

# **Calculating the Costs of the Kyoto Protocol – How Will It Affect Europe’s Competitiveness?**

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**Background Paper**

**Transport emissions continue to grow in 1999**

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## Transport Emissions Continue to Grow in 1999

The sectoral details behind the latest CO<sub>2</sub> data from the International Energy Agency reveal again the key role of transport emissions in explaining overall emission increases since 1990. These emissions grew by more than 10% in 22 of the Annex B countries, with the average increase for all countries nearly 12%, as shown in Table 1. Only some economies in transition registered declines over this period.

This trend is not likely to change significantly by 2008-2012, when countries will be struggling to meet their Kyoto targets. Only major behavioral changes could make much of a difference in this time frame, and these are not likely. The longer-term response will require technological changes and significant investments in capital stock for both vehicles and infrastructure.

### *Transport Emissions Outpace Total CO<sub>2</sub> & GHG Emissions*

It is clear from comparing Table 1 with total CO<sub>2</sub> and total GHG emissions (see separate paper) that the growth in transport emissions is probably the largest contributor to the increase in total emissions. In almost every country the increase in transport emissions was larger than the increase in total CO<sub>2</sub> (or smaller than the decrease in total emissions for many EITs).

The two main exceptions among OECD countries were Australia and Norway, and in each case there are special circumstances:

In Australia, emissions from coal use by utilities were up by 170% since 1990. Coal accounts for 96% of total utility emissions, and utilities account for over half of total CO<sub>2</sub> from fuel combustion.

In Norway, development of the North Sea gas fields for export to Europe resulted in emissions from gas use by this sector increasing by 140%. Gas accounts for 80% of total (non-electricity) energy sector emissions, and this sector accounts for 36% of total CO<sub>2</sub> from fuel combustion.

Transport sector emissions increased in every EU country, and by more than 10% in 11 out of the 15 Member States. The largest increases were in the “developing” Member States: Ireland (94%), Portugal (71%) and Spain (40%). The increase of nearly 60% in Luxembourg is due to “tank tourism” involving drivers from the four neighboring countries filling up in Luxembourg because of lower fuel taxes and prices.

### *Bunker Fuels Is Even Bigger Issue for Future*

Table 1 also shows what the effect would be if emissions from international bunker fuel use were included in the totals. In most countries bunker fuels represent only about 10 to 15% of total transport-related emissions, averaging 11% for all Annex B Countries (although some are missing data).

But in some countries it is much higher, such as the Netherlands (60%), Belgium (44%), Greece (41%), Iceland (34%) and Denmark (30%). In Iceland the largest share of this is due to aviation bunkers but in the others, which all have major ports, it is marine bunkers that account for the majority of emissions.

The table indicates a mixed pattern in terms of the effect of including bunker fuels emissions in the transport total. For Annex B as a whole, inclusion of bunkers would boost the increase in transport

emissions from 11.6% to 13.4% relative to the base year. But for several countries the effect would be to lower the total increase in transport-related emissions.

The impact seems to depend on the relative importance of aviation bunker fuel use, which is growing faster than marine bunker use. In the Netherlands, for example, including bunker fuel emissions would raise the increase in total transport emissions from 18% to 25% because of the huge impact of Amsterdam's Schiphol airport, which contributed to a 127% increase in aviation bunker emissions. In Belgium, however, even though aviation bunker emissions rose by 55% since 1990, this was not enough to offset lower growth of about 7% in marine bunker emissions, which would pull total transport emissions increases from 21% down to 19%.

TABLE 1: 1999 ANNEX B EMISSIONS: TRANSPORT &amp; BUNKER FUELS

COUNTRY	BASE	1999	% DIFF.	BASE W/ BUNKERS	1999 W/ BUNKERS	% DIFF.
Austria	15.0	17.4	16.4	15.9	19.0	19.4
Belgium	20.4	24.7	21.2	36.3	43.2	18.9
Denmark	11.7	12.5	6.6	16.7	18.9	13.4
Finland	11.8	12.3	4.2	14.6	15.2	3.8
France	115.8	136.3	17.6	133.5	161.2	20.7
Germany	160.0	178.4	11.5	182.1	205.5	12.8
Greece	15.4	19.8	29.0	25.8	32.5	25.9
Ireland	5.0	9.7	94.2	6.1	11.8	92.3
Italy	96.6	113.4	17.5	111.5	131.1	17.6
Luxembourg	2.6	4.2	58.5	3.0	5.2	71.1
Netherlands	26.5	31.3	18.2	65.5	81.6	24.7
Portugal	9.8	16.8	70.8	13.3	20.3	52.6
Spain	64.1	89.6	39.9	79.1	116.1	46.8
Sweden	20.4	22.1	8.4	23.4	28.4	21.5
United Kingdom	122.9	132.1	7.5	143.8	158.1	10.0
EU-15	698.0	820.7	17.6	870.7	1,048.1	20.4
Australia	61.8	72.2	16.9	68.1	81.9	20.2
Bulgaria	6.9	5.7	-17.4	9.2	5.9	-35.2
Canada	124.3	151.4	21.8	129.8	157.9	21.6
Croatia	3.0	4.5	49.3	3.1	4.7	50.3
Czech Republic	7.3	11.5	57.6	8.0	11.8	48.9
Estonia	1.4	1.3	-5.0	1.4	2.0	40.4
Hungary	8.6	9.0	4.3	9.1	9.6	6.1
Iceland	0.6	0.6	0.0	1.0	1.2	21.1
Japan	201.3	252.8	25.6	230.9	288.4	24.9
Latvia	3.6	2.0	-44.0	3.6	2.1	-41.4
Lithuania	4.9	3.5	-28.7	4.9	3.8	-22.4
New Zealand	9.0	12.2	36.2	11.3	15.0	32.7
Norway	11.0	13.1	18.6	13.7	17.5	27.6
Poland	24.3	30.0	23.4	27.2	32.5	19.4
Romania	10.7	11.2	5.3	11.4	9.3	-18.8
Russia	316.0	182.5	-42.3	316.0	208.6	-34.0
Slovakia	2.9	4.2	43.5	2.9	4.2	43.5
Slovenia	2.6	3.8	45.5	2.7	3.9	43.4
Switzerland	14.7	15.1	3.1	17.8	19.7	10.1
Ukraine	35.0	15.7	-55.2	35.0	17.8	-49.2
United States	1,424.0	1,692.9	18.9	1,553.8	1,832.2	17.9
Annex B Total	2,971.8	3,315.9	11.6	3,331.7	3,778.1	13.4