CO2 emissions from transport in the EU27

An analysis of 2006 data submitted to the UNFCCC

August 2008

European Federation for
TRANSPORT and ENVIRONMENT

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Summary

All figures apply to CO2 emissions in the EU27 and include emissions from international aviation and shipping, unless otherwise stated.

- Between 1990 and 2006, transport emissions increased by 34.9% while emissions from other sectors decreased by -9.4%;
- The share of transport in total emissions rose from 21% in 1990 to 28% in 2006;
- Emissions from international aviation and shipping (both outside Kyoto) have risen by 99% and 59% respectively. In 2006 they accounted for 6.6% of the total, and 24% of transport emissions. In 1990, these figures were 3.8% and 18% respectively.
- Emissions from shipping have grown by 6.3% between 2005 and 2006. Emissions from aviation have increased by 4.1%. For the second consecutive year maritime transport overtakes aviation as the fastest growing source of CO2 emissions in the EU-27.

Background

The European Community (EC), as a party to the United Nations Framework Convention on Climate Change (UNFCCC), reports annually on greenhouse gas (GHG) inventories within the area covered by its Member States. The 2006 inventory was published in July 2008 (EEA, 2008[1]).

T&E has published this short paper to clarify the climate performance of the transport sector, also including the developments of international 'bunkers' (international aviation and shipping) which are not covered by the Kyoto Protocol and hence not officially reported to the UNFCCC. The exclusion of international bunkers often leads to an underestimation of the contribution of the transport sector to climate change.

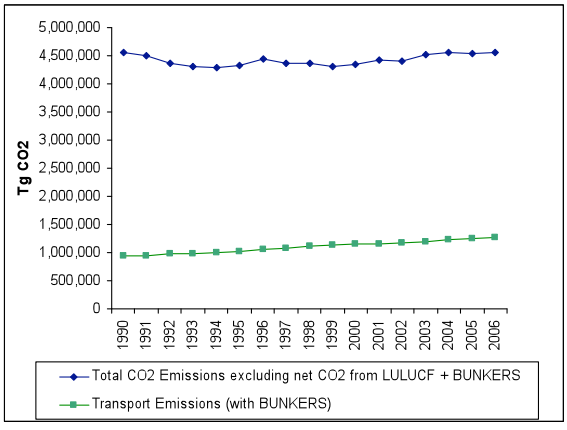
Developments 2005-2006

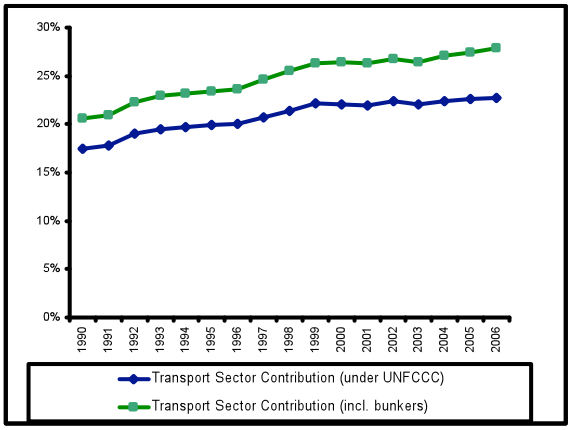
CO_2 emissions in the EU under the Kyoto Protocol have stabilized between 2005 and 2006 (a minor increase of 0.002% was observed). However, if one accounts for the contribution of bunker fuels CO_2 emissions have increased by 0.3% in that same period. Emission from non-transport sectors decreased by -0.2%, while transport emissions rose by 1.9% (at a higher rate than the previous year).

Developments 1990-2006

Total emissions (without bunkers) compared to 1990 have decreased by -3.1%. If bunker fuels emissions are taken into account EU emissions have almost stabilized (a reduction of -0.2% was observed). These figures are the result of a decrease in non-transport emissions of -9.4%, and an increase of transport emissions by 34.9%.

The figures below present the evolution of total emissions since 1990 and the contribution of the transport sector.





1 http://tinyurl.com/5twook

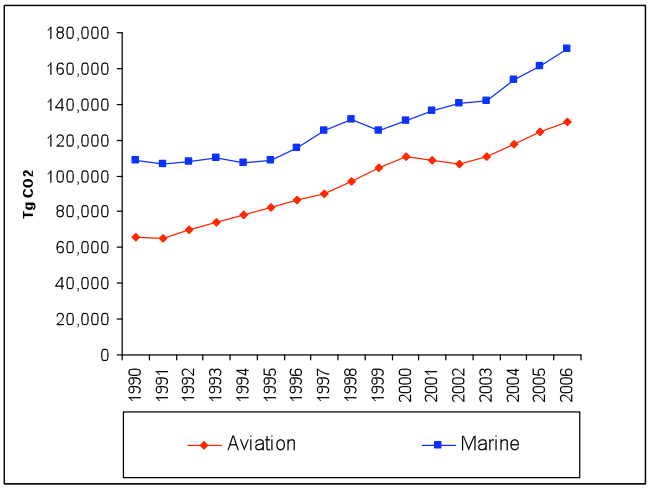
Share of transport in total

The share of the transport sector's emissions has been continuously growing, from 21% in 1990 to 28% in 2006. Excluding international bunkers the contribution grew from 17% in 1990 to 23% in 2006.

Growth and share of international aviation and shipping

International bunkers play an important role in the increased share of the transport sector in overall emissions. Emissions from international aviation and shipping have been growing at higher rates than those of transport as a whole.

The following figures present the evolution of international aviation and shipping CO_2 emissions since 1990.



Emissions from international aviation doubled between 1990 and 2006 (growth of 99%), with an increase of 4.1% between 2005 and 2006.

The same occurs with emissions from international maritime transport which has increased 59% since 1990, with an increase of 6.3% between 2005 and 2006. For the second consecutive year shipping growth rate is higher than the one of aviation. Shipping has overtaken aviation as the fastest growing source of CO2 emissions in the EU.

The share of emissions from bunkers in the total continues to increase. In 2006 they accounted for 6.6% of the total, and 24% of transport emissions. In 1990, these figures were 3.8% and 18% respectively.

Note: non-CO2 emissions

This report only considers CO2 emissions, although both transport and other sectors also emit other gases and have other impacts on the climate than just those of CO2.

Under the Kyoto Protocol, Parties should include 5 other greenhouse gases in their reporting: CH4, N2O, HFCs, PFCs, and SF6. These emissions are also included in the EEA report on which this briefing is based. But in the case of transport, the 'six gases' do not include most of the non-CO2 impacts. Besides CO2, the main contributions of transport to climate change are ozone (both at ground level and in the troposphere), sulphur dioxide, particle emissions, and contrails and cirrus clouds (for aviation). In particular the climate impact of aviation is relatively well studied, it appears to be 2 to 5 times that of CO2 alone, with a middle estimate of 3[2].

However, the EU does not officially report these impacts. In order to avoid confusion, therefore, this report has exclusively focused on CO2.

2 Sausen et al., 2005, Aviation Radiative Forcing in 2000: An Update of IPCC (1999), Sausen, R., Isaksen, I., Grewe, V., Lee, D.S., Myhre, G., Schumann, U., Stordal, F. and Zerefos, C., June 2005

Overview table of CO2 emissions in the EU27 as of 1990

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total Emissions (incl. Bunkers)	4,566,126	4,507,465	4,360,366	4,304,804	4,280,544	4,332,035	4,443,575	4,369,966	4,370,881	4,305,634	4,341,542	4,423,887	4,402,255	4,515,782	4,554,450	4,543,361	4,558,724
Transport Emissions (incl. Bunkers)	940,836	943,897	972,664	988,023	994,037	1,013,708	1,049,774	1,073,930	1,114,191	1,132,179	1,144,662	1,161,676	1,176,858	1,192,863	1,231,698	1,246,643	1,269,879
Transport Contribution	21%	21%	22%	23%	23%	23%	24%	25%	25%	26%	26%	26%	27%	26%	27%	27%	28%
Total emissions without transport	3,625,290	3,563,569	3,387,702	3,316,781	3,286,507	3,318,326	3,393,801	3,296,036	3,256,690	3,173,454	3,196,880	3,262,211	3,225,397	3,322,920	3,322,753	3,296,718	3,288,845
International Bunkers share in total	3.8%	3.8%	4.1%	4.3%	4.3%	4.4%	4.5%	4.9%	5.2%	5.3%	5.6%	5.5%	5.6%	5.6%	6.0%	6.3%	6.6%
Emissions of aviation	65,648	64,810	69,926	74,090	78,009	82,261	86,504	90,286	97,206	104,583	110,748	108,520	106,903	110,639	117,726	124,694	129,848
Emissions of maritime transport	108,586	106,428	107,825	110,222	107,115	108,396	115,332	125,650	131,400	125,058	130,932	136,226	140,406	142,026	153,448	161,129	171,252

(Unit: Tg CO2)