CO_2 emissions from transport in the EU27

An analysis of 2007 data submitted to the UNFCCC

August 2009

European Federation for
TRANSPORT and ENVIRONMENT

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Summary

All figures apply to CO_2 emissions in the EU27 and include emissions from international aviation and shipping, unless otherwise stated.

- Between 1990 and 2007, transport emissions increased by 35.6% while emissions from other sectors decreased by -8.9%;
- The share of transport in total emissions rose from 21% in 1990 to 28% in 2007;
- Emissions from international aviation and shipping (both outside Kyoto) have risen by 109% and 60% respectively. In 2007 they accounted for 6.9% of the total, and 24% of transport emissions. In 1990, these figures were 3.8% and 18% respectively.
- Emissions from shipping have grown by 0.9% between 2006 and 2007.
- Emissions from aviation have increased by 2.8%. After two consecutive years, when maritime transport overtook aviation as the fastest growing source of CO_2 emissions in the EU-27, aviation growth is faster again.

Background

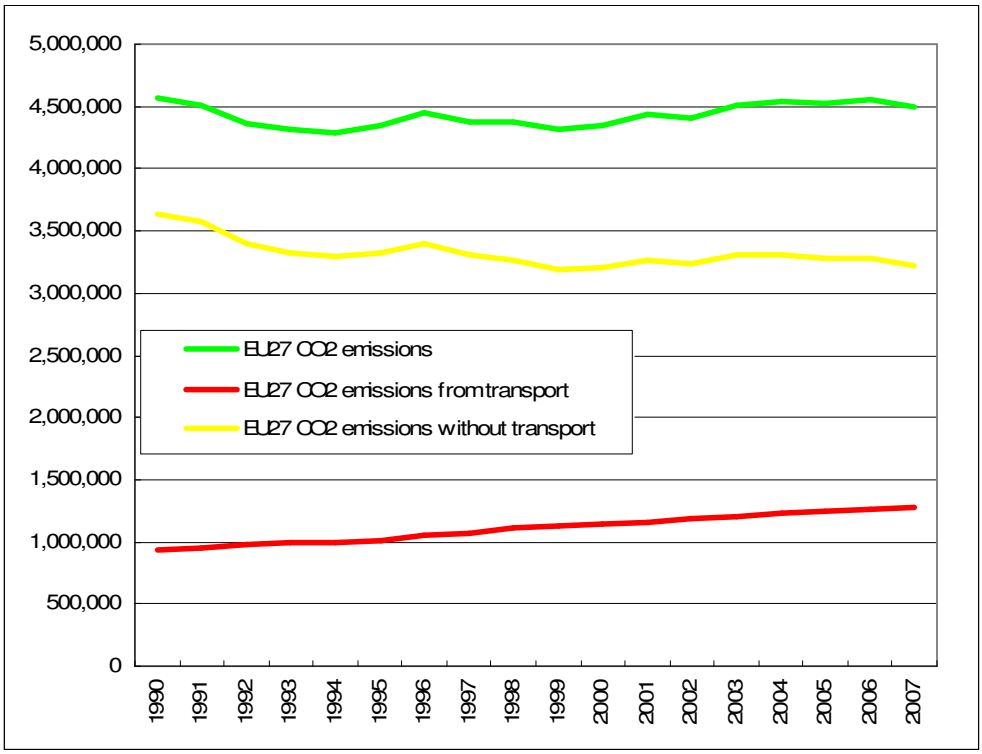
The European Community (EC), as a party to the United Nations Framework Convention on Climate Change (UNFCCC), reports annually on greenhouse gas (GHG) inventories within the area covered by its Member States. The 2007 inventory was published in May 2009 (EEA, 2009).

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 2006-2007

CO_2 emissions in the EU under the Kyoto Protocol have decreased by -1.3% between 2006 and 2007. However, if one accounts for the contribution of bunker fuels CO_2 emissions have decreased by -1.1% in that same period. Emissions from non-transport sectors decreased by -1.9%, while transport emissions rose by 0.8%.

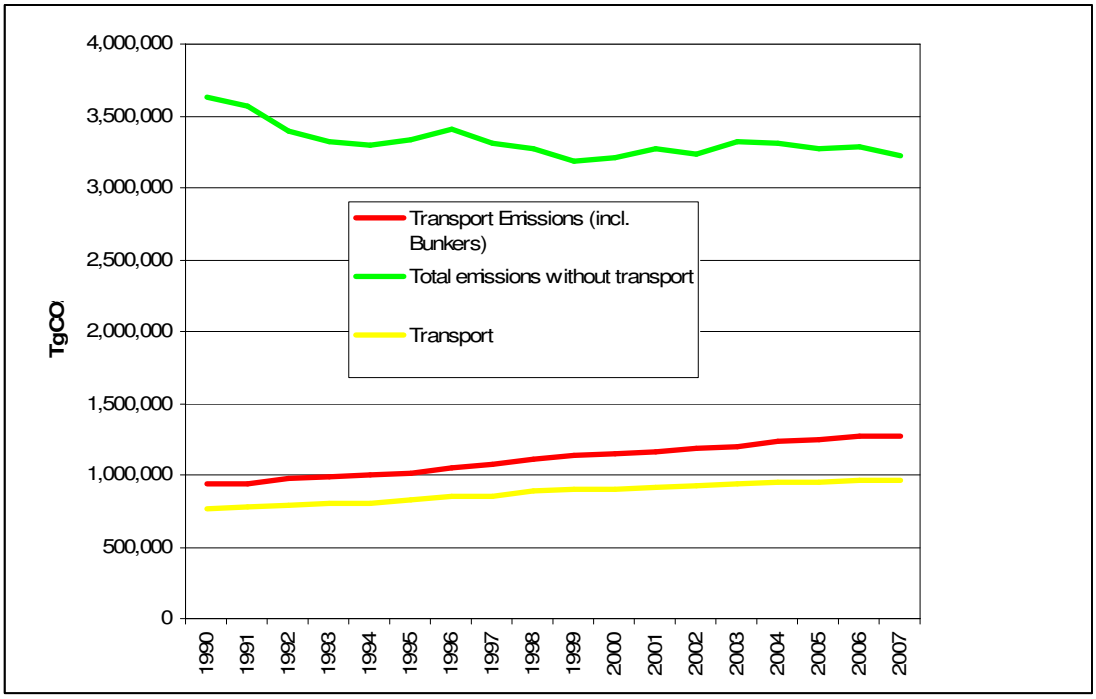
Developments 1990-2007



Total emissions (without bunkers) compared to 1990 have decreased by -4.8%. If bunker fuel emissions are taken into account EU emissions have almost stabilized (a reduction of -0.5% was observed). These figures are the result of a decrease in non-transport emissions of -8.9%, and an increase of transport emissions by 35.6%.

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

Share of transport in total



The share of the transport sector's emissions has been continuously growing, from 21% in 1990 to 28% in 2007. Excluding international bunkers the contribution grew from 17% in 1990 to 23% in 2007.

Growth and share of international aviation and shipping

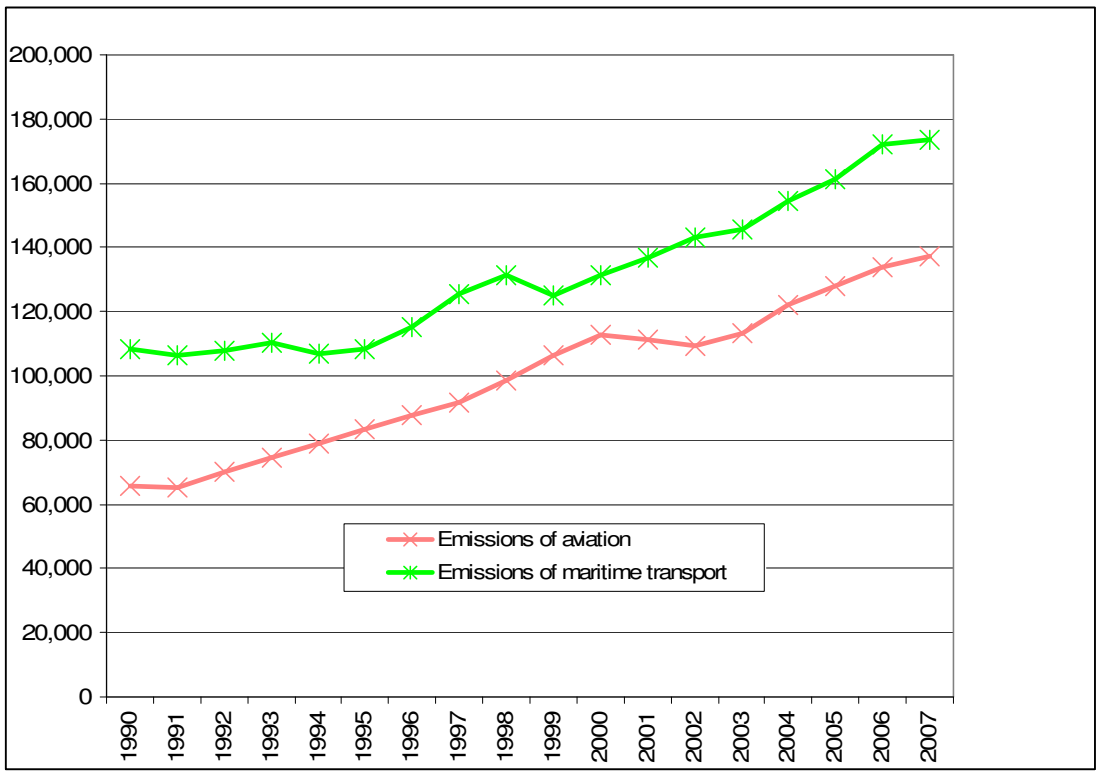
International bunkers play an important role in the increased share of the transport sector in overall emissions. Emissions from international aviation and shipping have been growing at higher rates than those of transport as a whole.

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

Emissions from international aviation more than doubled between 1990 and 2007 (growth of 109%), with an increase of 2.8% between 2006 and 2007.

The same occurs with emissions from international maritime transport which has increased 60% since 1990, with an increase of 0.9% between 2006 and 2007. After the second consecutive year of shipping growth rate is exceeding the one of aviation, the growth rate of aviation went up again.

The share of emissions from bunkers in the total continues to increase. In 2007 they accounted for 6.9% of the total, and 24% of transport emissions. In 1990, these figures were 3.8% and 18% respectively.



Note: non-CO_2 emissions

This report only considers CO_2 emissions, although both transport and other sectors also emit other gases and have other impacts on the climate than just those of CO_2.

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-CO_2 impacts. Besides CO_2, the main contributions of transport to climate change are ozone (both at ground level and in the troposphere), sulphur dioxide, particle emissions, and, in the case of aviation, contrails and cirrus clouds. In particular the climate impact of aviation is relatively well studied, it appears to be 2 to 5 times that of CO_2 alone, with a middle estimate of 3[1].

However, the EU does not officially report these impacts. In order to avoid confusion, therefore, this report has exclusively focused on CO_2.

1 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 CO_2 emissions in the EU27 as of 1990

	Total CO_2 emissions (including bunkers)	Transport Emissions (incl. Bunkers)	Transport Contribution	Total emissions without transport		International Bunkers share in total	Emissions of aviation	Emissions of maritime transport
1990	4,573,674	941,631	21%	3,632,043		3.81%	65,584	108,553
1991	4,513,971	943,524	21%	3,570,447		3.80%	64,992	106,365
1992	4,368,737	973,353	22%	3,395,384		4.08%	70,319	107,734
1993	4,311,221	987,793	23%	3,323,428		4.29%	74,628	110,202
1994	4,288,887	994,062	23%	3,294,825		4.33%	78,735	107,068
1995	4,341,746	1,013,840	23%	3,327,906		4.41%	83,178	108,379
1996	4,453,935	1,049,861	24%	3,404,074		4.56%	87,618	115,302
1997	4,379,770	1,074,133	25%	3,305,637		4.96%	91,631	125,570
1998	4,382,053	1,114,381	25%	3,267,672		5.25%	98,711	131,437
1999	4,315,801	1,132,325	26%	3,183,476		5.36%	106,298	125,219
2000	4,349,931	1,145,009	26%	3,204,922		5.61%	112,867	131,284
2001	4,432,551	1,162,320	26%	3,270,231		5.60%	111,479	136,671
2002	4,410,774	1,179,606	27%	3,231,168		5.73%	109,420	143,293
2003	4,511,252	1,195,927	27%	3,315,326		5.74%	113,341	145,566
2004	4,540,591	1,232,080	27%	3,308,511		6.08%	121,991	154,196
2005	4,521,140	1,244,934	28%	3,276,207		6.41%	128,073	161,518
2006	4,548,667	1,266,704	28%	3,281,963		6.72%	133,670	171,896
2007	4,497,517	1,276,892	28%	3,220,625		6.91%	137,360	173,499

(Unit: Gg CO_2)