

23 May 2006

Coverage
United Kingdom
Theme
The Natural and Built Environment

Greenhouse gas emissions little changed since 1999

Environmental Accounts Spring 2006

Environmental Accounts published today by the Office for National Statistics show that, on a UK residents basis, since 1999, there has been little change in greenhouse gas emissions, compared with a 10.4 per cent fall between 1990 and 1999. Greenhouse gas emissions are currently 1.9 per cent higher than in 1999 but 8.7 per cent lower than 1990.

In 2004, greenhouse gas emissions rose 1.0 per cent compared with 2003. The recent 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 from the Transport and Communications sectors.

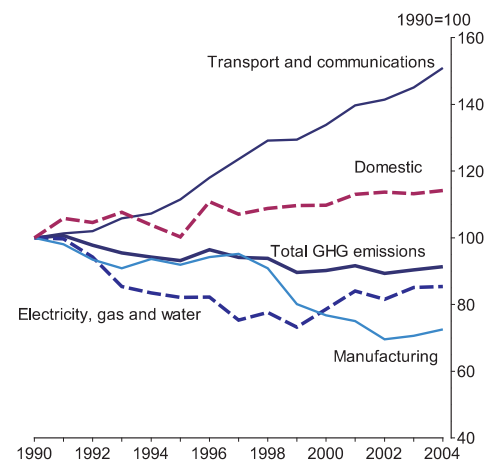
Some of the small increases since 1999 and in 2004 are due to an increase in UK owned shipping which does not add to global emissions growth.

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

These data are therefore on a different basis from estimates published by the Department for Environment, Food and Rural Affairs under the UK's Kyoto Protocol obligations. The Kyoto Protocol basis covers emissions from UK territory only and excludes emissions from international aviation and shipping. Table A of this release presents a reconciliation of data on both bases.

The latest Environmental Accounts release also contains new information on energy consumption and environmental taxation.

Greenhouse gas emissions 1990 - 2004



Issued by
National Statistics
1 Drummond Gate
London SW1V 2QQ

Telephone
Press Office 020 7533 5725
Public Enquiries 0845 601 3034

Statistician
Pete Lee 020 7533 5048
E-mail
Environment.accounts@ons.gov.uk

Internet
www.statistics.gov.uk

Next publication date
23 November 2006

Greenhouse gas emissions (Table B)

Greenhouse gas emissions from the electricity, gas and water supply industries 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.

However, since 1999 emissions from this industry rose 16.7 per cent. Greenhouse gas emissions from electricity generation constituted 25.4 per cent of all greenhouse gas emissions in 2004 after falling to a low 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. This trend has reversed in recent years leading to a 2.7 per cent rise between 2003 and 2004. The recent rise reflects an increase in emissions from the metal production 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 communication 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 64.8 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.

Emissions from air transport rose 15.2 per 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 aviation have almost doubled.

UK households were responsible for the direct emission of 162.3 million tonnes of greenhouse gases in 2004, up 0.8 per cent on the previous year and 14.2 per cent on the 142.2 million tonnes emitted in 1990. Since 1999, emissions from UK households rose 4.1 per cent. Greenhouse gas emissions from households' private vehicles were 68.1 million tonnes in 2004 while 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 (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 was the main factor behind 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, hydroelectricity, wind and imported electricity fell 5.8 per cent between 2003 and 2004 but was still 9.6 per cent higher than in 1990.

The total amount of energy derived from renewable sources rose 13.9 per cent between 2003 and 2004 and 272.7 per cent between 1990 and 2004. Energy from renewable sources such as biomass (for example wood, manure, crops), hydro and wind power amounted to 4.1 mtoes in 2004 and accounted for 1.7 per cent of all energy used.

The largest direct users of carbon fuels are UK households who consumed 61.8 mtoes in 2004, a rise of 0.8 per cent on a year earlier. The next largest were the Electricity, Gas and Water supply industries who consumed 60.4 mtoes in 2004, up 1.5 per cent on 2003.

Environmental taxes (Table D)

Environmental tax receipts in 2005 amounted to £35.0 billion, unchanged since 2004. Similarly, the share of environmental taxes accounted was unchanged at 8.3 per cent of all taxes and social contributions in 2004. Environmental taxes amounted to 2.9 per cent on Gross Domestic Product (GDP), down 0.1 percentage points on 2004 and 0.7 percentage points on 1999.

The largest source of environmental tax revenue were the hydrocarbon taxes (taxes on petrol and diesel). Hydrocarbon taxes amounted to £23.3 billion in 2005, 66.8 per cent of environmental tax revenue.

BACKGROUND NOTES

1. Environmental accounts are 'satellite accounts' to the main national accounts. They provide information on air pollution, energy consumption, oil and gas reserves, trade in basic materials, environmental taxation and spending on environmental protection. These are related to the different industrial, commercial and domestic sectors. Environmental accounts use similar concepts and classifications of industries to those employed in the National Accounts, and they reflect the recommended European Union and United Nations framework for developing such accounts.
2. The Environmental Accounts estimates for air emissions are published on a National Accounts basis and differ from those used to monitor progress against the Kyoto Protocol in that they include emissions from international aviation and from fuels purchased abroad by UK residents, including those purchased by international shipping and aircraft on international flights. They exclude emissions from fuels purchased in the UK by non-UK residents.
3. The greenhouse gases included in the atmospheric emissions accounts are those covered by the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). To aggregate the greenhouse gases covered in the accounts, a weighting based on the relative global warming potential (GWP) of each of the gases is applied, using the effect of CO₂ over a 100 year period as a reference. This gives methane a weight of 21 relative to CO₂ and nitrous oxide a weight of 310 relative to CO₂, SF₆ has a GWP of 23,900 relative to CO₂. The GWP of the other fluorinated compounds varies according to the individual gas.
4. For the purpose of this news release, the UK transport industries comprise railways, tubes and trams, buses and coaches, taxis and mini cabs, road freight, air transport, water transport and transport via pipelines. The road freight industry covers road haulage companies as opposed to all types of road freight. Lorries owned by retailers for instance are allocated to the retail industry.
5. Further details on air emissions and energy use as well as information on other elements of the environmental accounts such as oil and gas reserves, material flows and environmental protection expenditure, can be found at: <http://www.statistics.gov.uk/statbase/Product.asp?vlnk=3698>
6. The environmental accounts are used to inform sustainable development policy, to model impacts of fiscal or monetary measures and to evaluate the environmental performance of different industrial sectors.
7. Details of the policy governing the release of new data are available from the press office. Also available is a list of names of those given pre-release access to the contents of this release.

8. **National Statistics** are produced to high professional standards set out in the National Statistics Code of Practice. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference. © Crown copyright 2006.

A Greenhouse gas emissions bridging table

National Accounts measure to IPCC¹ measure

Thousand tonnes

		1990	1995	1997	1998	1999	2000	2001	2002	2003	2004
Greenhouse gases - CO₂,CH₄,N₂O,HFC,PFCs and SF₆²											
National Accounts measure	JKRU	801 460	747 019	754 793	752 330	718 245	722 586	734 297	715 975	724 536	731 915
less											
Bunker emissions ³	A43J	22 648	27 182	31 317	34 669	34 353	36 377	36 330	34 680	35 179	39 450
CO ₂ from biomass ⁴	A43K	2 979	4 644	5 167	5 823	6 411	6 873	7 223	7 531	8 283	9 375
Cross boundary adjustment ⁵	A43L	12 861	12 735	15 453	15 413	16 442	17 362	21 015	23 664	24 569	25 284
plus											
Crown Dependencies ⁶	EQ44	259	254	246	248	240	239	227	222	174	177
Landuse change / forestry ⁷	A43M	2 931	1 046	568	16	-215	-419	-571	-1 098	-1 159	-1 923
IPCC (inc. net Co ₂ emissions/removals)	A43N	766 161	703 759	703 670	696 690	661 064	661 793	669 385	649 224	655 520	656 061
Adjustment for 'Kyoto' total ⁸	F82M	-2 815	-1 182	-1 144	-813	-718	-656	-584	-252	-394	172
IPCC Kyoto greenhouse gas basket total ⁸	F82L	763 346	702 578	702 525	695 877	660 346	661 138	668 801	648 972	655 126	656 233
Kyoto base year ⁹	F82N	768 251

Source: Netcen, ONS

1 Intergovernmental panel on climate change.

2 Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbon and sulphur hexafluoride expressed as thousand tonnes of carbon dioxide equivalent.

3 International aviation and international shipping emissions.

4 Emissions arising from wood, straw, biogases and poultry litter combustion for energy production.

5 Emissions made by UK residents abroad and excludes emissions made by foreign residents in the UK.

6 Emissions from deforestation, soils and changes in forest and other woody biomass.

7 Includes emissions of crown dependencies; Guernsey, Jersey, Isle of Man. The total used for assessing progress against the Kyoto Protocol target differs slightly from the sum of greenhouse gases reported above in the table due to differences in the coverage of land use change and forestry Cayman Islands, Falkland Islands and Montserrat.

8 The UK's base year for the Kyoto target of a 12.5 per cent reduction by 2008-12 is the sum of 1990 emissions for Co₂, CH₄, and N₂O and from 1995 emissions for HFC, PFC and SF₆.

9 An allowance is included for net emissions from deforestation in 1990, in accordance with Article 3.7 of the Kyoto Protocol.

B Greenhouse gas emissions

Thousand tonnes

		1990	1995	1997	1998	1999	2000	2001	2002	2003	2004
Greenhouse gases - CO₂,CH₄,N₂O,HFC,PFCs and SF₆¹											
Agriculture	JKRH	60 742	58 584	59 724	58 485	57 802	55 588	52 567	52 928	52 540	52 069
Mining and quarrying	JKRJ	40 067	36 675	36 170	33 678	31 913	31 502	30 594	31 169	30 508	29 915
Manufacturing	JKRK	183 181	168 431	174 433	166 381	146 728	140 676	137 426	127 375	129 370	132 885
Electricity, gas and water supply	JKRL	217 668	178 728	163 987	169 058	159 280	171 129	183 001	177 592	185 168	185 803
Construction	JKRM	5 506	5 981	6 391	6 411	6 560	6 640	6 875	6 797	7 112	7 453
Wholesale and retail trade	JKRN	12 437	14 132	15 046	15 827	16 877	17 356	16 684	16 413	16 419	16 596
Transport and communication	JKRO	64 892	72 344	80 187	83 798	83 990	86 860	90 649	91 768	94 163	97 961
Other business services	JKRP	6 322	6 681	6 453	6 640	6 795	6 944	7 380	6 334	6 524	6 318
Public administration	JKRQ	10 563	10 310	10 196	9 504	9 341	8 675	9 548	9 577	8 966	8 993
Education, health and social work	JKRR	11 705	11 169	12 213	12 255	12 571	11 773	12 686	10 541	10 787	10 736
Other services	JKRS	46 186	41 402	37 687	35 557	30 433	29 375	26 136	23 812	21 969	20 861
Domestic	JKRT	142 191	142 583	152 306	154 736	155 954	156 069	160 751	161 669	161 011	162 325
Total greenhouse gas emissions	JKRU	801 460	747 019	754 793	752 330	718 245	722 586	734 297	715 975	724 536	731 915
<i>of which:</i>											
emissions from road transport	JKRV	112 300	115 107	122 507	122 538	124 185	123 640	123 756	126 483	126 512	127 639
emissions from water transport ³	F8ZP	17 032	17 045	19 299	18 916	16 845	16 344	20 446	22 331	22 901	27 060
emissions from air transport ⁴	F8ZQ	20 367	24 656	28 044	31 416	33 842	37 347	36 823	36 114	37 355	38 971

1 Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbon and sulphur hexafluoride expressed as thousand tonnes of carbon dioxide equivalent.

2 Sulphur dioxide, nitrogen oxides and ammonia expressed as thousand tonnes of sulphur dioxide equivalent.

3 Emissions from the water transport industry (EA code 69)

4 Emissions from the air transport industry (EA code 70)

Source: Netcen, ONS

C Energy Consumption

Million tonnes of oil equivalent

		1990	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Direct use of energy from carbon fuels												
Agriculture	JKPO	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.1
Mining and quarrying	JKPP	3.8	4.7	5.5	5.7	6.3	6.1	6.5	7.5	7.4	7.5	7.4
Manufacturing	JKPQ	43.9	43.6	44.7	44.5	44.0	44.4	43.8	42.7	40.2	41.0	41.8
Energy, gas and water supply	JKPR	57.1	52.2	53.1	50.5	52.6	51.8	55.4	58.1	57.0	59.5	60.4
Construction	JKPS	1.9	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.5
Wholesale and retail trade	JKPT	4.7	5.1	5.2	5.1	5.2	5.5	5.5	5.2	5.0	5.1	5.2
Transport and communication	JKPU	22.0	24.6	26.1	27.2	28.5	28.6	29.6	30.8	31.1	31.9	33.0
Other business services	JKPV	2.4	2.5	2.6	2.4	2.5	2.5	2.6	2.7	2.3	2.3	2.2
Public administration	JKPW	3.8	3.9	4.0	3.9	3.7	3.6	3.3	3.6	3.7	3.5	3.6
Education, health and social work	JKPX	4.6	4.7	5.1	5.1	5.2	5.4	5.1	5.5	4.6	4.7	4.7
Other services	JKPY	2.3	2.0	2.1	1.8	1.8	1.7	1.7	1.8	1.6	1.6	1.5
Domestic	JKPZ	54.1	54.7	60.7	58.0	58.7	59.0	59.4	61.0	61.2	61.2	61.8
Total use of energy from carbon fuels	JKQA	202.8	202.4	213.5	208.7	212.7	213.1	217.3	223.4	218.5	222.8	226.3
Energy from other sources ¹	JKQB	17.7	23.1	24.0	23.8	25.0	24.0	21.4	22.1	21.3	20.6	19.4
Total energy consumption of primary fuels and equivalents	JKQC	220.5	225.6	237.5	232.5	237.8	237.1	238.7	245.5	239.8	243.4	245.7
Energy from renewable sources ²	JKRF	1.1	2.3	2.1	2.3	2.6	2.8	2.8	3.0	3.3	3.6	4.1

1 Nuclear power, hydroelectric power and imports of electricity.

2 Renewable sources include solar power and energy from wind, wave and tide, hydroelectricity, wood, straw and sewage gas. Landfill gas and municipal solid waste combustion have also been included within this definition.

Source: Netcen, Department of Trade and Industry, ONS

D Government revenues from environmental taxes

£ million

		1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Energy													
Duty on hydrocarbon oils	GTAP	12 497	15 360	16 895	18 357	20 996	22 391	23 041	22 046	22 070	22 476	23 412	23 346
including													
Unleaded petrol ¹	GBHE	4 242	5 901	7 043	8 073	9 897	11 952	12 269	1 980	–	–	–	–
Leaded petrol/LRP ²	GBHL	4 502	4 088	3 716	3 393	2 984	1 630	286	245	239	233	242	240
Ultra low sulphur petrol	ZXTK	–	–	–	–	–	–	1 162	10 800	11 149	10 857	11 303	11 271
Diesel ³	GBHH	3 484	5 127	5 888	6 528	7 088	1 274	32	60	–	–	–	–
Ultra low sulphur diesel	GBHI	–	–	–	146	806	7 338	9 061	8 754	10 465	11 155	11 614	11 581
VAT on duty	CMYA	2 187	2 688	2 957	3 212	3 674	3 918	4 032	3 858	3 862	3 933	4 097	4 086
Fossil fuel levy	CIQY	1 331	1 306	978	418	181	104	56	86	32	–	–	–
Gas levy	GTAZ	240	161	198	181	32	–	–	–	–	–	–	–
Climate change levy	LSNT	–	–	–	–	–	–	–	585	825	828	756	744
Hydro-benefit	LITN	22	27	30	32	32	35	42	46	44	44	40	10
Road vehicles													
Vehicle excise duty	CMXZ	3 482	3 954	4 149	4 334	4 631	4 873	4 606	4 102	4 294	4 595	4 763	4 809
Other environmental taxes													
Air passenger duty	CWAA	–	339	353	442	823	884	940	824	814	781	856	909
Landfill tax	BKOF	–	–	5	378	333	430	461	502	541	607	672	735
Aggregates levy	MDUQ	–	–	–	–	–	–	–	–	213	340	328	333
Total environmental taxes	JKVW	19 755	23 835	25 565	27 354	30 702	32 635	33 178	32 049	32 695	33 604	34 924	34 972
Environmental taxes as a % of:													
Total taxes and social contributions	JKVX	9.1	9.4	9.6	9.5	9.8	9.8	9.3	8.7	8.8	8.6	8.3	8.3
Gross domestic product	JKVY	3.1	3.3	3.3	3.4	3.6	3.6	3.5	3.2	3.1	3.0	3.0	2.9

1 Unleaded petrol includes superunleaded petrol.

2 Lead Replacement Petrol (the alternative to 4-Star leaded petrol introduced in 2000) is lead-free.

3 Duty incentives have concentrated production on ultra low sulphur varieties.

Source: ONS, Department of Trade and Industry