

Briefing on Environmental Accounts

23 May 2006

The spring edition of the Environmental Accounts published today contains new information on energy consumption and atmospheric emissions for the period 1990 - 2004 and environmental tax revenue in 2005.

The main points of interest are:

- **Air.** Greenhouse gas emissions, on a UK residents basis, rose 1.0 per cent in 2004 compared with 2003. This rise is primarily due to a 0.8 per cent increase in emissions from the domestic sector, a 2.7 per cent increase in emissions from manufacturing and a 4.0 per cent increase in emissions from the transport and communications sector. Since 1999, there has been a period of relative stability in greenhouse gas emissions compared with a 10.4 per cent fall between 1990 and 1999. At 731.9 million tonnes of carbon dioxide equivalent, greenhouse gas emissions are currently 1.9 per cent higher than in 1999 but 8.7 per cent lower than in 1990.
 - The main contributors of Greenhouse gas emissions are in size order; the Electricity, Gas and water supply industry (25.4 per cent), Households (22.2 per cent) and Manufacturing (18.2 per cent).
 - The largest falls between 1990 and 2004 were in Other Services down 54.8 per cent, Manufacturing and the Mining and Quarrying industry; down 27.5 per cent and 25.3 per cent respectively. Although reflecting the general trend the majority of these reductions took place in the 1990s.
 - Greenhouse gas emissions from the transport and communication industries increased by 51.0 per cent between 1990 and 2004, year on year the increase was 4.0 per cent. The latest rise is mainly due to higher levels of fuel consumption resulting from increases in the number of UK owned ships in recent years, following the introduction of the Tonnage Tax in 2000. Emissions from air transport rose 4.3 per cent between 2003 and 2004, but have almost doubled since 1990 following growth in the industry.
- **Energy** consumption continues to rise, particularly the demand for electricity. Energy consumption amounted to 245.7 million tonnes of oil equivalent in 2004, 1.0 per cent higher than in 2003 and 11.4 per cent higher than in 1990.
- **Revisions** to air emissions and energy consumption arising from particular industries are the result of the re-allocation of gas oil emissions from "other industry" to "off road vehicles" and other minor methodological improvements implemented by data suppliers Netcen. Latest National Accounts Supply-Use data and DTI energy data are incorporated into these estimates further informing the distribution of emissions across the 93 Environmental Accounts industrial codes.
- **Environmental tax** revenue received by the Government in 2005 was £35.0 billion, unchanged since 2004. Receipts from hydrocarbon oils such as unleaded petrol were £23.3 billion, 66.8 per cent of the total. Environmental taxes as a proportion of total taxes and social contributions were 8.3 per cent in 2005, unchanged since 2004. As a proportion of GDP they were 0.1 percentage points lower than a year earlier at 2.9 per cent.

Greenhouse gas emissions (News Release table B)

Between 1990 and 2004, total UK greenhouse gas emissions on a UK residents basis declined 8.7 per cent from 801.5 million tonnes of carbon dioxide equivalent to 731.9 million tonnes. However, greenhouse gas emissions in 2004 rose 1.0 per cent on the previous year, primarily due to increased emissions from manufacturing and households, although energy use of electricity generators and transport were also higher. Since 1999, there has been a period of relative stability in greenhouse gas emissions up slightly by 1.9 per cent compared with a 10.4 per cent fall between 1990 and 1999.

The ONS Environmental Accounts measure greenhouse gas emissions on a UK residents basis – they include all emissions generated by UK households' and companies transport and travel at home and abroad. They exclude emissions generated by non-residents' travel and transport in the UK.

Therefore, these emissions data differ from estimates previously published by the Department for Environment Food and Rural Affairs (Defra) under the UK's Kyoto Protocol obligations. The Kyoto basis includes emissions from UK territory only and excludes emissions from international aviation and shipping. Table 1 shows a reconciliation of data on both bases consistent with table A of the News Release.

Table 1**Reconciliation of UK greenhouse gas emissions between UK residents and territory basis**

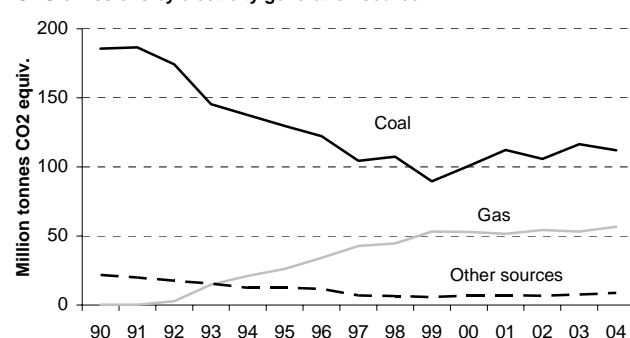
	Million tonnes of CO2 equivalent						
	1990	1995	2000	2001	2002	2003	2004
UK residents basis	801.5	747.0	722.6	734.3	716.0	724.5	731.9
less							
Bunker emissions ¹	22.6	27.2	36.4	36.3	34.7	35.2	39.5
CO2 from biomass ²	3.0	4.6	6.9	7.5	7.5	8.3	9.4
Cross boundary adjustment ³	12.9	12.7	17.4	21.0	23.7	24.6	25.3
plus							
Crown Dependencies	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Land use change and forestry ⁴	2.9	1.0	-0.4	-0.6	-1.1	-1.2	-1.9
IPCC (inc. net CO2 emissions / removals)	766.2	703.8	661.8	669.4	649.2	655.5	656.1
Adjustment for 'Kyoto' total	-2.9	-1.2	-0.7	-0.6	-0.3	-0.4	0.2
IPCC Kyoto greenhouse gas basket total	763.3	702.6	661.1	668.8	649.0	655.1	656.2
Kyoto base year	768.3						

1. International aviation and international shipping emissions.
2. Emissions arising from wood, straw, biogases and poultry litter combustion for energy production.
3. Emissions by UK residents abroad less emissions made by foreign residents in the UK.
4. Emissions from deforestation, soils and changes in forest and other woody biomass.

Source: ONS, Defra

Compilation on a UK residents basis allows direct comparison with National Accounts measures such as Gross Domestic Product and Gross Value Added. The Environmental Accounts are also compiled on an industry as opposed to activity basis again allowing comparison with mainstream National Accounts measures.

Greenhouse gas emissions from the electricity, gas and water supply companies fell 14.6 per cent from 217.7 million tonnes in 1990 to 185.8 million tonnes in 2004 as electricity generators increased their use of natural gas as opposed to coal. Greenhouse gas emissions from electricity generation constituted 25.4 per cent of all

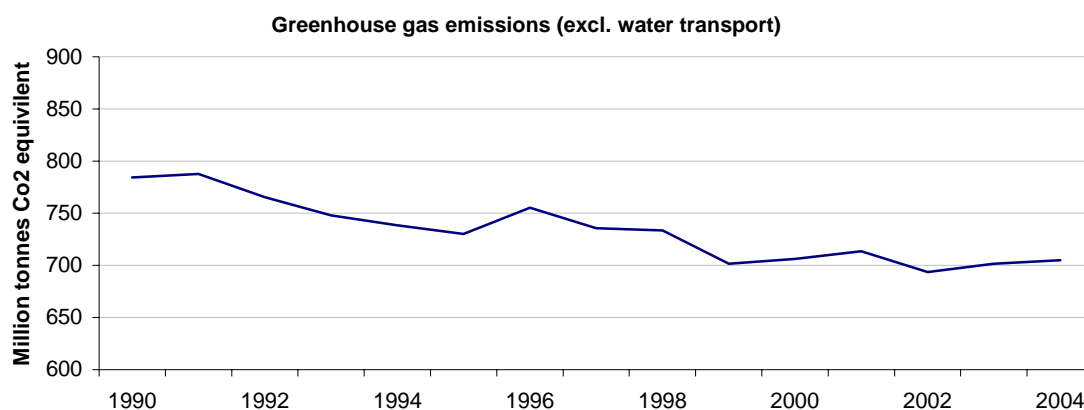
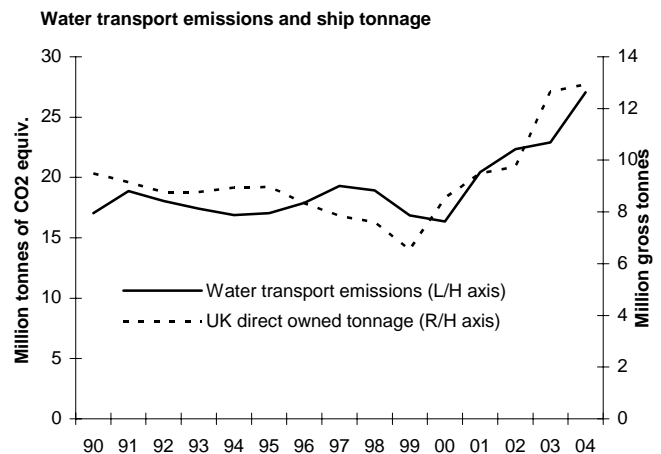
GHG emissions by electricity generation source

greenhouse gas emissions in 2004, lower than the 27.2 per cent share in 1990, but higher than the figure of 21.7 per cent in 1997.

Greenhouse gas emissions from the manufacturing industries fell from 183.2 million tonnes in 1990 to 132.9 million tonnes in 2004, a fall of 27.5 per cent. The decline in emissions from the chemical industry was particularly significant, down from 51.9 million tonnes in 1990 to 17.8 million tonnes in 2004, a fall of 65.7 per cent. However, emissions from manufacturing rose by 2.7 per cent in 2004 compared with a year earlier. The recent rise is mainly driven by an increase in emissions from the iron and steel industries.

Year on year, greenhouse gas emissions from transport and communications increased 4.0 per cent between 2003 and 2004. Greenhouse gas emissions from the transport and communications industries were 51.0 per cent higher in 2004 than in 1990. The transport and communication industries were responsible for emitting the equivalent of 98.0 million tonnes of carbon dioxide in 2004 compared with 64.9 million tonnes in 1990.

This latest rise mainly reflects increases in the number of UK owned ships following the introduction of the UK Tonnage Tax in 2000. Shipping companies qualify for Tonnage Tax if they operate ships, which are strategically and commercially managed in the UK and as companies moved into Tonnage Tax UK owned ship tonnage increased. Between end year 2000 and 2004, gross tonnage of UK owned trading ships increased by 51.5 per cent. However, even with the effects of this administrative change removed it is still possible to see a slight rising trend in overall greenhouse gas emissions. However, even with the effects of this administrative change removed it is still possible to see a slight rising trend in overall in overall greenhouse gas emissions (see charts).



Emissions from air transport rose 15.2 per cent between 1999 and 2004, almost matching growth of the industry. Over the same period the number of flight kilometres by UK operators increased by 18.0 per cent. Since 1990, emissions from the aviation industry have almost doubled.

From 1999 to 2003 emissions from the road freight industry remained relatively stable at between 21.1 and 22.0 million tonnes of CO₂ equivalent. In 2004, there was a fall of 10.6 per cent in road freight emissions driven in particular by lower emissions from articulated HGVs.

The table below shows emissions from the transport industry broken down into different transport types:

EA code and industry	Million tonnes of CO ₂ equivalent									
	1990	1995	1997	1998	1999	2000	2001	2002	2003	2004
63 Railways	2.3	2.2	2.4	2.5	2.6	2.6	2.7	2.7	2.7	2.9
64 Buses and coaches	5.4	5.1	4.9	4.7	4.5	4.2	4.0	4.3	4.4	4.4
65 Tubes and trams	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.1	0.1
66 Taxis & minicabs	1.2	1.6	1.7	1.7	1.8	1.9	1.9	1.9	1.9	2.1
67 Road freight	15.7	18.7	20.8	21.3	21.1	21.1	21.7	21.2	22.0	19.6
68 Transport via pipeline	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
69 Water transport	17.0	17.0	19.3	18.9	16.8	16.3	20.4	22.3	22.9	27.1
70 Air transport	20.4	24.7	28.0	31.4	33.8	37.3	36.8	36.1	37.4	39.0
Total transport industry	62.5	69.8	77.6	81.1	81.3	84.0	88.2	89.1	91.5	95.3
% of total UK emissions	7.8	9.3	10.3	10.8	11.3	11.6	12.0	12.4	12.6	13.0
93 UK households' vehicles	60.0	58.9	63.6	63.4	65.1	64.6	65.5	68.0	67.4	68.1
% of total UK emissions	7.5	7.9	8.4	8.4	9.1	8.9	8.9	9.5	9.3	9.3
Other emission sources	678.9	618.3	613.6	607.9	571.8	573.9	580.6	558.9	565.7	568.6
% of total UK emissions	84.7	82.8	81.3	80.8	79.6	79.4	79.1	78.1	78.1	77.7
Total UK emissions	801.5	747.0	754.8	752.3	718.2	722.6	734.3	716.0	724.5	731.9
<i>of which</i>										
Road transport ¹	112.3	115.1	122.5	122.5	124.2	123.6	123.8	126.4	126.5	127.6
% of total UK emissions	14.0	15.4	16.2	16.3	17.3	17.1	16.9	17.7	17.5	17.4

1. Greenhouse house gas emissions from road transport comprise emissions from all road transport sources i.e. cars, heavy goods vehicles, light goods vehicles, motorcycles, buses, coaches, etc.

Source: ONS Environmental Accounts

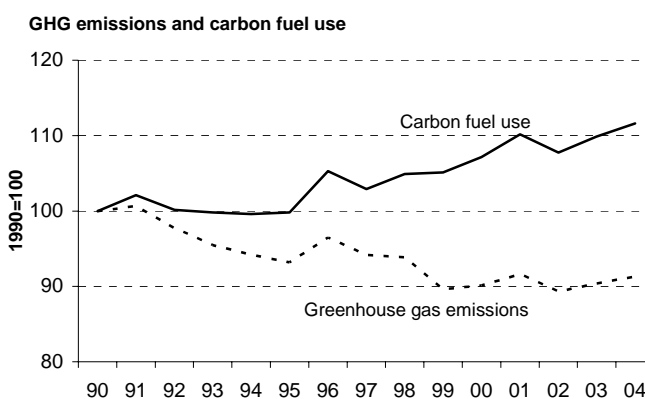
The large decline in emissions from Other Services between 1990 and 2004 was driven by 62.4 per cent fall in emissions from the solid waste industry.

UK households were responsible for directly emitting 162.3 million tonnes of greenhouse gases in 2004, down 0.8 per cent on the previous year but up 14.2 per cent on the 142.2 million tonnes emitted in 1990. Greenhouse gas emissions from households' private vehicles were 64.1 million tonnes in 2004. The drop in emissions from UK households' vehicles between 2002 and 2003 is the result of a 33.7 per cent reduction in emissions from non-catalyst cars. Emissions from other sources such as heating and cooking amounted to 93.7 million tonnes. In 2004, greenhouse gas emissions from households constituted 22.2 per cent of all greenhouse gas emissions compared with 17.7 per cent in 1990.

Energy consumption (News Release table C)

Total energy consumption in 2004 was 1.0 per cent higher than in 2003 and 11.4 per cent higher than in 1990. Total energy consumption in 2004 amounted to 245.7 million tonnes of oil equivalent (mtoes) compared with 243.4 mtoes in 2003 and 220.5 mtoes in 1990.

The use of carbon fuels such as coal, oil and gas rose to 226.3 mtoes in 2004, an increase of 1.6 per cent on the previous year. The increased use of carbon fuels is a factor driving the rise in greenhouse gas emissions over the same period. Between 1990 and 2004, the consumption of carbon fuels rose 11.6 per cent while greenhouse gas emissions fell 8.7 per cent due to changes in fuel use - the combustion of natural gas rather than coal and the introduction of integrated pollution prevention and control measures.



Energy from other sources such as nuclear, hydro, wind and imported electricity fell 5.8 per cent between 2003 and 2004 but is 9.6 per cent higher than in 1990. The current fall in energy from non-carbon sources is the result of a 9.4 per cent reduction in the generation of electricity from nuclear energy compared with 2003.

Energy from renewable sources such as biomass, hydro and wind power amounted to 4.1 mtoes in 2004 and accounted for 1.7 per cent of all energy used. In comparison, energy from renewable sources was 1.1 mtoes in 1990 or 0.5 per cent of all energy used.

The largest direct users of carbon fuels are UK households, which consumed 61.8 mtoes in 2004, a slight rise on levels in the previous year. The next largest direct consumers were the electricity generators which consumed 59.0 mtoes in 2004. Manufacturing and Transport of communications were other major direct users of carbon fuels, up 2.0 per cent and 3.5 per cent respectively.

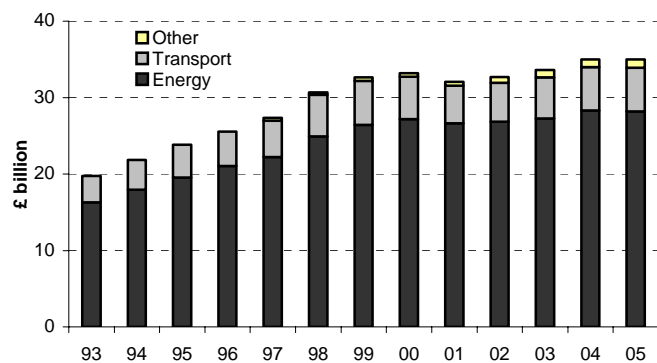
Environmental taxes (News Release table D)

Environmental tax receipts in 2005 amounted to £35.0 billion, virtually unchanged since 2004.

Environmental taxes accounted for 8.3 per cent of all taxes and social contributions in 2005, unchanged since the previous year. Environmental taxes amounted to 2.9 per cent on GDP, down 0.1 percentage points on 2004 and 0.7 percentage points lower than 1999, when they reached their highest proportion of GDP.

The largest sources of environmental tax revenue were the hydrocarbon taxes (taxes on varieties of petrol and diesel). Hydrocarbon taxes amounted to £23.4 billion in 2005, 66.8 per cent of environmental tax revenue.

Environmental taxes by tax type



Revenue from the Landfill Tax rose by 9.4 percent between 2004 and 2005 as a result of the policy to increase the tax rate by £1.00 per tonne each year. Revenue from Vehicle Excise Duty increased by 1.0 per cent to £4.8 billion in 2005

Receipts from the Aggregates Levy were similar to those in 2004 at just over £0.3 billion. At £0.9 billion, revenue from Air Passenger Duty was 6.2 per cent higher than in 2004 but remained below its peak in 2000 peak.

The next edition of the Environmental Accounts will be published on 23 November 2006.