3	284.8	219.9
1.A.5. Other	CO ₂	100.0	69.5	65.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.1. Solid fuels	CH ₄	100.0	56.8	53.9	76.3	78.6	43.6	62.0	63.1	51.1	39.6	34.6	43.6	43.2
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.2. Oil and natural gas	CH ₄	100.0	87.9	74.1	55.8	53.7	48.2	50.9	50.0	42.0	38.5	36.8	36.4	36.0
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	PFC	100.0	0.0	0.0	83.6	81.8	84.8	100.0	100.6	113.9	122.4	121.8	126.0	127.3
2. Industrial processes	HFC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	SF ₆	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.A. Mineral products	CO ₂	100.0	77.0	56.0	57.3	55.5	52.5	52.4	59.2	56.5	56.4	52.9	52.0	47.9
2.B. Chemical industry	N ₂ O	100.0	53.1	26.3	27.7	28.0	33.8	24.3	22.6	18.9	4.2	6.4	11.0	6.9
2.B. Chemical industry	CO ₂	0.0	0.0	0.0	100.0	93.6	83.1	104.4	106.6	56.0	28.3	48.4	72.2	66.5
2.C. Metal production	CO ₂	0.0	0.0	0.0	100.0	99.7	107.9	122.8	115.8	123.4	116.6	80.8	89.9	8.9
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.A. Enteric fermentation	CH ₄	100.0	87.3	76.8	75.2	63.8	62.9	61.2	60.4	59.0	55.4	51.7	52.1	49.1
4.B. Manure management	CH ₄	100.0	96.2	86.1	185.9	157.1	155.9	167.6	142.5	143.6	129.4	128.0	114.9	102.2
4.B. Manure management	N ₂ O	0.0	0.0	0.0	100.0	94.9	54.8	73.9	54.7	82.1	52.6	63.2	270.4	81.8
4.D. Agricultural soils	N ₂ O	100.0	81.9	26.0	65.9	67.0	33.4	64.8	56.0	59.0	54.5	51.3	81.8	80.3
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.A. Solid waste disposal on land	CH ₄	100.0	94.9	94.4	269.9	267.4	267.4	271.5	267.7	268.1	259.1	258.7	267.4	152.1
6.B. Waste-water handling	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Submission by country (CRF tables).

Slovakia

Share in total AC/CC greenhouse gases:	5.2 %	
Emissions in base year (1990):	72.2 Mt	
Emissions in 2001:	50.1 Mt	
Change, base year–2001:	– 22.1 Mt – 30.6 %	
Change, 2000–01:	2.2 Mt 4.7 %	

Slovakian GHG emissions declined until 1994, after which they did not fall significantly. Emissions increased by 4.7 % between 2000 and 2001.

Distance-to-target indicator: Slovakian GHG emissions decreased from 1990 to 2001 by 30.6 %. From 1990 to 1994, emissions decreased by 28 %, after which they did not fall significantly. In 2001, Slovakia was 26.2 index points below its Kyoto target path (in 2000 it was – 29.1 index points). GDP and emissions decoupled significantly in recent years. GDP has been increasing since 1992. The increase from 1991 to 2001 was more than 30 %.

Greenhouse gas emissions by sector: The most important source category in 2001 was the combustion of fossil fuels (68 % stationary combustion, plus 10 % transport). Agriculture (8 %), industrial processes (7 %), the waste sector (4 %) and fugitive emissions (3 %) were less significant. Emissions in all sectors decreased between the base year and 2001.

Greenhouse gas emissions by gas: CO₂ is the most important GHG with a share of almost 84 % in the total GHG emissions. Emissions of CO₂ decreased by 29 % between 1990 and

2001. Emissions from energy industries and from transport declined by 33 and 4 %, respectively. Emissions of CO₂ from mineral products decreased by about 12 % between 1990 and 2001.

Emissions of CH₄ contribute 9 % to the total GHG emissions. Emissions of CH₄ declined by 32 % between 1990 and 2001. Emissions from enteric fermentation dropped by 55 %, mainly due to a reduction in cattle numbers. Emissions of CH₄ from solid waste disposal were only 9 % below 1990 levels in 2001.

Emissions of N₂O contribute by 7 % to total GHG emissions. Emissions of N₂O decreased by 45 % between 1990 and 2001. Emissions from agricultural soil declined by 43 %. Emissions of N₂O from the chemical industry decreased by 64 %. The emission decline was achieved mainly due to improved technology of nitric acid production. Emissions of N₂O from transport increased by about 154 % mainly due to the growing number of cars with catalytic converters.

The share of fluorinated gases of the total GHG emissions is less than 1 %. Fluorinated gas emissions decreased by 60 % between 1990 and 2001 as a result of modernised aluminium production.

Figure A.73 Slovakian greenhouse gas emissions compared with Kyoto target for 2008–12 (excluding LUCF)

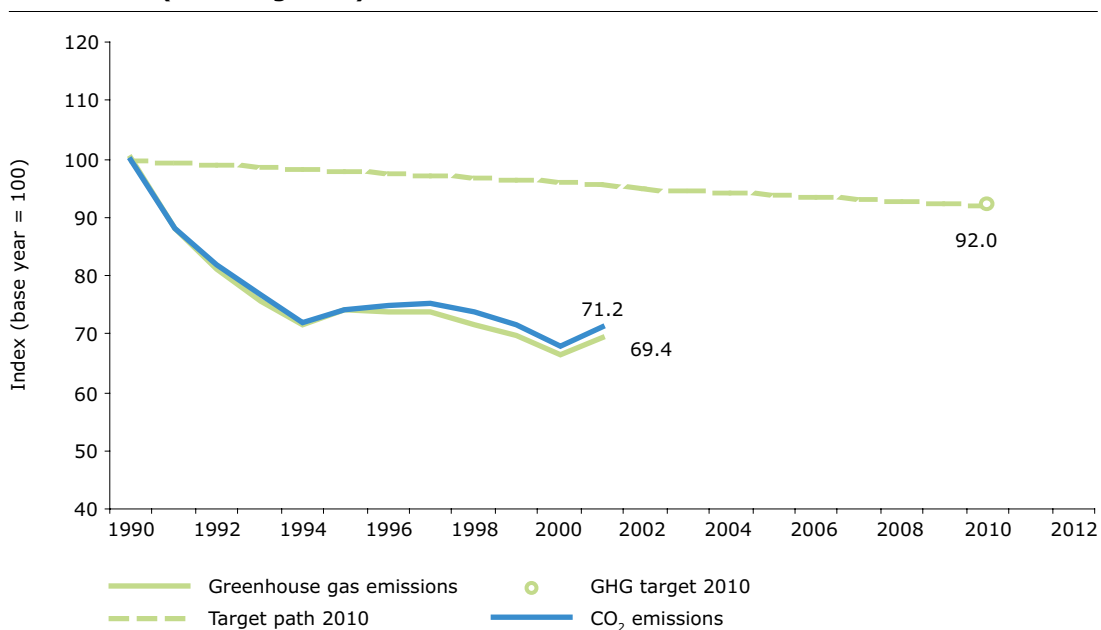
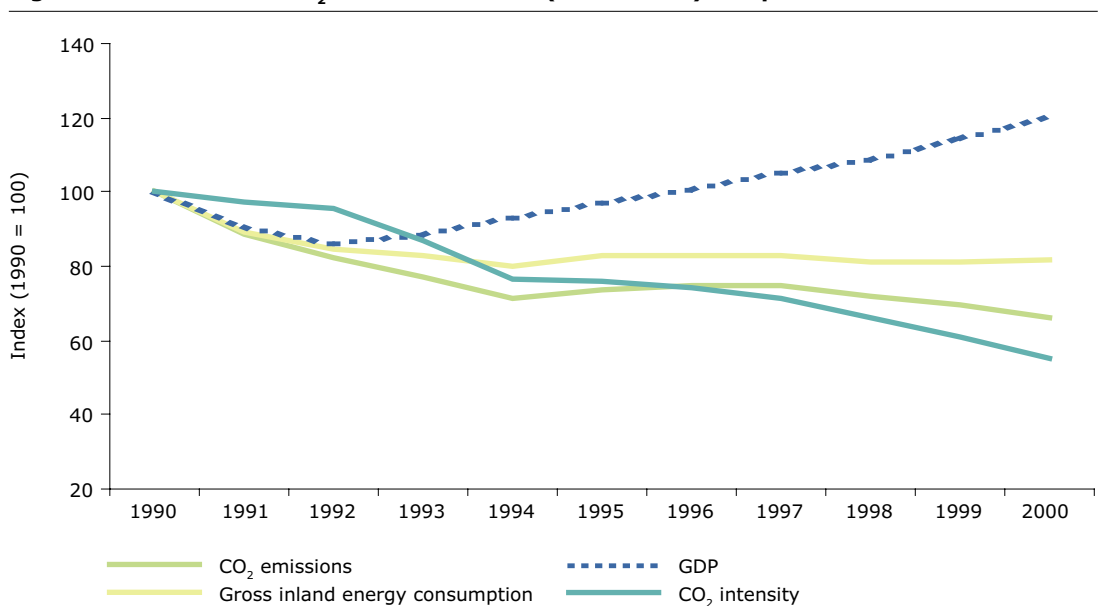
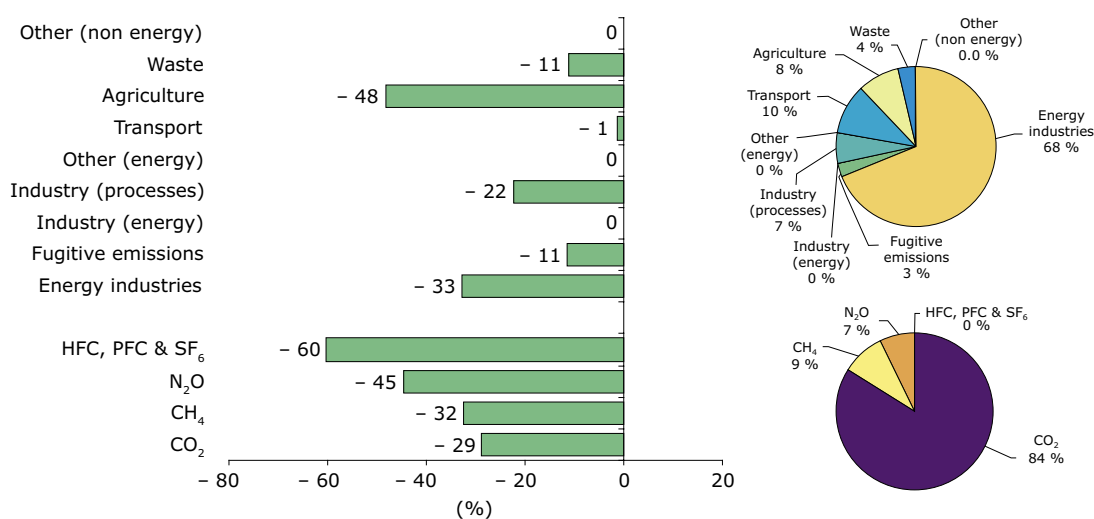


Figure A.74 Slovakian CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Source: Submissions by country (CRF tables), IEA, Eurostat.

Figure A.75 Slovakian greenhouse gas emissions by gas and sector (excluding LUCF) in 2001 (% change, BY–2001)

Source: Submission by country (CRF tables).

Table A.67 Greenhouse gases and distance-to-target indicators for Slovakia

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	72.2	72.2	63.6	58.5	54.6	51.7	53.4	53.2	53.2	51.6	50.3	47.9	50.1
CO ₂ (without LUCF)	59.1	59.1	52.0	48.3	45.3	42.4	43.7	44.2	44.5	43.5	42.3	40.1	42.1
CH ₄ (without LUCF)	6.7	6.7	6.1	5.6	5.2	5.1	5.2	5.3	5.0	4.7	4.6	4.5	4.5
N ₂ O (without LUCF)	6.1	6.1	5.2	4.4	3.9	4.1	4.2	3.6	3.6	3.4	3.2	3.2	3.4
F-gases	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	100.0	88.1	81.1	75.6	71.7	74.0	73.8	73.8	71.5	69.7	66.4	69.4
DTI 2010	0.0	0.0	- 11.5	- 18.1	- 23.2	- 26.7	- 24.0	- 23.8	- 23.4	- 25.3	- 26.7	- 29.6	- 26.2
CO ₂ (without LUCF)	100.0	100.0	88.0	81.7	76.7	71.9	74.1	74.8	75.3	73.6	71.7	67.8	71.2
CH ₄ (without LUCF)	100.0	100.0	91.1	83.0	77.3	75.6	78.1	79.3	74.9	69.5	69.0	67.1	67.5
N ₂ O (without LUCF)	100.0	100.0	85.6	72.8	63.8	66.9	69.4	59.3	59.0	55.6	53.2	52.7	55.5
F-gases	100.0	100.0	98.2	91.6	57.3	53.1	54.5	33.4	42.0	29.3	37.9	37.9	39.8

Table A.68 Sectoral emission indicators (key sources) for Slovakia

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	100.0	89.3	82.5	77.0	70.4	72.4	73.4	73.5	69.4	67.3	64.4	67.3
1.A.2. Manufact. indus. and constr.	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.A.3. Transport	CO ₂	100.0	100.0	83.4	77.9	76.8	81.2	86.3	87.5	90.6	97.6	95.1	85.2	96.4
1.A.3. Transport	N ₂ O	100.0	100.0	82.1	74.2	73.8	136.7	158.5	176.4	197.8	231.4	235.4	216.6	254.3
1.A.4. Other sectors	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.A.4. Other sectors	CH ₄	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.A.5. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.1. Solid fuels	CH ₄	100.0	100.0	86.8	74.0	74.3	76.0	78.7	80.2	82.0	82.9	78.4	76.3	71.8
1.B.1. Solid fuels	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.B.2. Oil and natural gas	CH ₄	100.0	100.0	95.4	87.9	91.4	90.8	98.3	102.9	103.9	99.1	102.1	99.6	104.6
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Industrial processes	PFC	100.0	100.0	98.2	91.6	57.3	48.6	41.9	12.9	12.2	8.8	4.3	4.3	4.2
2. Industrial processes	HFC	0.0	0.0	0.0	0.0	0.0	100.0	842.9	1 541.9	2 400.5	1 498.1	2 691.4	2 691.4	2 861.1
2. Industrial processes	SF ₆	100.0	100.0	107.7	123.1	207.7	29 830.8	31 892.3	34 615.4	36 484.6	39 392.3	42 207.7	42 207.7	43 376.9
2.A. Mineral products	CO ₂	100.0	100.0	74.5	75.2	72.6	78.9	80.1	76.7	79.8	100.8	103.1	89.4	88.0
2.B. Chemical industry	N ₂ O	100.0	100.0	94.1	85.2	71.6	113.0	124.0	27.5	28.5	26.7	28.0	25.9	35.9
2.B. Chemical industry	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.C. Metal production	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.A. Enteric fermentation	CH ₄	100.0	100.0	86.2	74.2	63.4	59.3	63.3	58.2	53.8	47.3	45.8	45.0	45.1
4.B. Manure management	CH ₄	100.0	100.0	92.8	83.9	77.0	72.8	74.7	71.0	65.1	57.4	55.4	53.5	53.5
4.B. Manure management	N ₂ O	100.0	100.0	90.7	78.2	67.9	63.6	66.8	61.8	56.6	49.8	47.1	46.0	46.0
4.D. Agricultural soils	N ₂ O	100.0	100.0	83.1	69.4	61.2	60.3	61.2	60.7	61.4	58.0	55.1	55.4	57.0
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.A. Solid waste disposal on land	CH ₄	100.0	100.0	100.0	100.0	100.0	100.0	101.2	118.6	101.4	91.1	92.6	96.0	90.3
6.B. Waste-water handling	N ₂ O	100.0	100.0	100.0	76.9	61.5	63.1	60.0	66.2	61.5	63.1	55.4	46.2	98.5
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Submission by country (CRF tables).

Slovenia

Share in total AC/CC greenhouse gases:	2.1 %	
Emissions in base year (1986):	19.9 Mt	
Emissions in 1996:	19.8 Mt	
Change, base year–1996:	– 0.1 Mt – 0.5 %	
Change, 2000–01:	n.a.	

Slovenia is the only acceding or candidate country to have increased its GHG emissions in the 1990s. Compared with the base year (1986), GHG emissions were slightly lower in 1996. Emissions of CO₂ from transport more than doubled between 1986 and 1996.

Distance-to-target indicator: Slovenian GHG emissions declined by 7.8 % from 1986 to 1990, but were 8.2 % above 1990 levels in 1996. Slovenian GHG emissions were two index points above the Kyoto target path in 1996. GDP increased by about 18 % from 1992 to 1996.

Greenhouse gas emissions by sector:

The most important sector in Slovenia was the energy industries with 27 %, transport with 22 % and agriculture with a 12 % share in total GHG emissions.

Greenhouse gas emissions by gas: CO₂ is the most important GHG with a share of 80 % in the total GHG emissions.

Emissions of CO₂ increased by 1 % between the base year and 1996 (but by 10 % between 1990 and 1996). Emissions from the energy industries decreased by 15 %, whereas CO₂ emissions from

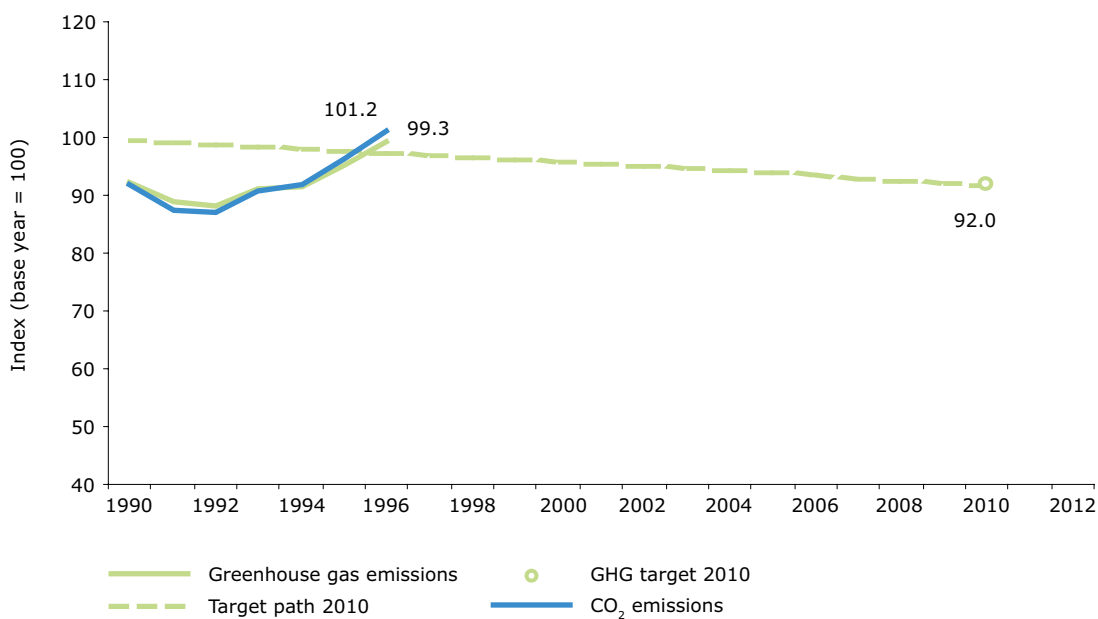
transport increased by 109.5 %. Energy-related CO₂ emissions from industry declined by 43 % between the base year and 1996, whereas emissions from households and services increased by 41.5 %.

Emissions of CH₄ contribute by around 12 % to total GHG emissions. They decreased between the base year and 1990 by 6 % and until 1996 they did not change significantly. Emissions from enteric fermentation and manure management decreased by 11 and 29 %, respectively. That from solid waste disposal on land increased by 27 %.

Emissions of N₂O contribute by around 9 % to total GHG emissions. In 1996, N₂O emissions were 9 % below the base-year level. Emissions from agricultural soil have been stable since 1990, but emissions from transport increased by more than 200 %.

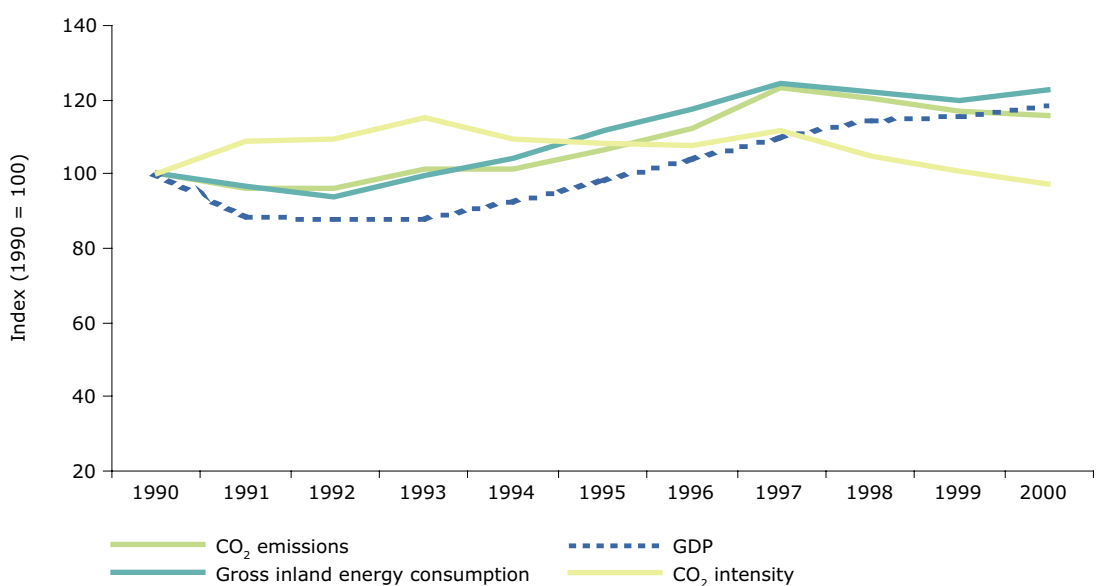
The share of fluorinated gases in total GHG emissions is less than 1 %. Fluorinated gas emissions increased by 45 % between the base year and 1996.

Figure A.76 Slovenian greenhouse gas emissions compared with Kyoto target for 2008–12 (excluding LUCF)



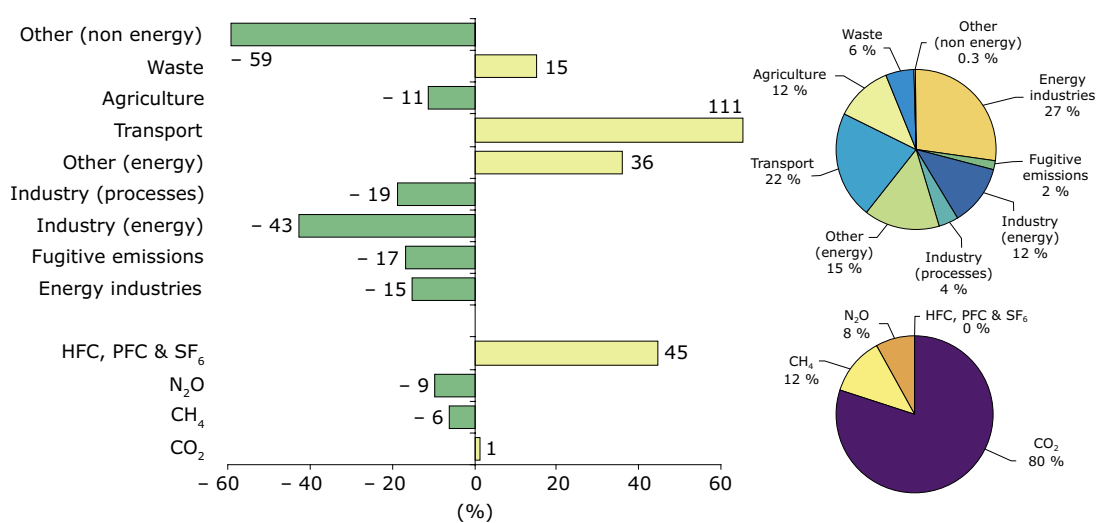
Note: The emissions in 1990 are below 1990 levels because Slovenia's base year is 1986.

Figure A.77 Slovenian CO₂ emissions trends (1990–2000) compared with GDP and GIEC



Note: CO₂ emissions for 1997 to 2000 extrapolated with energy indicators.

Source: Submission by country (CRF tables), IEA, Eurostat.

Figure A.78 Slovenian greenhouse gas emissions by gas and sector (excluding LUCF) in 1996 (% change, BY–1996)

Source: UNFCCC database, EMEP database (IPCC tables).

Table A.69 Greenhouse gases and distance-to-target indicators for Slovenia

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	CO ₂ equivalent [Tg = million tons]												
Greenhouse gas emissions (without LUCF)	19.9	18.3	17.7	17.5	18.1	18.2	19.0	19.8	NA	NA	NA	NA	NA
CO ₂ (without LUCF)	15.6	14.3	13.6	13.5	14.1	14.3	15.0	15.7	NA	NA	NA	NA	NA
CH ₄ (without LUCF)	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	NA	NA	NA	NA	NA
N ₂ O (without LUCF)	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.6	NA	NA	NA	NA	NA
F-gases	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA

	BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Greenhouse gas emissions (without LUCF)	100.0	92.2	88.9	88.0	91.1	91.6	95.3	99.3	NA	NA	NA	NA	NA
DTI 2010	0.0	-7.4	-10.4	-10.8	-7.4	-6.5	-2.4	1.9	NA	NA	NA	NA	NA
CO ₂ (without LUCF)	100.0	91.9	87.4	86.9	90.8	91.7	96.3	101.2	NA	NA	NA	NA	NA
CH ₄ (without LUCF)	100.0	94.4	96.7	94.7	94.4	93.4	93.3	93.8	NA	NA	NA	NA	NA
N ₂ O (without LUCF)	100.0	91.4	90.8	88.3	88.4	88.8	89.4	90.5	NA	NA	NA	NA	NA
F-gases	100.0	92.5	108.7	87.3	90.2	101.2	162.5	144.6	NA	NA	NA	NA	NA

Table A.70 Sectoral emission indicators (key sources) for Slovenia

		BY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1.A.1. Energy industries	CO ₂	100.0	93.7	84.5	93.0	92.7	86.7	90.8	85.0	NA	NA	NA	NA	NA
1.A.2. Manufact. indus. and constr.	CO ₂	100.0	73.2	70.4	61.6	57.2	59.8	59.7	57.4	NA	NA	NA	NA	NA
1.A.3. Transport	CO ₂	100.0	132.7	125.4	129.2	149.1	167.7	180.8	209.5	NA	NA	NA	NA	NA
1.A.3. Transport	N ₂ O	100.0	124.3	120.6	111.1	122.7	181.5	250.1	344.7	NA	NA	NA	NA	NA
1.A.4. Other sectors	CO ₂	100.0	79.0	94.8	83.7	107.7	102.1	110.2	141.5	NA	NA	NA	NA	NA
1.A.4. Other sectors	CH ₄	100.0	75.4	82.2	76.0	72.3	66.9	64.6	65.6	NA	NA	NA	NA	NA
1.A.5. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
1.B.1. Solid fuels	CH ₄	100.0	84.4	78.7	85.3	78.3	74.7	75.8	72.4	NA	NA	NA	NA	NA
1.B.1. Solid fuels	CO ₂	100.0	119.9	103.6	86.0	86.1	97.0	150.2	136.3	NA	NA	NA	NA	NA
1.B.2. Oil and natural gas	CH ₄	100.0	47.9	45.6	45.6	44.1	43.7	52.3	52.0	NA	NA	NA	NA	NA
1.B.2. Oil and natural gas	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
2. Industrial processes	PFC	100.0	93.2	109.5	88.0	90.9	101.9	103.4	86.7	NA	NA	NA	NA	NA
2. Industrial processes	HFC	0.0	0.0	0.0	0.0	0.0	0.0	100.0	98.8	NA	NA	NA	NA	NA
2. Industrial processes	SF ₆	100.0	0.0	0.0	0.0	0.0	0.0	368.7	296.3	NA	NA	NA	NA	NA
2.A. Mineral products	CO ₂	100.0	93.6	78.0	67.4	54.4	69.7	71.8	74.4	NA	NA	NA	NA	NA
2.B. Chemical industry	N ₂ O	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
2.B. Chemical industry	CO ₂	100.0	77.5	60.7	43.3	57.5	68.6	69.2	72.7	NA	NA	NA	NA	NA
2.C. Metal production	CO ₂	100.0	169.1	141.8	151.7	154.4	162.2	146.6	137.3	NA	NA	NA	NA	NA
2.G. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
4.A. Enteric fermentation	CH ₄	100.0	96.3	93.8	89.7	88.2	88.2	88.7	88.9	NA	NA	NA	NA	NA
4.B. Manure management	CH ₄	100.0	102.8	100.9	99.2	95.9	87.3	78.9	71.3	NA	NA	NA	NA	NA
4.B. Manure management	N ₂ O	100.0	95.8	93.1	90.2	88.6	89.3	89.6	90.2	NA	NA	NA	NA	NA
4.D. Agricultural soils	N ₂ O	100.0	92.7	93.9	93.3	95.1	93.9	93.2	92.5	NA	NA	NA	NA	NA
4.D. Agricultural soils	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA
6.A. Solid waste disposal on land	CH ₄	100.0	98.9	112.6	111.4	117.7	120.1	125.3	126.7	NA	NA	NA	NA	NA
6.B. Waste-water handling	N ₂ O	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NA	NA	NA	NA	NA
6.D. Other	CO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	NA

Source: IPCC tables.

