The environment in your pocket **2005**







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Key facts and figures on the environment of the United Kingdom

The environment in your pocket **2005**

Introduction

Welcome to the ninth edition of our annual booklet of key environmental statistics.

The Environment in your Pocket is intended to be an easily accessible, handily sized, reference booklet, which offers information on a wide range of environmental topics and will be useful for anyone with an interest in environmental issues. It covers almost 60 key data series and focuses on providing trends over time, including performance against quantified targets and commitments set at the national and international level.

The contents of this edition are similar to previous editions. However, as with each previous edition, we have introduced some new items. In particular this year we have included a new section focusing on agriculture and the environment.

Explanatory notes at the back of the booklet provide more detailed, technical or background information for those items where it is felt to be particularly necessary.

The booklet also draws upon the Government's set of indicators of sustainable development. A revised set of 68 indicators was produced to support the new Sustainable Development Strategy, launched by the UK Government in March 2005. The Strategy sets out a vision of sustainable development through to 2020. A complete set of these indicators is published in a pocket-sized booklet: *Sustainable Development Indicators in your Pocket 2005*.¹

The Environment in your Pocket 2005 is available free of charge from Defra Publications (from the address on the inside front cover). It is available in the traditional pocket-sized (A6) format and also a larger (A4) size version. The larger version contains the same information but with larger print. This booklet, similar "key facts" about the environment and more detailed statistics are available on the e-Digest of Environmental Statistics website (see below). This booklet is widely distributed to public libraries, colleges of further education, and local and central government bodies. If you or your organisation would like to receive a copy of the next edition please contact us at the address on page 3.

¹ Sustainable Development Indicators in your Pocket 2005 (available from Defra Publications – product code PB11008) Our aim is to produce user-friendly, useful and relevant presentations, building on the feedback we have received from readers of previous editions. If you want to send us any comments, including ideas for future editions, they would be most welcome.

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The relationship that agriculture has with the environment is a significant and complex one – farming activities can give rise to both positive and negative impacts on the environment at all levels from local to global and changes in the environment can impact on agriculture. In the UK, agricultural activities cover around three-quarters of the land area (see page 48) and produce two-thirds of UK food. The agricultural sector is made up of around 307 thousand holdings varying widely in size and type. A range of different farming practices are employed involving: the way in which livestock are kept, the use of inputs such as soil and water as well as nutrient, land and waste management. The interaction between these practices and the local environmental characteristics affect the extent to which farming activities impact on the environment.

The complex relationships between agricultural activities and the environment make it difficult to isolate and quantify the effects each has on the other. However, it is possible to show how trends in agricultural activity are associated with trends in environmental indicators (page 9). For instance, as the volume of output from agriculture over the last 30 years initially increased and then broadly levelled off, the numbers of farmland birds – which are a good indicator of the state of the environment and countryside – in the same period declined before levelling off, in recent years. Similarly emissions of methane, a greenhouse gas, attributed to agriculture have largely followed trends in agricultural output although, whilst output volume is now higher than 30 years ago, methane emissions are 14 per cent lower.

Climate change

The agricultural sector is the largest single emitter into the atmosphere of two of the main greenhouse gases that influence climate change: methane, as a by product of livestock production, and nitrous oxide, as a consequence of fertiliser use (see pages 21 and 22).

The agricultural sector is one that is particularly sensitive to the effects of the weather, and long term changes in the global climate might be expected to have impacts on agricultural activity such as influencing the types of crops that can be grown and their potential yields. Average surface temperatures have been increasing (see page 15) over the last century, with four of the five hottest years ever recorded over a 330 year period occurring since 1990. Coupled with this the potential growing season has been getting longer (page 10). Similarly, long term trends

in rainfall and predictions of wetter winters and drier summers can be expected to have an effect on agricultural activity and its demand for water (see page 16).

Pollution

Climate change is not the only environmental factor likely to have an impact on agriculture. Pollution can also have an effect. During the growing season, concentrations of the air pollutant ozone in the atmosphere at ground level, which are at their highest during hot sunny weather, can also affect crop growth (page 11).

Agriculture itself is also a contributor to pollution. Ammonia emissions, which are mainly as a result of livestock rearing and fertiliser use, can cause damage to some plants or harm some habitats of significant conservation importance such as upland heaths, upland bogs and semi-natural grassland. In addition there are impacts in other areas – agriculture accounted for almost one in five of the most significant pollution incidents affecting water quality in 2004 (page 12 and also see page 34), and runoff and leaching of fertiliser from soils has a effect on the levels of nitrate concentrations in rivers (see page 33).

Conservation

Agriculture dominates the rural landscape, and plays a critical role in managing the structure of the countryside. Traditional farming methods together with climatic conditions and the underlying geology have produced distinctive regional landscapes. Over time, agriculture has changed the landscape, creating habitats that support a wide diversity of plants and wildlife. Areas of the UK have been designated to give protection, mainly for reasons of national landscape and/or nature conservation importance. There are around 1 million hectares of land in England designated as Sites of Special Scientific Interest (SSSIs) for the importance of their flora, fauna, geological or landform features, of which around half of the total area is predominantly agriculturally managed land (see page 51).

Suitable management practices can help support, maintain and enhance the diversity of the landscapes, habitats and food sources for farmland wildlife. Agri-environment schemes help to support farming systems which conserve habitats and landscape features, and over 1 million hectares of land in England is now within such schemes (page 13).

The relationship between agricultural output and its environmental impacts: 1974–2003

United Kingdom

Index (1974 = 100)



This is a UK Government sustainable development strategy indicator

Agriculture is the main user of rural land in the UK. Between 1974 and 2003, the output volume from UK agriculture rose by 16 per cent; most of this increase occurred prior to the mid 1980s, followed by a levelling off until the late 1990s since when there has been a slight reduction. The use of fertilisers in agriculture increased by roughly a half between 1974 and 1997, but has fallen since and in 2003 input was 5 per cent higher than in 1974.

Agricultural emissions of methane, one of the main greenhouse gases, have remained fairly constant throughout the period, but in 2003 were 14 per cent lower than in 1974. Emissions of ammonia have also fallen, by 22 per cent between 1990 and 2003.

Birds are regarded as a good indicator of the broad state of the environment and countryside land quality. The numbers of farmland birds in the national index fell by 44 per cent between 1974 and 2003. This indicates that the link between the productivity of agriculture and its environmental impacts has not been fully broken.

Source: Defra, netcen, RSPB, BTO





The growing season is the period of time each year during which plants can grow. The thermal growing season length is defined as beginning when the temperature on five consecutive days exceeds 5°C and ending when the temperature on five consecutive days is below that threshold.

The increase in growing season length since 1980 is largely due to the earlier onset of spring. The earliest start of the thermal growing season was in 2002 when it began on 13 January. The longest growing season in the 233-year series was 330 days, in 2000. The shortest growing season was 181 days in 1782.

Note: The line on the chart shows smoothed figures. Smoothed line ends at 2003. Source: Met Office, Mitchell, T. D., Hulme, M., 2002: Length of the growing season. Weather 57: pp196–198

Ozone levels during May to July: 2001–2003

United Kingdom

Total microgram hours above 80 µgm⁻³



Ground level ozone can damage vegetation as well as human health. At high concentrations, brown or white flecking often appears on leaves. At lower concentrations, plant growth may be reduced without any visible damage.

These maps show estimates relating to the European Target Value for the protection of crop yields and semi-natural vegetation. The target is to be achieved by 2010 (see explanatory note).

The formation of ground-level ozone is highest in hot, sunny weather and the highest summer ozone concentrations are often seen in South and South East England. The effect of the hot summer of 2003 can be seen in the high levels of ozone in May–July of that year when compared to the levels in 2001, which experienced a cooler June and July.

Serious pollution incidents affecting water, air or land: 2004

England and Wales

Number of incidents



Number of serious (category 1 and 2) pollution incidents							
2004	Water	Air	Land	All incidents			
England and Wales	708	183	377	1,199			

The chart shows the number of incidents investigated in 2004 which had a serious impact (category 1 or 2) on each of three media (water, air or land). Some incidents had an impact on more than one medium and appear in more than one column. The sewage and water industry caused 19 per cent of the serious water pollution incidents and was the main identified source of water pollution incidents, followed by agriculture and industry. Waste management was the biggest identified source of the serious air and land pollution incidents and caused 55 per cent of air pollution incidents and 25 per cent of land pollution incidents.

Source: Environment Agency

Agri-environment schemes: 1992–2004

England

Thousand hectares



					Thousand	l hectares
	1992	1996	2000	2002	2003	2004
ESAs	129	434	550	620	640	650
CSS		91	192	334	531	589

This is a UK Government sustainable development strategy indicator

Agri-environment schemes make payments for the adoption of agricultural practices to conserve wildlife habitats, historic, archaeological and landscape features and to improve opportunities for countryside enjoyment. Support is also provided for a variety of capital works.

The Environmentally Sensitive Areas (ESA) scheme was introduced in England in 1987 and covers 22 areas designated for their unique environmental features. The Countryside Stewardship Scheme (CSS) was introduced in 1991 and applies outside ESAs. Over 1 million hectares of land in England are managed through these agri-environmental schemes, nearly 13 per cent of the total agricultural area in England.

Note: for ESAs – area is counted in the year in which both agreed and paid for; for CSSs – area is counted in the year in which paid for (usually the year following agreement) Source: Defra

Climate change and greenhouse gases

The temperature of the earth is determined by a balance between energy coming in from the sun and energy constantly being emitted from the earth to space. Some of the outgoing radiation is absorbed by naturally occurring greenhouse gases, including water vapour, creating a natural greenhouse effect which keeps the surface of the earth around 33°C warmer than it would otherwise be and helps to sustain life.

Since the beginning of the Industrial Revolution (around AD 1750), concentrations of the long-lived greenhouse gases in the atmosphere – carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) – have risen as a result of human activities. At the same time, changes in global climate have occurred and in 2001, the Intergovernmental Panel on Climate Change, reported that "there is new and stronger evidence that most of the warming over the last 50 years is attributable to human activities". It also concluded that we can expect a rise in global temperatures of between 1.4 and 5.8°C by the end of the 21st century. Climate change scenarios for the UK suggest that the average temperature across the UK could increase by 2 to 3.5°C by the 2080s.

 CO_2 is the main contributor to global warming because the quantity of emissions is so large. The UK contributes about 2 per cent to global man-made emissions of CO_2 , which are currently estimated to range between 6.2 and 6.9 billion tonnes carbon per annum.

Under the Kyoto Protocol, the UK has agreed to reduce emissions of a "basket" of six greenhouse gases – CO_2 , CH_4 , N_2O , hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) – by 12.5 per cent below 1990 levels by the period of 2008–2012. The UK Government also has a domestic goal to cut CO_2 emissions by 20 per cent below 1990 levels by 2010, and a longer term goal to put the UK on a path to reduce CO_2 emissions by 60 per cent by 2050.

Further details:

www.defra.gov.uk/environment/statistics/globatmos/index.htm

Average surface temperature: 1772–2004

Global and Central England

Anomaly in degrees C (compared to 1961–1990 average)



Average global surface temperatures have increased by 0.4 to 0.8°C since the late 19th century. 1998 was the hottest year since global records began in 1861, 2004 was the fourth warmest, and all ten of the hottest years on record have been during the period 1990–2004. This trend is statistically significant and is unlikely to be entirely natural in origin. Current climate models predict that global temperatures will rise by a further 1.4 to 5.8°C by the end of the 21st century.

During the 20th century, the annual mean central England temperature warmed by about 1°C. The 1990s were exceptionally warm in central England by historical standards, about 0.6°C warmer than the 1961–1990 average. Four of the five warmest years since 1772 have been since 1990 and 2004 was the ninth warmest.

Note: the chart shows smoothed figures.

Source: Hadley Centre

Summer and winter precipitation: 1874–2005

England

Percentage change from 1961–1990 average



Recent climate change scenarios have predicted that the UK will experience a change to rainfall patterns. Winters are expected to become wetter, while summers may become drier. The largest relative changes will be in south east England where summer rainfall may decline by up to 50 per cent by the 2080s.

Heavy winter rainfall will become more frequent, but the amount of snow could decline by 90 per cent by the 2080s.

The weather in the UK will continue to vary substantially from year-to-year for entirely natural reasons and any apparent short-term trends should be treated with caution. For example, in 2004 the United Kingdom experienced its wettest August since 1956.

Note: The chart shows smoothed figures.

Sea level rise at selected sites: 1850–2003

United Kingdom

Anomaly (cm) compared to 1920 baseline



Global-average sea level rose by about 1.5mm per year during the 20th Century. This is believed to be the result of a number of factors including thermal expansion of warming ocean waters and the melting of glaciers. All the sites shown indicate a rise in historic mean sea level, ranging from 0.6mm per year at Aberdeen to 2.0mm per year at Sheerness. This reflects a UK sea level rise of approximately 1mm per year combined with long term geological movements (which are causing the south and east to sink and the north to rise).

Source: Proudman Oceanographic Laboratory

EU emissions of greenhouse gases compared with Kyoto Protocol target: 1990–2012



Under the Kyoto Protocol, the EU has a target to reduce greenhouse gas emissions to 8 per cent below 1990 (base-year) levels by 2008–2012. Total EU emissions fell by 1.4 per cent between 1990 and 2003.

The fall between 1990 and 2003 was largely due to reductions in emissions of over 18 per cent in Germany and 13 per cent in the UK. However, in 2003 these two countries continued to generate more emissions than any other country in the EU–15 with Germany generating almost a quarter and UK 16 per cent of the EU–15 total.

About half of the reductions in both Germany and the UK were due to one-off factors: economic restructuring following reunification in the case of Germany and energy liberalisation leading to increased use of gas for electricity generation in the UK.

Emissions increased in ten Member States between 1990 and 2003.

Source: European Environment Agency (EEA)

Emissions of greenhouse gases: 1990–2004

United Kingdom

Million tonnes (carbon equivalent)

Million tonnes (carbon dioxide equivalent)



				Million tonnes (carbon)			
	1990	1995	2000	2002	2003	2004(p)	
Basket of gases	209	193	182	180	182	183	
Carbon dioxide	165	155	153	153	156	158	

This is a UK Government sustainable development strategy indicator

In 2003 emissions of the "basket" of six greenhouse gases, weighted by global warming potential, were $13\frac{1}{2}$ per cent lower than the Kyoto baseline, and emissions of carbon dioxide (CO₂), the main greenhouse gas fell by $5\frac{1}{2}$ per cent between 1990 and 2003. The UK aims to move beyond the Kyoto target and reduce CO_2 emissions by 20 per cent below 1990 levels by 2010.

Provisional estimates for 2004 show decreases between 1990 and 2004 of about 4 per cent for CO_2 and about $12\frac{1}{2}$ per cent for the basket of greenhouse gases. The provisional estimates for 2004 show an increase since 2003, mainly due to increased emissions from industry and transport. *Note: p* = *provisional figures* Source: netcen

Carbon dioxide emissions, by end user: 1970–2003

United Kingdom



	Million tonnes (carbon)				
	1970	1980	1990	2000	2003
Transport	23.1	30.8	40.9	43.3	43.8
Industry	82.2	59.5	51.1	41.8	42.8
Domestic	54.0	47.8	41.7	39.5	41.2
Other end users	28.7	27.8	27.4	24.3	24.6

This is a UK Government sustainable development strategy indicator

Carbon dioxide (CO_2) is the most important greenhouse gas accounting for around 86 per cent of the UK's total emissions in 2003.

In 2003, industry and the transport sector each accounted for just over 28 per cent of emissions and domestic users accounted for a further 27 per cent. Between 1970 and 2003, total carbon dioxide emissions fell by 19 per cent. Much of this decline has come from a reduction in emissions attributable to industry which declined by almost half since 1970. Emissions caused by domestic users have declined by 24 per cent since 1970; those attributable to transport have increased by 89 per cent.

Figures for end users show emissions from power stations allocated to those using the electricity generated.

Source: netcen

Nitrous oxide emissions, by source: 1990–2003



				Thousand tonnes		
	1990	1995	2000	2002	2003	
Industrial processes	94	61	20	10	10	
Road transport	3	7	13	15	16	
Agriculture	103	99	94	90	87	
Other	18	17	18	18	17	
Total emissions	219	184	145	132	130	

Nitrous oxide emissions fell by 40 per cent between 1990 and 2003. The largest reductions came between 1998 and 1999, mainly as a result of a reduction in emissions from adipic acid production. This leaves agriculture as the main source, accounting for about two thirds of emissions, mainly from agricultural soils.

Road transport emissions increased from 2 per cent of the total to 12 per cent in 2003, as a result of the introduction of three way catalytic converters. These significantly reduce emissions of various other harmful gases such as carbon monoxide, hydrocarbons and nitrogen oxides, but they have a side-effect of producing higher emissions of nitrous oxide.

Methane emissions, by source: 1970–2003

United Kingdom

Million tonnes



					Thousand	tonnes
	1970	1980	1990	2000	2002	2003
Coal mines	1,540	1,269	870	333	301	228
Landfill	764	889	1,131	552	420	384
Gas leakage	88	354	398	336	339	245
Agriculture	903	1,006	1,017	955	890	894
Other sources	430	300	274	202	193	182
Total emissions	3,724	3,818	3,690	2,377	2,142	1,933

In 2003, total UK emissions of methane, excluding those from natural sources, were 48 per cent below 1990 levels. In 2003 the main sources were agriculture (46 per cent of the total) and landfill sites (20 per cent). Emissions from agriculture have reduced by 12 per cent since 1990 and emissions from landfill by 66 per cent. Coal mines used to be the main source of methane emissions but in 2003 these emissions were around 85 per cent lower than their 1970 level.

Global atmosphere

Maximum area of the Antarctic ozone hole: 1979–2004

Antarctic

Million square kilometres



		Million square kilometres					
	1979	1985	1990	1996	2000	2003	2004
Maximum area	1.1	18.8	21.1	27.0	30.3	29.2	24.3

The stratospheric ozone layer protects us from damaging ultraviolet radiation from the sun. It is depleted by man-made emissions of substances containing chlorine and bromine. There is now evidence of reductions occurring everywhere except in equatorial regions. Over the UK there has been a clear decline in total ozone since the early 1980s. The largest losses occur over the Antarctic as a result of the extremely cold temperatures. The Antarctic ozone hole in 2004 was the ninth largest ever observed and 2003 the second largest.

Note: No data available for 1993–1995

Source: NASA

Air quality and some important air pollutants

For most air pollutants, the main sources of emissions are from fossil-fuel combustion (electricity generation, heating and vehicles).

Sulphur dioxide (SO_2) and nitrogen oxides (NO_x) emissions contribute to acidification and local air pollution. Sulphur dioxide is an acid gas and can affect health and vegetation. It affects the lining of the nose, throat and airways of the lung. Nitrogen oxides are acid gases and ozone pre-cursors and can affect human health and vegetation. Nitrogen dioxide (NO_2) is thought to have both short and long term effects on airways and lung function.

Airborne particulate matter is very diverse and includes products of combustion, dust, grit, sea salt and biological particles. It has many sources, such as road traffic, construction work and chemical reactions in the atmosphere. Fine particles can be carried into the lungs and can be responsible for causing premature deaths among those with pre-existing lung and heart disease. The most commonly used method of measurement is based on the size of particles and collects mainly particles 10µm (10 thousandths of a millimetre) in diameter or smaller – small enough to penetrate deep into the lungs. The material is known as PM_{10} .

At ground level, ozone (O_3) occurs naturally but levels can be increased as a result of reactions between NO_x, oxygen and volatile organic compounds (VOCs) in the presence of sunlight. Once formed, O₃ can persist for several days and can be transported long distances. It can cause irritation to the eyes and nose and very high levels can cause damage to the airway lining. Ozone can also damage plants and crops.

Persistent organic pollutants (POPs) can accumulate in the tissues of humans and animals. These include polycyclic aromatic hydrocarbons (PAHs), a class of hydrocarbons emitted by motor vehicles, industrial processes and processes where there is incomplete combustion, such as bonfires. They are toxic in high concentrations and some may cause cancer.

The UK has a National Air Quality Strategy aimed at reducing air pollution. The strategy sets health-based standards for nine important pollutants to be achieved by various dates between the end of 2003 and 2010.

Further details: www.defra.gov.uk/environment/statistics/airqual/index.htm

Annual levels of particles and ozone in the air: 1987–2004

United Kingdom



µg per cubic metre

(Ozone = annual average of daily maximum 8 hour running mean; PM_{10} = annual average)

	1987	1993	2000	2003	2004
Ozone (Rural)	60	68	68	75	73
Ozone (Urban background)		42	53	60	57
PM ₁₀ (Roadside)			31	31	27
PM ₁₀ (Urban background)		36	23	25	22

This is a UK Government sustainable development strategy indicator

The two types of air pollution believed to have the most significant impacts on public health are long-term exposure to particulate matter (PM_{10}) and daily peak ozone levels.

Annual average urban background PM_{10} levels decreased from 36 µg m⁻³ to 22 µg m⁻³ between 1993 and 2004. However, urban background ozone levels increased over the same period. This increase is due to the reduction in urban emissions of nitrogen oxides, which destroy ozone close to their emission source.

Source: Defra, netcen

Particulate (PM₁₀) emissions, by source: 1980–2003



				Thousand tonnes			
	1980	1990	2000	2001	2002	2003	
Energy industries	83	74	25	21	12	13	
Residential	93	47	27	29	27	20	
Road transport	51	61	40	39	39	38	
Other sources	106	106	77	80	72	70	
Total emissions	333	287	168	169	150	141	

Coal burning, diesel combustion, construction, mining and quarrying are the major sources of particulate emissions.

Total emissions of PM_{10} fell by 58 per cent (192 thousand tonnes) between 1980 and 2003. Over the same period, emissions from residential fossil fuel use fell by 78 per cent and emissions from the energy industries fell by 85 per cent. Emissions from road transport increased by 27 per cent between 1980 and the peak year of 1988 but by 2003 had fallen to 26 per cent below the 1980 level.

Source: Defra, netcen

Sensitive habitats where critical loads for acidification and eutrophication were exceeded: 1996–2002

United Kingdom

Percentage of habitat area



Percentage of sensitive habitat area where critical load thresholds were exceeded for:

	Ac	idity	Nutrient nitrogen		
	1996	2002	1996	2002	
England	76	72	94	93	
Wales	90	82	95	87	
Scotland	68	43	46	38	
Northern Ireland	81	71	89	82	
UK	73	55	66	60	

This is a UK Government sustainable development strategy indicator

Critical loads are thresholds above which the deposition of certain pollutants causes significant harm to the environment through acidification and eutrophication (e.g. excessive freshwater algae growth due to nitrogen). The pollutants come mainly from burning fossil fuels and waste from farm animals.

There was a reduction in the percentage of the area of sensitive habitats where critical loads were exceeded in the UK as a whole between 1996 and 2002. Scotland experienced the largest reduction in acidity exceedance from 68 per cent in 1996 to 43 per cent in 2002.

Source: CEH

Sulphur dioxide emissions, by source and targets: 1980–2003

United Kingdom

Thousand tonnes



				Thousand	l tonnes
	1980	1990	2000	2002	2003
Large combustion plants	3,449	2,935	899	745	734
Other sources	1,392	776	295	257	244
Total emissions	4,841	3,711	1,194	1,002	979

Most sulphur dioxide (SO₂) emissions come from the burning of coal and fuel oil.

Total sulphur dioxide emissions fell by 74 per cent between 1990 and 2003 to 979 thousand tonnes. This compares with targets for 2010 of 625 thousand tonnes under the UNECE Gothenburg Protocol and 585 thousand tonnes under the EU National Emissions Ceiling Directive.

Emissions from Large Combustion Plants (LCPs) fell by 79 per cent between 1980 and 2003 compared with the EC LCP Directive target of a 60 per cent reduction on 1980 levels by 2003.

Nitrogen oxides emissions, by source and targets: 1980–2003

United Kingdom



					Thousand	d tonnes
	1980	1990	2000	2001	2002	2003
Road transport	989	1,324	812	741	690	632
Energy industries	942	875	419	426	437	469
Other sources	722	630	506	493	450	469
Total emissions	2,652	2,828	1,737	1,660	1,578	1,570

The combustion of motor spirit, diesel and coal are the major sources of NO_X emissions. Total emissions of NO_X fell by 41 per cent between 1980 and 2003 to 1,570 tonnes. This compares with a target for 2010 of 1,167 thousand tonnes under the EU National Emissions Ceiling Directive (NECD).

Emissions from road transport increased by a third during the 1980s, peaking at 1.33 million tonnes in 1989, but by 2003 had fallen to 36 per cent below the 1980 level. Emissions from the energy industries fell by 58 per cent between 1980 and 1999 but have increased since and in 2003 were half the 1980 level.

Source: netcen

Biological river water quality: 1990–2004

United Kingdom

Percentage of classified river length of good quality



	Percentage of rivers of good quality					
	1990	2000	2002	2003	2004	
England	60	67	68	69	70	
Wales	79	78	79	79	79	
Northern Ireland		61	57	57	51	
Scotland		87	86	88	87	

This is a UK Government sustainable development strategy indicator

Biological grading is based on the monitoring of small animals (invertebrates) which live in, or on the bed of, rivers and canals.

Between 1990 and 2004 the percentage of rivers of good biological quality in England rose from 60 to 70 per cent. In 2004, 51 per cent of rivers in Northern Ireland and 79 per cent of rivers in Wales were of good biological quality. In Scotland, 87 per cent of rivers were of good quality in 2004 based on a combined chemical, biological and aesthetic assessment, the same as in 2000.

Note: the Northern Ireland network expanded significantly in 2000. Note: the Scotland network changed from 2000

Source: Environment Agency, SEPA, Environment and Heritage Service

Chemical river water quality: 1990–2004

United Kingdom

Percentage of classified river length of good quality



	Percentage of rivers of good quality				
	1990	2000	2002	2003	2004
England	43	64	65	62	62
Wales	86	93	92	93	94
Northern Ireland		(59)	(59) 55	58	58
Scotland		87	86	88	87

This is a UK Government sustainable development strategy indicator

In England 62 per cent of rivers were of good quality in 2004 compared with 43 per cent in 1990. In Northern Ireland quality fell in the mid-1990s and then recovered. In all years since 1993 over 90 per cent of rivers in Wales have been of good chemical quality. In Scotland, 87 per cent of rivers were of good quality in 2004, the same as in 2000, based on a combined chemical, biological and aesthetic assessment.

Note: the Northern Ireland network expanded significantly in 2002. Data from smaller network shown in brackets. The Scotland network changed from 2000.

Source: Environment Agency, SEPA, Environment and Heritage Service

Phosphate concentrations in rivers: 1995–2004

United Kingdom



Percentage of river length with average phosphate concentrations greater than 0.1 mgP/l

Percentage	of river	length	with	averag	ge phos	sphate
	concer	ntratior	ns are	ater tl	han 0.1	mgP/l

		•	-
	1995	2000	2004
England	56	60	58
Wales	10	8	8
Scotland		5	4
Northern Ireland	25	27	23

Phosphorus and nitrogen are naturally found in water, and plants require these nutrients to grow. Elevated levels of phosphorus in water, from inputs from sewage works, for example, can lead to eutrophication (excessive algal growth) in freshwater.

Rivers with the highest concentrations are mainly in central and eastern England, reflecting the geology and higher population. In 2004, around 78 per cent of river lengths in Thames, Anglian and Midlands regions had average phosphate concentrations greater than the guideline value of 0.1 mgP/l. In England the North West has the lowest phosphate levels and in 2004, 41 per cent of the river lengths had average phosphate concentrations greater than the guideline value of 0.1 mgP/l.

Source: Environment Agency, SEPA, Environment and Heritage Service

Nitrate concentrations in rivers: 1995–2004

United Kingdom



Percentage of river length with average nitrate concentrations greater than 30 mgNO₃/l

as of river length with

	concent	rations greater than	30 mgNO ₃ /l
	1995	2000	2004
Ingland	33	36	32
Wales	1	1	0
cotland		3	3
Northern Ireland	0	0	0

High levels of nitrate can lead to eutrophication in the sea and are of concern in relation to drinking water abstractions.

Higher levels of nitrate concentrations tend to be in central and eastern England, reflecting inputs from agriculture, geology and sewage effluent. In 2004, just under two thirds of the river lengths in Anglian region, and about half in Midlands and in Thames regions had an average concentration greater than 30 mgNO₃/l. Between 2000 and 2004 the percentage of river length with concentrations above this level in the Anglian region decreased from 81 to 71. In all other regions there was relatively little change.

Source: Environment Agency, SEPA, Environment and Heritage Service

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Water pollution incidents: 1993–2004

England and Wales Number of Incidents 8,000 Category 1 Incidents Category 2 Incidents 7,000 6,000 5,000 4,000 3,000 2,000 1,000 0 1993 1995 1997 1999 2001 2003

			Number of incidents			
	1993	1998	2000	2003	2004	
Category 1 incidents	331	128	77	94	114	
Category 2 incidents	6,768	1,238	758	685	594	
Prosecutions	286	96	235	211	207	

Category 1 and category 2 pollution incidents have the most serious impact on river water quality, there are two other two categories: those that are relatively minor or have no impact.

Both the total number of category 1 and 2 incidents and the number of prosecutions have fallen every year since 2001. The number of category 1 and 2 incidents from agriculture increased from 98 in 2003 to 115 in 2004, while the number of incidents from the sewage and water industry fell from 198 to 137.

In 1998 the number of prosecutions for water pollution fell to 66 per cent lower than the number of prosecutions in 1993 but has risen since and in 2004 was 28 per cent lower than in 1993.

Source: Environment Agency
Inland water

Abstractions from non-tidal surface water and groundwater, by use: 1971–2003

England and Wales

Thousand megalitres per day



	Thousand megalitres per day				
	1991	1995	2000	2002	2003
Electricity supply industry	13.4	8.2	16.9	19.0	16.1
Other industry	3.5	2.3	4.4	3.4	4.6
Other purposes	1.0	1.0	1.1	0.5	0.6
Fish farming	3.9	4.3	4.7	3.2	3.1
Public water supply	17.6	17.3	17.0	16.9	16.9
Total	39.3	33.2	44.1	43.1	41.4

Water is abstracted under licences, granted on the basis of the reasonable needs of the public, industry and agriculture and availability of supplies. The amount abstracted has been generally rising since the mid-1990s. In 2003, 80 per cent of water abstracted was for the public water supply and electricity supply industry. Abstractions for the electricity supply industry have fallen by 15 per cent since 2002, when they reached their highest level for 10 years.

Note: data collected before 1991 are not strictly comparable with later years.

Source: Environment Agency

Inland water

Water supply and leakage: 1992/3-2003/4

England and Wales



			Megalitres (N	/ll) per day
	1992/3	1995/6	1999/2000	2003/4
Distribution losses Supply pipe losses Delivered	3,576 1,191 11,417	3,685 1,295 11,991	2,432 875 11,665	2,625 1,024 11,913
Total	16,184	16,971	14,972	15,562

In 2003/4, 3,649 megalitres per day of water put into the supply in England and Wales was lost through leakage, a decrease of 23 per cent since 1992/3. Between 1994/5 and 1999/2000 leakage fell from 228 litres to 139 litres per property per day. However, since 2000/1 leakage has begun to rise and was 154 litres per property per day in 2003/4.

Distribution losses includes all losses of drinkable water between the treatment works and the highway boundary. *Supply pipe losses* is leakage from customers' pipes between the highway boundary and the customers' stop taps. *Delivered* here excludes losses.

Compliance with mandatory and guideline bathing water standards: 1988–2004

United Kingdom

Percentage complying



	Percentage of coastal waters meeting standard					
	1988	1995	2000	2003	2004	
Mandatory standards	67	89	94	98	98	
Guideline standards		41	45	75	69	

In 2004, 98 per cent of coastal bathing waters in the UK met the mandatory standards of the European Bathing Water Directive, compared with 67 per cent in 1988. Compliance with the more stringent guideline standards, which is one of the requirements for *Blue Flag* status, was 69 per cent in 2004. 86 per cent of coastal bathing waters in Wales met this guideline standard compared with 68 per cent in England, 56 per cent in Northern Ireland and 55 per cent in Scotland.

Overall, bathing water quality has improved in the United Kingdom. This trend is expected to continue as further improvements are made to sewerage infrastructure affecting coastal waters, and through tackling diffuse pollution.

Source: Environment Agency, SEPA, Environment and Heritage Service

Riverine and direct inputs of metals from the UK to marine waters around the UK: 1990–2003

United Kingdom



Over the last decade there have been substantial reductions in most inputs of metals via rivers and direct discharges to estuaries and coastal waters. The apparent increase in inputs of some metals in the years from 1998 to 2002 compared to the previous years' trend is due to higher levels of riverine inputs that result from elevated riverine flows over this period. This highlights the importance of looking at the patterns of change in inputs and riverine flow together, preferably over a long period, rather than at year on year changes which can be misleading.

Note: based on upper estimates

Source: Defra, Environment Agency, SEPA, DRD (NI)

North Sea fish stocks and stocks of North East Atlantic mackerel: 1964–2004

United Kingdom

Index (1964 = 100 (mackerel 1977 = 100))



Trends may vary from species to species and fish stocks can fluctuate substantially over relatively short periods. Most stocks are over-exploited and some stocks are at historically low levels, especially North Sea cod. The North Sea herring population was seriously affected by over-fishing in the 1970s and the fishery was closed between 1978 and 1982, allowing stocks to recover.

The spawning stock biomass estimates are those produced in 2004 by the International Council for the Exploration of the Sea (ICES) based on mathematical models that use time series information on international catches and fishing activity and estimates of relative abundance from research vessel surveys.

Source: ICES, CEFAS

Fish stocks around the UK at full reproductive capacity and harvested sustainably: 1998–2004



In 2004, 38 per cent of fish stocks around the UK were at full reproductive capacity and were being harvested sustainably. These stocks had spawning levels which were sufficient to allow a good probability of stock replenishment.

There was an increase in the reported proportion of fish stocks considered to be within safe limits between 1998 and 2004; it is uncertain whether this represents a long term trend. Levels have fluctuated a little between 1998 and 2004 but in general around two-thirds of stocks have been suffering reduced reproductive capacity as a result of insufficient spawning levels or exploitation rates that were too high. For many of these stocks the ICES scientific advice is that the fishing rate should be reduced substantially in order to permit the stocks to recover.

Note: figures relate to finfish stocks only

Radioactivity

Discharges from the nuclear industry: 1983–2003

United Kingdom

Index (1985 = 100)



Radioactive discharges are the less toxic waste products from electricity generation and the medical and scientific industries that are emitted, under authorisation, to air and water.

Radioactive emissions to air in the UK fell by around 76 per cent between 1985 and 2003 and emissions to water fell by 82 per cent. At the same time, electricity production from nuclear sources increased by over 50 per cent. Around a quarter of overall UK electricity generated has come from nuclear sources in recent years.

Source: DTI, MOD, SEPA, FSA, CEFAS, BNFL, UKAEA, British Energy Generation, Amersham plc

Noise

Noise complaints received by Environmental Health Officers: 1984/5–2003/4

England and Wales

Index 1984/5 = 100



		Number per million people			
	1984/5	1990/1	1995/6	2003/4	
Domestic Premises	1,244	2,264	4,895	5,973	
Road works and construction	98	252	229	335	
Industrial/Commercial premises	636	913	1,466	1,480	
Road traffic	41	46	66	32	
Aircraft	15	34	48	120	

Although noise complaints are increasing, this does not necessarily mean that there has been an increase in actual noise levels.

Domestic premises are the largest cause of complaints about noise, accounting for three quarters of all complaints in 2003/4. Between 1984/5 and 2003/4, complaints about noise from this source increased almost five fold. Complaints about roadworks and construction noise more than trebled over the same period, while complaints about noise from industrial and commercial premises more than doubled. Complaints about road traffic rose until 1995/6, but in the last three years there have been fewer than in 1984/5. The information reported from the EHOs is considered to give, at best, only a very approximate indication of the trend in noise complaints from these sources.

Estimated total annual waste arisings, by sector

United Kingdom



Total = 330 million tonnes

In 2002/3 the UK produced about 330 million tonnes of waste. The chart above shows the estimated proportion produced by each sector.

This includes nearly 100 million tonnes of minerals waste from mining and quarrying, which is not subject to control under the EU Waste Framework Directive, and nearly 220 million tonnes of controlled wastes from households, commerce and industry (including construction and demolition wastes). Household wastes represent about 9 per cent of total arisings. Waste from the agriculture sector excludes manure or straw and represents less than 1 per cent of total arisings.

Estimates shown in the chart are mainly based on data for the period 2002/3, although estimates for sewage sludge and dredged materials relate to earlier years. The figure for construction and demolition wastes includes excavated soil and miscellaneous materials as well as hard materials, such as brick, concrete and road planings.

Source: Defra, Environment Agency, Water UK

Waste arisings and management: 1998/9–2002/3



This is a UK Government sustainable development strategy indicator

In 2002/3, around 220 million tonnes of waste were produced in the UK by households, commerce and industry (including construction and demolition), 25 million tonnes more than in 1998/9. In 2002/3, municipal waste (household and other waste collected by local authorities) made up about a sixth of this waste, industry and commerce accounted for just over a third, and construction and demolition made up about half.

In 2002/3, the proportion of waste disposed of in landfill sites fell to 43 per cent, although the actual amount disposed of in this way did not change significantly compared with 1998/9. The proportion of waste being recycled or reused increased to 43 per cent in 2002/3, with actual tonnage increasing by 50 per cent between the two years.

Note: These estimates are based on data from various surveys and comparisons between the two years should be treated with caution.

Source: Defra

Household waste and recycling: 1983/4-2003/4

United Kingdom

Kilograms per person per year



		Kilograms per person per year				
	1995/6	2000/1	2001/2	2002/3	2003/4	
Waste not recycled	423	455	456	449	425	
Waste recycled/ composted	27	52	60	71	87	
Total waste	450	507	516	521	512	

This is a UK Government sustainable development strategy indicator

Household waste includes household bin waste and also waste from civic amenity sites, other household collections and recycling sites.

On average each person in the UK generates just over half a tonne of household waste per year. Between 1995/6 and 2003/4 UK household waste per person increased by 14 per cent, but was below the 2001/2 amount in 2003/4.

The amount per person recycled or composted has increased steadily each year and in 2003/4 was over three times the 1995/6 level. In 2003/4, 17 per cent of UK household waste was recycled. The amount of non-recycled waste per person has decreased in the last two years and is at a similar level to 1995/6 – most of this goes to landfill. Source: Defra

Household waste recycling, by material: 1996/7–2003/4

England

Thousand tonnes



25.4 million tonnes of household waste was collected in England in 2003/4;18 per cent of this waste was collected for recycling or composting.This compares with a target, set in Waste Strategy 2000, to recycle/compost25 per cent of household waste by 2005/6.

Most recycling comes from bring sites such as bottle banks and civic amenity sites, however an increasing proportion is now from kerbside collection schemes. In 2003/4, 42 per cent of all household recycling was collected through kerbside schemes compared with 19 per cent in 1996/7. In 2003/4, 4 out of 5 households were served by such schemes.

There has been a change in the material make up of recycled waste. In 1996/7 paper and card was the largest component, making up a third of the total, followed by glass (19 per cent) and compost (17 per cent). In 2003/4 compost was the largest component (30 per cent of the total) with the next largest being paper (28 per cent); glass made up 13 per cent of the total.

Co-mingled collections – the collection of a number of recyclable materials in the same box or bin e.g. paper, cans, plastics – have become more widespread, and 10 per cent of household recycling was collected in this way in 2003/4.

Industrial and commercial waste arisings and management: 1998/9–2002/3



Around 67.9 million tonnes of industrial and commercial waste was produced in England in 2002/3, 1 per cent less than the 68.8 million tonnes produced in 1998/9. Within this total, industrial waste had reduced to 38 million tonnes in 2002/3 while the amount of commercial waste had grown to 30 million tonnes.

In 2002/3 disposal of commercial and industrial waste to landfill was nearly 14 per cent lower than in 1998/9 and, for the first time, recovery (recycling, reuse and land recovery) had overtaken landfill as the most common method of waste management. Overall 41 per cent was sent to landfill and 45 per cent recovered.

Source: Environment Agency

Agricultural and other land use: 1998–2004

United Kingdom

Thousand hectares



Total land area = 24 million hectares

						Thousan	d hectares
	Crops	Grass	Grazing	Other agricultural	Set-aside	Forest	Urban & other
1998	5,005	6,665	5,848	285	313	2,758	3,219
2004	4,022	0,000	2,205	500	000	2,010	5,551

This is a UK Government sustainable development strategy indicator

Land use refers to the main activity taking place on an area of land. Over 70 per cent of the total UK land area is under agricultural uses. The total area of agricultural land fell by 1 per cent between 1998 and 2004. The area under crops fell by 8 per cent in the same period, and rough grazing land decreased by 5 per cent. Grassland increased by 3 per cent, urban and other land increased by 10 per cent and the amount of set-aside land rose by almost 80 per cent between 1998 and 2004.

Area of woodland: 1924–2004

United Kingdom

Thousand hectares



					Thousand h	ectares
	1924	1947	1965	1980	1995–1999	2004
England	660	755	886	948	1,097	1,115
Scotland	435	513	656	920	1,281	1,330
Wales	103	128	201	241	287	286
N Ireland	13	23	42	67	81	86
Total	1,211	1,419	1,784	2,175	2,746	2,817

The area of woodland in the UK has increased over the past century. Approximately 5 per cent of the UK was covered by woodland in 1924; in 2004 almost 12 per cent of the UK was wooded.

Around 800 thousand hectares of new woodland have been created in the UK since 1970. In 2004, woodland covered 17 per cent of Scotland, 14 per cent of Wales, 9 per cent of England and 6 per cent of Northern Ireland.

New homes built on previously developed land: 1989–2004

England



This is a UK Government sustainable development strategy indicator

In England, provisional figures for 2004 indicate that 70 per cent of new homes (including the conversion of existing buildings, which are estimated to add about 3 percentage points to the national figure) were built on previously developed – *brownfield* – land. The Government has set a target of 60 per cent to be achieved by 2008.

The percentage is much higher in urban areas and there is also considerable regional variation. Over the period from 2000 to 2004, London had the highest rate of generally over 90 per cent (excluding conversions) and the East Midlands and the South West had the lowest rates both at around 50 per cent.

SSSI habitats in favourable or recovering condition by sector: at 31 March 2005

England



Sites of Special Scientific Interest (SSSIs) are intended to safeguard the best of England's wildlife and geology. In England, there are over 4,000 sites covering around 1 million hectares, around 7.5 per cent of the total land area.

A programme to assess the condition of all SSSIs was started by English Nature in 1997. The baseline assessment was completed in March 2003 which showed that 57 per cent of the area of sites assessed was in a favourable or recovering condition.

As at 31 March 2005 67 per cent of the land area of sites, according to the latest assessment of each one, were in a favourable or recovering condition. Over 80 per cent of the area of sites within local authority management and around three-quarters of the area of sites in coastal areas, woodland or urban areas or in business management were in a favourable or recovering condition compared with around half the area of water and wetland sites and 63 per cent of those on farmland.

The Government has a Public Service Agreement target to bring 95 per cent of nationally important wildlife sites into favourable condition by 2010.

Source: English Nature

Change in countryside character: 1990–1998

England



The map shows changes to the landscape and the effect they have had on the character of the countryside between 1990 and 1998. Change in landscape quality was assessed in relation to woodland, boundary features, agriculture, settlement and development, semi-natural habitats, historic features, and river and coastal elements occurring within the Joint Character Areas of England over the period 1990 to 1998.

Between 1990 and 1998, 40 per cent of landscapes were either stable or showed changes in elements that were consistent with existing character area descriptions. Over the same period the changes were marked and inconsistent with the character of the area for 23 per cent of landscapes, and for 37 per cent the changes were inconsistent with the character of the area but of less significance for overall character.

Source: Countryside Agency

Status of priority species and habitats in the UK: 2002

United Kingdom



This is a UK Government stainable development strategy indicator

Priority species and habitats are those that have been identified as being the most threatened and requiring action under the UK Biodiversity Action Plan (BAP) which was published in 1994 in response to the UN Convention on Biological Diversity (CBD).

In 2002, of the 391 priority species, a quarter were increasing or stable, around 30 per cent were declining or lost. The status of over a third of the species was unknown.

Of the 45 priority habitats, a quarter were increasing or stable, 38 per cent were declining and the status of just under a third was unknown.

www.defra.gov.uk/environment/statistics/wildlife/index.htm

Source: UK Biodiversity Partnership

Population of wild birds: 1970–2003

United Kingdom



This is a UK Government sustainable development strategy indicator

Wild bird populations are considered to be a good indicator of the broad state of the wildlife and countryside.

The overall index of populations of British breeding birds has been relatively stable over the last two decades. In 2003, the index of all native species (comprising 111 species) was 6 per cent higher than in 1970, a comparable position to that in 2000. The farmland birds index almost halved between 1977 and 1993, but has been relatively stable since, remaining at less than 60 per cent of the 1970 level. The woodland bird index fell by around 24 per cent between 1975 and 1992, but has also been relatively stable since. The index of coastal birds has risen steadily and in 2003 was 37 per cent higher than in 1970.

Although populations of the more common farmland and woodland birds have been declining, rare bird populations, which are not included in this index, have been stable or rising. This reflects conservation efforts focused on these species.

Source: Defra, RSPB, BTO

Changes in farmland bird populations, by region: 1994–2003

England



Between 1994 and 2003, there was no significant change in farmland wild bird populations in most English regions. The exceptions were the South East where they fell by 12 per cent and the East of England where the index fell by 10 per cent in this period. This compares with a decrease of 5 per cent overall for England.

In half of the 8 regions shown on this map, a similar proportion of species of farmland birds declined as increased over that period.

Note: numbers in brackets on the map indicate the number of species in the index.

Source: Defra, RSPB, BTO

Changes in woodland bird populations, by region: 1994–2003

England



Between 1994 and 2003 the index of woodland birds for England fell by 4 per cent. In the South East, South West and West Midlands woodland bird populations all showed a decline of 10 per cent over this period. The largest increase was in the North West where woodland bird populations were 24 per cent higher in 2003 than in 1994. There was an increase of 14 per cent in the East Midlands with little change in other three regions.

In 7 of the 8 regions shown on this map, more species of woodland birds increased than declined over the period. The region with more species in decline than increasing was the South East

Note: numbers in brackets on the map indicate the number of species in the index.

Source: Defra, RSPB, BTO

Population estimates and projections, by age group: 1971–2036

United Kingdom

Million



1971 1976 1981 1986 1991 1996 2001 2006 2011 2016 2021 2026 2031 2036

						Millions
Age	1971	1991	2003	2011	2021	2036
65+	7.41	9.06	9.51	10.48	12.70	16.37
15-64	35.05	37.37	39.12	40.53	40.69	39.46
0-14	13.47	11.01	10.92	10.39	10.45	10.39
Total	55.93	57.44	59.55	61.40	63.84	66.22

The overall population of the UK is estimated to have been 59 ¹/₂ million in 2003, and is projected to increase by around 11 per cent by 2036. The projection indicates an ageing population: those over 65 are projected to increase from 16 per cent of the total to 25 per cent by 2036; those aged between 15-64 years are projected to decrease from 66 per cent of the 2003 total to 60 per cent by 2036.

Source: Government Actuary's Department, ONS, GROS, NISRA

Road traffic, by type of vehicle: 1950–2004

Great Britain

Billion vehicle kilometres



				Billion	vehicle kil	ometres
Road traffic	1950	1970	1990	2000	2003	2004
Cars and taxis	25.6	155.0	335.9	376.8	393.1	398.1
Other vehicles	27.4	45.4	75.0	90.3	97.3	100.5
All motor vehicles	53.0	200.5	410.8	467.1	490.4	498.6

Overall, motor vehicle traffic levels rose by 21 per cent between 1990 and 2004; car and taxi traffic was up by 19 per cent whilst other vehicle traffic rose by just over a third. Traffic levels rose by 2 per cent between 2003 and 2004 and within *other vehicles* light van traffic increased by 5 per cent.

Source: DfT

Final energy consumption: 1980–2004

United Kingdom

Million tonnes of oil equivalent



1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004

			M	Million tonnes of oil equivalent			
Source	1980	1990	2000	2002	2003	2004	
Transport	35.5	48.6	55.3	55.4	56.0	57.4	
Domestic	39.8	40.8	46.9	47.9	48.3	48.7	
Industry	48.3	38.7	34.6	33.7	34.2	34.1	
Services	18.7	19.2	21.5	19.9	19.8	20.8	
Total	142.4	147.3	158.3	156.9	158.4	161.0	

Between 1980 and 2004 energy use for transport increased by 62 per cent, mainly as a result of an 83 per cent increase in road traffic over the same period. Domestic energy consumption rose by 21 per cent between 1980 and 1996; it has levelled off since and in 2004 domestic consumption was 22 per cent above the 1980 level.

Note: Services includes agriculture.

Source: DTI

Electricity generated by renewable sources: 1998–2004

United Kingdom





		Gigawat	t hours				
Electricity generated from renewables in 2004							
Landfill Gas	4,004	Co-firing with fossil fuels	1,022				
Large scale hydro power	4,648	Sewage sludge digestion	379				
Wind and wave	1,935	Small scale hydro power	282				
Biodegradable municipal solid	waste 971	Other	931				
		Total	14,171				

One of the UK's renewables targets is that 10 per cent of electricity generated should be from renewable sources by 2010. Between 1990 and 2004 the percentage of electricity generated from renewable sources increased from 1.8 per cent to 3.6 per cent.

The largest increase in electricity generated over the last 6 years was from landfill gas, from 1,185 GWh in 1998 to 4,004 GWh in 2004. Generation from wind power more than doubled.

Electricity use, economic growth and environmental impacts: 1990–2003

United Kingdom

Index (1990 = 100)



This is a UK Government sustainable development strategy indicator

Electricity generation is the most significant source of emissions of greenhouse gases and also a source of emissions of air pollutants. Between 1990 and 2003 use of electricity in the UK increased by 23 per cent, whilst GDP increased by 35 per cent. This suggests that the link between electricity use and the growth of the economy as a whole has yet to be broken ("decoupled").

During the same period, total carbon dioxide (CO₂) emissions from electricity production fell by around 15 per cent, emissions of nitrogen oxides (NO_X) fell by 51 per cent and emissions of sulphur dioxide (SO₂) by 75 per cent. This shows that there has been some decoupling of carbon dioxide emissions and of those air pollutants from electricity consumption, mainly because of the switch from the use of coal and oil to gas and nuclear power in power stations. A small rise in emissions of CO₂ and NO_X from 1999 reflects an increase in the use of fossil fuels for electricity generation in recent years.

Source: DTI, ONS, netcen

Environmental impacts of households: 1990–2003

United Kingdom

Index (1990 = 100)



Between 1990 and 2002, household numbers rose by 10 per cent. Between 1990 and 2003 household energy consumption (excluding transport use) rose by around 18 per cent. The level of carbon dioxide (CO_2) emissions relating to this energy use has fluctuated but in recent years has been around the same level as in 1990. Most of the energy consumed by households is for heating and hot water with the remainder for lighting, appliances and cooking. The increasing use of central heating and increasing number of appliances and computers in the home has broadly offset improvements in energy efficiency.

Over the same period domestic waste arisings not recycled grew by 7 per cent, roughly in line with household numbers until the latest year. Household water consumption (including leakage from water companies' pipes) fell by 8 per cent between 1995 and 2001, but has since been rising.

Note: the figures for household numbers are for Great Britain.

The link between road traffic growth, economic growth and environmental impacts: 1990–2003

United Kingdom

Index (1990 = 100)



This is a UK Government sustainable development strategy indicator

Between 1990 and 2003, road traffic increased by 19 per cent. In the same period GDP grew by 35 per cent. This may indicate some relative weakening of the link ("decoupling") between road traffic growth and economic growth.

Road transport is a major source of carbon dioxide (CO_2) emissions and also of emissions of several air pollutants. There was little decoupling of CO_2 emissions from growth in road traffic between 1990 and 2003. In that period, CO_2 emissions from road transport increased by 10 per cent.

Since around 1990, technological improvements in vehicles have allowed significant decoupling of emissions of pollutants, such as particulates and nitrogen oxides, from the growth in road traffic. NO_X emissions and particulate (PM_{10}) emissions declined by 51 per cent and 37 per cent respectively between 1990 and 2003.

Note: the figures for road traffic are for Great Britain.

Source: DfT, ONS, netcen

Resource use and construction output: 1970–2004

United Kingdom

Index (1970 = 100)



This is a UK Government sustainable development strategy indicator

Between 1970 and 2004, construction industry output, in terms of gross value added (GVA), increased by 55 per cent, with the increase occurring from the 1980s following a period of decline in the 1970s. The domestic extraction of minerals for use in construction roughly followed the same trend of output until the late 1980s. Since then extraction has declined, resulting in an overall decrease of 12 per cent between 1970 and 2003. This indicates a break of the link ("decoupling") between construction industry growth and mineral resource use over the last 15 years.

There are a number of reasons for this improvement in resource efficiency, including changes in the structure of the construction industry, with an increase in the number of home extensions and a relative decrease in the more resource intensive new-build homes.

Source: ONS

Environmental protection expenditure by private industry: 2003





Total expenditure = £3.4 billion

Environmental protection expenditure is spending by companies or the public sector where the primary aim is to reduce environmental pollution. This includes expenditure to reduce or prevent emission to air or water, to dispose of waste materials, to protect soil and groundwater, to prevent noise and vibration, or to protect the natural environment.

Based on a survey, in 2003, UK industry spent an estimated £3.4 billion on environmental protection expenditure. Around two-thirds of the spending was divided between solid wastes and reduction of emissions of pollutants to water.

www.defra.gov.uk/environment/statistics/supp/index.htm

Source: Defra

Environmental protection expenditure by the public sector: 2003

United Kingdom



Total expenditure = £4.9 billion

In 2003 the public sector in the UK spent an estimated £4.9 billion on environmental protection expenditure. Almost two-thirds of the spending was on solid waste management. The next largest area of expenditure was nature protection – around 13 per cent – and a similar amount was spent on the reduction of emissions of pollutants to water and to the atmosphere.

Source: ONS

Pages 11: Ozone level maps

The two maps show estimates relating to the European Target Value for the protection of crop yields and semi-natural vegetation. This value has been set at no more than 18,000 microgram hours above 80 μ g m⁻³ (micrograms per cubic metre) during May-July, averaged over 5 years to be achieved by 2010.

Pages 11, 25: Ozone exceedences

At ground level, Ozone (O₃) occurs naturally but levels can be increased as a result of the presence of other pollutants. As a secondary pollutant, it is formed by a series of reactions between NO_x, oxygen and VOCs in the presence of sunlight. Production of ozone is affected by the weather, which can lead to ozone, and the pollutants that cause it, being blown over from mainland Europe and North America. O₃ episodes, in which concentrations rise substantially above background levels, occur in the summer months when there are long hours of bright sunlight, temperatures above 20°C, and light, or no winds. Ozone reacts with NO_x to form NO₂ and, as urban areas tend to have higher levels of NO_x than rural areas, ozone concentrations recorded at urban sites are generally lower than at rural ones.

Pages 13: Agri-environment schemes

ESA and CSS schemes are now closed to new applicants. A new agri-environment scheme, Environmental Stewardship, which comprises Entry Level Stewardship, Organic Entry Level Stewardship and Higher Level Stewardship, was introduced in March 2005.

Pages 19, 20, 21, 22, 26, 28, 29: Emissions

Emissions estimates for the UK are updated annually to reflect revisions in methodology and the availability of new information. These adjustments are applied retrospectively to earlier years and hence there are differences from the data published in previous editions of the booklet.

Pages 18, 19: Greenhouse gas emissions

Emissions of the basket of greenhouse gases (CO₂, CH₄, N₂O, HFCs, PFCs and SF₆) are presented based on their global warming potential, that is their relative contribution to global warming. The figures for EU-15 greenhouse gas emissions are on a slightly different basis from those showing emissions for the UK only. The EU-15 figures exclude emissions from land use change and forestry since this can currently

be treated differently between countries. The UK totals on the pages showing UK results only, include land use change and forestry.

Pages 18: Greenhouse gas emissions

EU-15 refers to the 15 members states of the European Union in the period prior to enlargement in 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

Page 20: Carbon dioxide emissions by end user

In this year's edition emissions from commercial and light industrial enterprises have been re-allocated from the industry category to the other end users category.

Pages 26, 27: Particulates

Particulate matter is now increasingly measured by a method that determines the mass of a fraction of the particles in the air that are most likely to be deposited in the lungs. PM_{10} is the particulate matter which passes through a size-selective filter set to preferentially collect smaller particles: collecting 50 per cent of particles 10 microns (10 thousandths of a millimetre) in diameter and 95 per cent of particles of 5 microns.

Page 28: SO₂ emissions; page 29: NO_X emissions

Emissions from large combustion plants (LCPs) include emissions from all power stations and refineries and from some industrial sources. From 1991 actual emissions have been assessed for individual large plants. Up to 1990 estimates have been made based on the estimated proportions from the relevant sources: power stations, refineries, iron and steel and other industrial sources.

Pages 30, 31: River water quality

In Scotland, since 1996, an overall classification has been used combining chemical, biological, nutrient and aesthetic quality. The Scottish classification system and criteria for determining which river lengths should be monitored is different from the other countries. Comparisons between Scotland and other countries should therefore be treated with caution.

In Scotland a new system for recording river lengths, called the Digitised River Network was introduced in 2000. Data for chemical quality for 2000 are shown using the combined classification on the old network basis

to be consistent with data for 1996-1999. Data for biological quality for 2000 are only available for the new network. As a result of these changes, a series for the UK has not been produced.

Page 33: Nitrate concentrations

Rivers with an average nitrate concentration level greater than 30 mgNO₃/l are classified as having high concentrations in the General Quality Assessment (GQA) for nitrate. This measure enables trends and regional differences in nitrate concentrations to be shown. Average concentrations cannot be directly compared with the EU maximum admissible concentration for drinking water of 50mgNO₃/l to be met by 95 per cent of samples, which is also the threshold established by the World Health Organisation.

Page 34: Water pollution incidents

From 1999, a new system for recording pollution incidents was introduced by the Environment Agency, covering incidents to air and land as well as water. The incidents were classified into four categories by their severity of impact. Only incidents classified as having an impact on the water environment and only those incidents in categories 1 and 2 – the two more severe categories – are shown in this booklet to maintain consistency with earlier years.

The numbers of these more severe incidents are thought to be less influenced by changes in reporting and thus provide a more meaningful indication of actual trends in pollution incidents than the total number of reported incidents.

Prosecutions are for cases taken before 31 December in that year, apart from 1994 where figures include cases taken before 30 April 1995.

Page 37: Bathing waters

Under the EC Bathing Water Directive, eleven physical, chemical and microbiological parameters are measured to assess bathing water quality at designated sites. Legal minimum (mandatory) and more stringent (guideline) standards are set for a number of these, including total and faecal coliforms which are generally considered to be the most important indicators of faecal contamination at bathing sites. The European Commission measures compliance with the Directive in terms of achieving the mandatory standards for total and faecal coliforms and three physico-chemical parameters, and guideline compliance in terms of additionally achieving the guideline standards for total and faecal

coliforms. The water quality component of the international Blue Flag beaches scheme uses the same conditions as EC guideline compliance and, additionally, the Directive's guideline limit for faecal streptococci. The guideline standards quoted in this booklet refer to the water quality standards used for the Blue Flag scheme.

Page 38: Riverine and direct inputs

Riverine inputs are the loads conveyed by rivers based on sampling points just upstream of the zone of tidal influence. They reflect all point sources and diffuse losses upstream of these points.

Direct inputs are those reaching the marine environment via discharges downstream of the riverine monitoring points. Typically, inputs are estimated from 12 samples taken each year. Some samples are taken that contain substances below the limits of detection and where this occurs two estimates are made: an upper and a lower. The upper estimate assumes that the substance is present at the level of detection and the lower assumes that concentrations are zero. Upper (worst case) estimates are used on this page.

Page 40: Sustainability of fish stocks

Part of the increase in the percentage of stocks considered to be within safe limits is due to the increase in the number of stocks in the not known category (as a result of some deterioration in the quality of data available for fish stock assessments).

Page 43: Total waste

Waste from the agriculture sector excludes manure or straw and is soon to come under the same legislative controls as other forms of waste. Manure and slurry when spread at the place of production, for the benefit of agriculture, will not be considered waste under the new controls.

Page 49: Woodland

Data for 2004 incorporate adjustments to the 1995–1999 woodland census figures for subsequent new planting and sales, all other years' data are census figures. The most recent census was undertaken over the period 1995–1999 in a rolling programme.
Explanatory notes

Page 51: SSSIs

Farmland SSSIs are not necessarily on farms but rather relate to habitats that are generally maintained by agricultural management.

English Nature assesses the condition of SSSIs using categories agreed for the UK through the Joint Nature Conservation Committee (JNCC). SSSI condition is a measure both of the quality of the special habitat and species features on SSSIs, and the management measures in place to recover and conserve these features. SSSIs are assessed as being in either a favourable, unfavourable recovering, unfavourable no change or unfavourable declining condition. (Sites that are in a favourable or unfavourable recovering condition are contributing to meeting the PSA target). In essence, if an SSSI is in favourable or recovering condition, it means that the habitat and the species are in a healthy state and are being conserved for the future by appropriate management. If an SSSI is assessed as unfavourable, this means that there is a current lack of appropriate management, or that there are damaging impacts which need to be addressed.

Page 53: Priority species and habitats

The UK Biodiversity Action Plan (BAP) was published in 1994 in response to the UN Convention on Biological Diversity (CBD). Through a series of individual action plans it established recovery targets for the most threatened species and habitats, identified the factors for their decline and prioritised the work that was needed to bring about improvements in each case. Assessment of the progress with implementation of the BAP takes place every three years and two reports have been completed so far, in 1999 and 2002. The information on page 53 provides an overview of the 2002 status of 436 priority species and habitats occurring in the United Kingdom.

Pages 54–56: Bird populations

Wild bird populations are considered to be a good indicator of the broad state of the wildlife and countryside because they occupy a wide range of habitats, they tend to be near or at the top of the food chain and considerable long-term data have been collected.

Species included in these indices are native to the UK and have more than 500 breeding pairs across the UK. At national level this gives 111 native species, of which 33 are woodland, 19 are farmland and 15 are coastal

Explanatory notes

species. The indices portray the annual changes in abundance of all species since 1970. Individual species populations within the indices may be increasing or decreasing, irrespective of the overall trends. The indicators are considered to give reliable medium to long term trends.

It was not possible to update the national indicator for 2001 because of restrictions on those collecting the data caused by the outbreak of foot and mouth disease. Estimates for 2001 are based on the average of 2001 and 2002.

Pages 55-56: Regional bird indices

These indices, based on recent research, are considered to be provisional. Although the indices are consistent with the national wild bird population indicator, they should be used with caution as they are subject to quite large sampling uncertainties.

Comparisons between regions also need to be interpreted with caution because geographical variations in the numbers of species recorded in the British Breeding Birds Survey (BBS) mean that each regional indicator could cover a different subset of species from other regions or the national indicators. However, the current results have been derived using a revised methodology from that used in previous years that allows trends to be included for those more scarce species in each region previously excluded.

Some conversion factors

metric		to metric		to imperial
1 tonne	=	1,000 kilograms	=	0.984 tons
1 hectare	=	10,000 sq metres	=	2.47 acres
1 sq kilometre	=	100 hectares	=	0.386 sq miles
1 kilometre	=	1,000 metres	=	0.621 miles (1,094 yards)
1 litre	=	0.001 cubic metres	=	1.76 pints (0.22 gallons)

Symbols used in this booklet

.. = data not available

p = provisional data

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