The environment in your pocket **2009**

NATIONAL STATISTICS

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Department for Environment Food and Rural Affairs

The environment in your pocket **2009**

Key facts and figures on the environment of the United Kingdom

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** Items marked with an asterisk are indicators supporting the UK Government Sustainable Development Strategy.*

The complete set of such indicators has been published in Sustainable development indicators in your pocket 2009. Further details can be found on the following website: www.defra.gov.uk/sustainable/government

Welcome to the thirteenth edition of our annual booklet of key environmental statistics. Our use of resources as consumers and our attitudes towards consumption have a huge impact on the environment. That's why this year's edition focuses on two key themes, sustainable consumption and waste and recycling.

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. Explanatory notes with further detail and data tables are available in the Annex of the booklet.

The booklet also draws upon the set of indicators supporting the UK Government's Sustainable Development Strategy. A complete set of these indicators has been published in: *Sustainable development indicators in your pocket 2009*.

The environment in your pocket 2009 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.

Tell us what you think of The environment in your pocket

This publication has been produced by Defra's Environment Statistics Service, we would welcome feedback. If you have comments or questions about this publication generally please contact us:

- Email: enviro.statistics@defra.gsi.gov.uk
- Address: Environment Statistics Service, Defra, Area 6E, Ergon House, Horseferry Road, London SW1P 2AL.

Sustainable Consumption

We are all consumers – of food and drink, personal travel, household products and travel tourism. As such, we are accountable for a large proportion of the pressures put on the environment. Households account for 42 per cent of the UK's direct carbon emissions from energy use (including private car use), two thirds of public water supply and 15 per cent of controlled waste.

Indirect emissions and other environmental effects also occur during the production of goods and services that we consume, whether they are produced in the UK or in other countries. With rising incomes and smaller households, the overall picture is of increasing pressures from the UK's 'environmental/climate change footprint'.

To some extent these impacts have been offset by environmental improvements in the goods and services we buy. New types of products are now designed with reduced environmental and social impacts. Manufacturers are minimising waste and carbon emissions, and more retailers are marketing "green" products, with some examining their whole supply chains to minimise their impacts.

Consumers are also becoming more aware of the issues, almost everyone has heard of climate change, and attitudes and behaviours are beginning to change. The *2009 Survey of public attitudes and behaviours towards the environment* indicates there has been a small increase in the proportion of people willing to do things to help the environment: 47 per cent of respondents said 'they did quite a few things that are environmentally friendly', compared with 41 per cent in 2007.

Waste and Recycling

The UK faces major challenges if we are to manage our waste sustainably. This is important, not just as part of our commitment to sustainable consumption, but also for reducing greenhouse gas emissions.

Reducing waste can make an important contribution to achieving sustainability. We can reduce waste by using fewer natural resources to make products, and by re-using and recycling the materials in them. Energy can be recovered from the remaining wastes where possible, and send to landfill only residual material. This approach: reduce, re-use, recycle, energy recovery, disposal – is known as the "waste hierarchy".

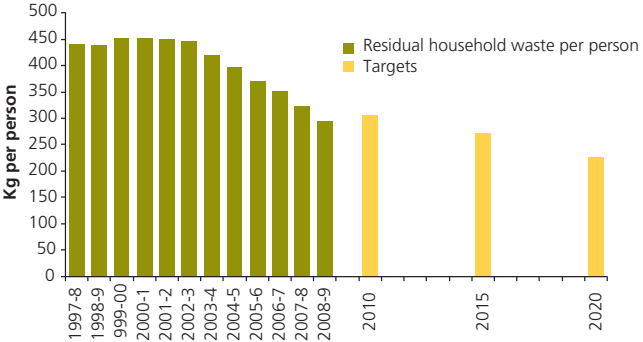
Municipal waste policy in recent years has focused on reducing the amount of non-recyclable waste generated, reducing landfill and increasing recycling, with targets at local authority and national level.

In 1997-8 only 8 per cent of England's household waste was recycled or composted. This rate reached approximately 37 per cent in 2008-9. Municipal waste, though, is only a small proportion of the total waste generated in the country. Business waste and waste from construction account for almost two thirds of the waste which has to be managed.

In October 2009, the Government released a statement regarding commercial and industrial waste. One of the announced actions was for the Government to carry out a national survey of commercial and industrial waste by the end of 2010.

Household waste per person after recycling, composting and reuse, 1997-8 to 2008-9

England

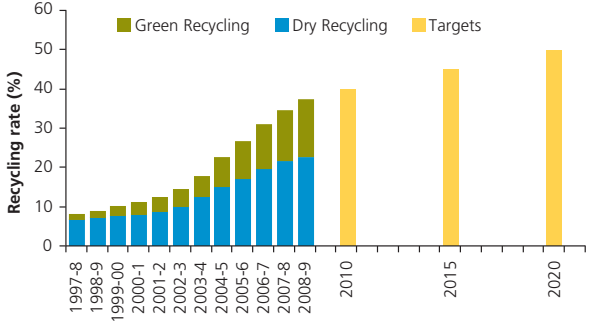


Source: Defra Municipal and Household waste statistics, WasteDataFlow

- A target in the Waste Strategy for England is to reduce household waste that is not re-used, recycled or composted (referred to as residual waste) from over 22.2 million tonnes in 2000 to 12.2 million tonnes in 2020. This is equivalent to a fall of 50 per cent per person, from 452 kg per person in 2000 to 307 kg in 2010 and 225 kg in 2020.
- In 2008-9, total residual household waste was 295 kg per person and therefore already lower than the target set for 2010. This is a decrease of 9 per cent from 324 kg per person in 2007-8 and a decrease of 35 per cent from 452 kg per person in 2000-1.

Green and dry recycling rates for household waste, 1997-8 to 2008-9

England

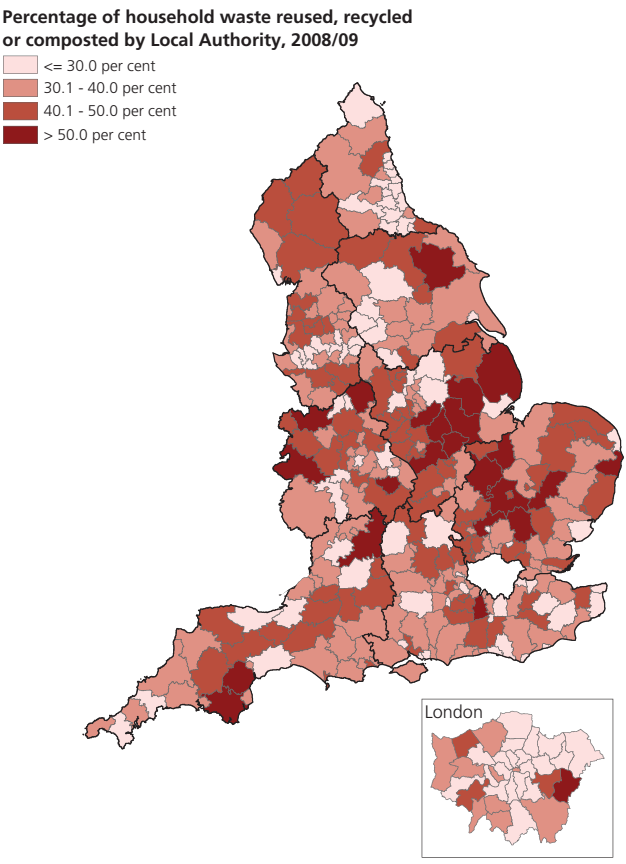


Source: Defra Municipal and Household waste statistics, WasteDataFlow

- The EU Landfill Directive requires biodegradable municipal waste (BMW) sent to landfill in England to be reduced to 11.2 million tonnes in 2010, 7.5 million tonnes in 2013 and 5.2 million tonnes in 2020.
- National target rates for reuse, recycling and composting of household waste are set at 40 per cent in 2010, 45 per cent in 2015 and 50 per cent in 2020.
- A total of 24.3 million tonnes of household waste was collected in England in 2008-9, of which 37.6 per cent was recycled, composted or reused. This has increased from 34.5 per cent in 2007-8 and from 8 per cent in 1997-8.
- Green recycling (composting) has increased from 1.6 per cent in 1997-8 to 14.8 per cent in 2008-9, whilst recycling of other materials (dry recycling) has increased from 6.6 per cent to 22.8 per cent over the same period.

Recycling rates for local authority areas, 2008-9

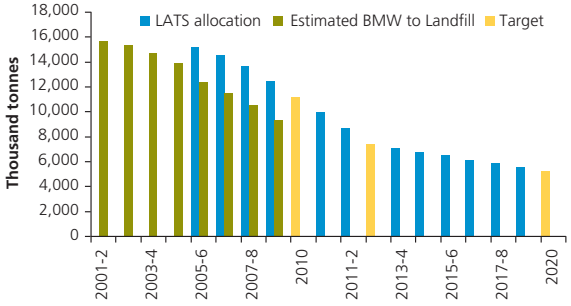
England



- The map shows percentages of household waste sent for recycling, composting and reuse by local authorities in England during 2008-9. This is a local government performance framework indicator.
- England's household recycling, composting and reuse rate for 2008-9 is 37.6 per cent. The regions with the highest recycling rates are the East Midlands and East of England with 44.5 per cent. London, with 29.2 per cent, is the region with the lowest recycling rate.
- There are 354 local authorities in England, 24 have a recycling rate higher than 50 per cent, 96 have a recycling rate between 40 and 50 percent, 137 between 30 and 40 per cent, and 97 have a rate of 30 per cent or lower.
- The local authorities with the highest recycling rates are Staffordshire Moorlands District Council (West Midlands) with 61.6 per cent, Cotswold District Council (South West) with 60.8 per cent and East Lindsey District Council (East Midlands) with 59.5 per cent.

Biodegradable municipal waste landfilled and targets, 2001-2 to 2008-9

England



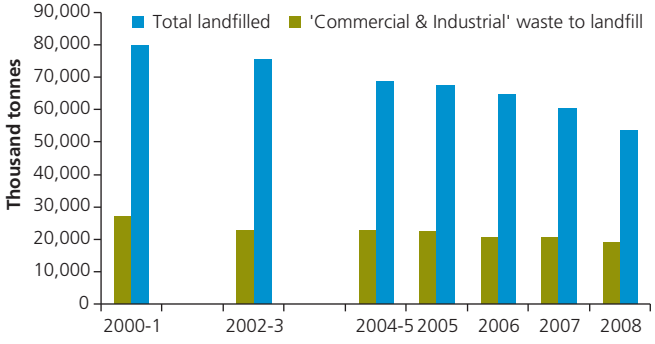
Notes: 2001-2 is the baseline allocation, 2002-3 to 2004-5 are Defra estimates based on local authority returns to the Municipal Waste Management Survey. 2005-6 to 2008-9 are the out-turn figures calculated by the Environment Agency.

Source: Environment Agency and Defra

- The EU Landfill Directive requires biodegradable municipal waste (BMW) sent to landfill in England to be reduced to 11.2 million tonnes in 2010, 7.5 million tonnes in 2013 and 5.2 million tonnes in 2020.
- The Landfill Allowances Training Scheme (LATS) introduced in 2005 aims to ensure that England meets its target under the Directive by limiting the amount of BMW that local authorities may send to landfill. In 2008-9, 9.3 million tonnes of BMW were sent to landfill in England, corresponding to 74 per cent of the total allocation.
- During 2008-9 BMW to landfill decreased by 12 per cent from an estimated 10.6 million tonnes in 2007-8, and by 41 per cent from an estimated 15.7 million tonnes in 2001-2.

Total waste landfilled and non-municipal/non-inert waste to landfill, 2000-1 to 2008

England



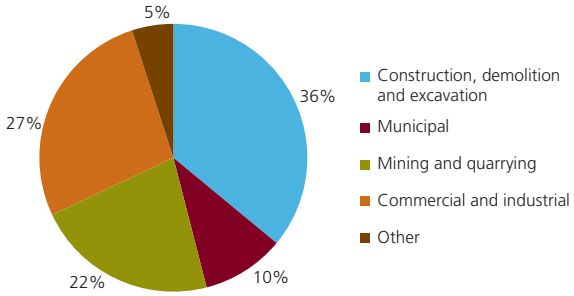
Notes: Data unavailable for 2001-2 and 2003-4

Source: EA landfill site returns, Defra WasteDataFlow municipal waste data

- In 2008, a total of 54 million tonnes of waste were sent to landfill. This is a decrease of 11 per cent since 2007 when 61 million tonnes of waste were sent to landfill, and a decrease of 33 per cent since 2000-1 when 80 million tonnes were landfilled.
- Non-municipal/non-inert waste is a proxy for commercial and industrial waste which amounted to 35 per cent of all waste sent to landfill in England in 2008.
- In 2008, 19 million tonnes of commercial and industrial waste were sent to landfill, compared with 27 million tonnes in 2000-1, a decrease of 29 per cent.

Waste arising, by sector, 2006

England

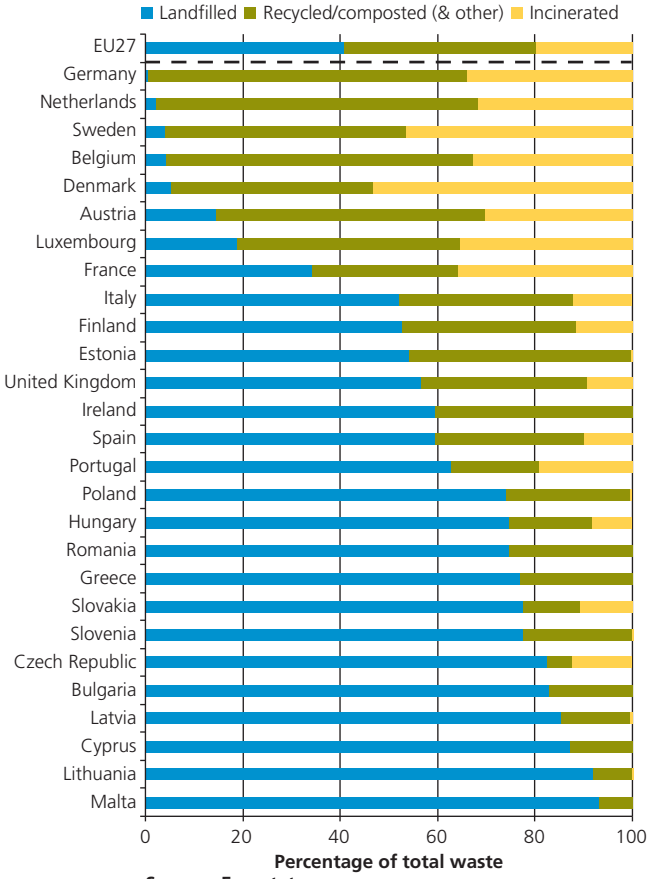


Source: Defra, Environment Agency, CLG, ONS, BRE, CEFAS, Water UK

- In 2006, total waste arisings in England was estimated at 282 million tonnes. The estimate was generated using administrative sources and supplemented by smaller surveys.
- The sector responsible for the largest percentage of waste arisings was construction, demolition and excavation. Waste from the sector was estimated at 102.8 million tonnes, equivalent to 36 per cent of the 2006 total.
- Waste from municipal sources generated 28.8 million tonnes, equivalent to 10 per cent of all waste arisings. Commercial & industrial waste is estimated at 75.5 million tonnes, and is derived by subtracting all other sectors from the total.
- Waste generated from agriculture, sewage and dredged materials (referred to as Other) accounted for 5 per cent of total waste arisings in England in 2006, the smallest percentage of the sectors.

Municipal waste management in the EU, 2007

EU-27

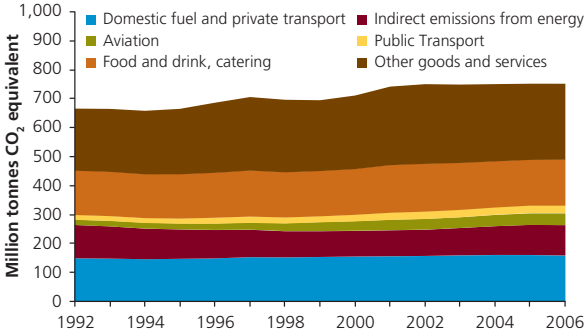


Source: Eurostat

- In 2007, the EU-27 generated over 258 million tonnes of municipal waste, of which, the UK produced over 34 million tonnes, equivalent to 13 per cent of the EU-27 total.
- Across the EU-27 countries, 41 per cent of municipal waste was disposed of at landfill. Malta and Lithuania disposed of over 90 per cent of their waste at landfill. Spain disposed of 60 per cent of its waste to landfill, and Belgium, Sweden, Netherlands and Germany landfilled less than 5 per cent of waste.
- Almost 40 per cent of municipal waste was recycled by the EU-27 overall. The Netherlands recycled two thirds of its waste, whereas Malta and Czech Republic recycled less than 10 per cent of their waste, the smallest percentages of the EU-27 countries.
- Overall a fifth of the EU-27's municipal waste was incinerated. Denmark incinerated over 50 per cent of its municipal waste, the largest percentage, yet 11 countries incinerated none. The Czech Republic, Italy and Finland all incinerated 12 per cent of their waste.

Greenhouse gas emissions relating to UK household consumption, 1992 to 2006

United Kingdom

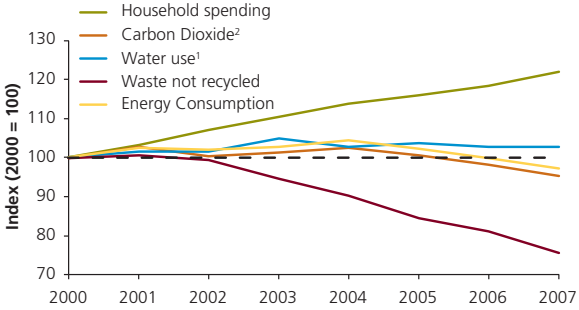


Notes: Data smoothed using three year moving average
Source: SEI

- Greenhouse gas emissions are associated with household consumption of all goods and services, whether or not they were produced within the UK. Between 1992 and 2006 greenhouse gas emissions associated with the products and services used in the UK have increased by 12 per cent.
- Increasingly the UK imports goods from countries where carbon emissions per product are higher than they would be in the UK (e.g. where coal is the primary fuel for power). In addition there has been an increase in the overall volume and diversity of products being consumed.
- The greenhouse gas emissions from aviation used by UK households doubled between 1992 and 2006, following a rise in the number of passengers passing through UK airports of 126 per cent over the period.

Impacts of UK household consumption, 2000 to 2007

United Kingdom



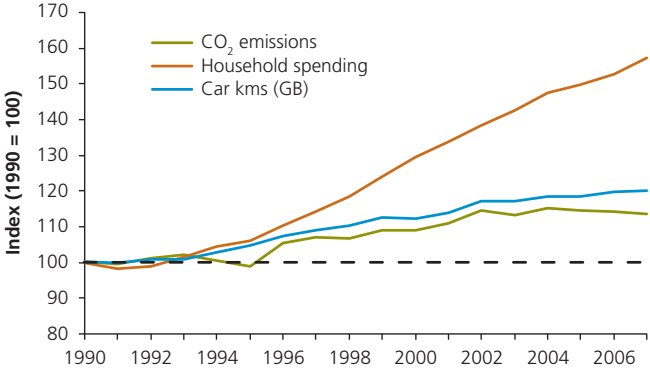
Notes:
1. England & Wales.
2. Includes an estimate of share of electricity industry emissions using constant 2007 emission factors.

Source: ONS, OFWAT, Defra

- Energy consumption in the home decreased by 3 per cent between 2000 and 2007. The associated carbon dioxide emissions decreased by 5 per cent between 2000 and 2007.
- Between 2000 and 2007 household waste generated increased by 1 per cent. However, the proportion recycled or composted has increased, with the result that waste to landfill has decreased by 25 per cent.
- Household water consumption accounts for around two thirds of water in the public supply (excluding leaks). Households consumed an average of 148 litres per person per day in 2007-8. Annual changes in consumption rates are largely owing to summer weather and 2003 was particularly warm and dry.

Private car CO_2 emissions, car-kilometres and household spending, 1990 to 2007

United Kingdom

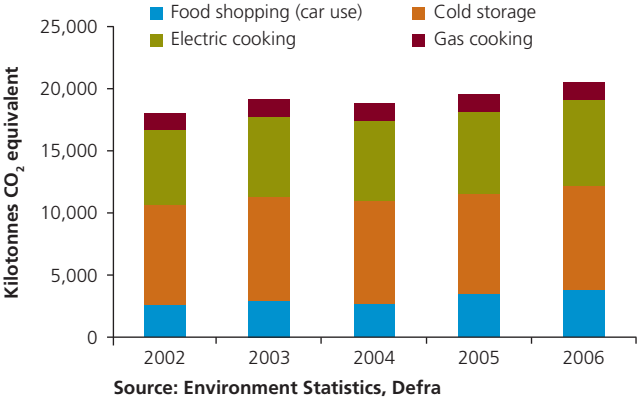


Source: DFT, ONS

- Carbon dioxide (CO_2) emissions from private cars increased by 13 per cent between 1990 and 2007.
- Over the same period road traffic volume (measured as total car-kilometres travelled) increased by 20 per cent. Road traffic volume increased in line with household spending (household final consumption expenditure) until the mid-1990s but this relationship has since weakened.
- CO_2 emissions per car-kilometre from the average petrol car manufactured in 2007 are 18 per cent less than the emissions from the average petrol car manufactured in 1990.

Food related greenhouse gas emissions from UK households, 2002 to 2006

United Kingdom

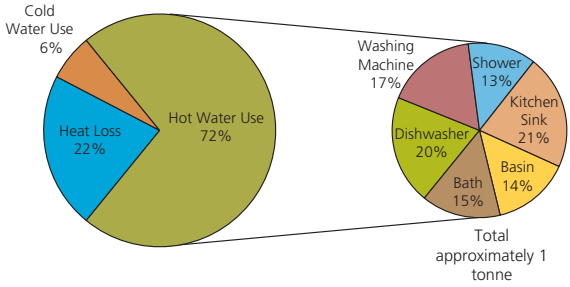


Source: Environment Statistics, Defra

- Greenhouse gas emissions from the UK food chain are equivalent to about 180 million tonnes of carbon dioxide. Of this, households directly accounted for about 20 million tonnes in 2006 through food shopping, and through preparing, storing and cooking food. This is an increase of 14 per cent from 2002.
- The main increase was through car trips for food shopping, but emissions from electric cooking and cold storage also increased over the period. Part of the reason for this increase is that although electricity consumption was stable between 2002 and 2006, electricity production in the UK became more carbon intensive.

Annual CO_2 emissions relating to water use in an average home built before 1990

United Kingdom

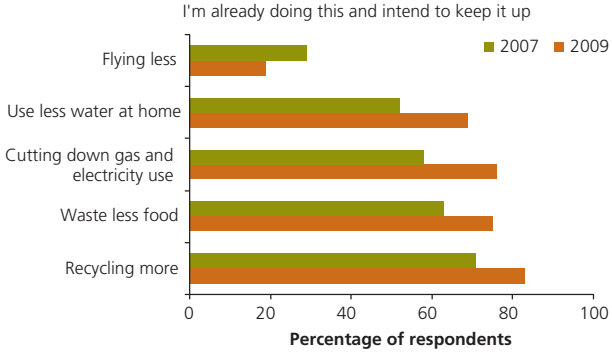


Source: Environment Agency, Energy Saving Trust

- The total CO_2 emissions relating to water use by households in the UK is approximately 24 million tonnes. This is equivalent to 17 per cent of total CO_2 emissions relating to energy use by households.
- Eighty-nine per cent of CO_2 emissions from water use come from water use in the home and the remaining 11 per cent relates to the activities of the water supply and treatment companies.
- The total estimated amount of water used in an average home built before 1990 is 124,000 litres per year. From using this amount of water, 960kg of CO_2 is emitted. Ways to reduce the amount of water used include having a shower instead of a bath and waiting to use the washing machine or dishwasher until there is a full load.
- Seventy-two per cent of water use CO_2 emissions relate to hot water use. Using less hot water and heating water more efficiently will have the biggest impact in reducing CO_2 emissions.

Environmentally friendly behaviour, 2007 and 2009

England

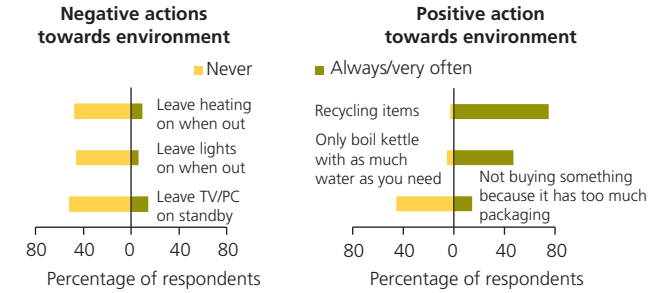


Source: Defra

- Between 2007 and 2009 there has been an increase in the proportion of people reporting 'using less water', 'cutting down on gas and electricity use', 'wasting less food' and 'recycling more'.
- In 2009, 69 per cent of respondents were 'already using less water and intended to keep this up', an increase from 52 per cent in 2007.
- Similarly, 76 per cent of respondents in 2009 reported 'cutting down on gas and electricity use' (compared with 58 per cent in 2007), 75 per cent were 'wasting less food' in 2009 (compared with 63 per cent in 2007) and 83 per cent were 'recycling more' in 2009 (compared with 71 per cent in 2007).
- There was a decrease in the proportion of respondents who were 'flying less', with 19 per cent 'flying less and intending to keep this up' in 2009, compared with 29 per cent in 2007.

Wasteful behaviour, 2009

England

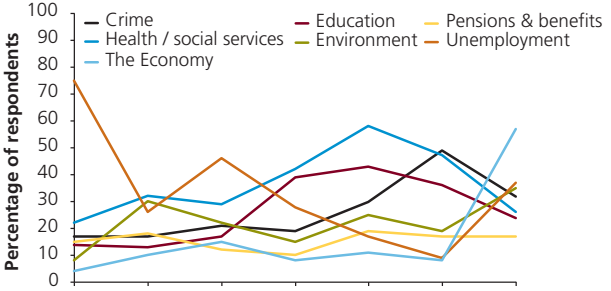


Source: Defra

- In 2009, when asked about environmentally friendly behaviours 14 per cent of respondents said they 'always or very often decided not to buy something because it had too much packaging' (46 per cent said they never did this).
- Forty-seven per cent of respondents said 'they always or very often boiled the kettle with only as much water as needed' (6 per cent said they never did this), and 75 per cent of respondents said they 'always or very often recycled items' (only 3 per cent said they never did this).
- In 2009, when asked about environmentally negative behaviours, 52 per cent of respondents said they 'never left the TV or PC on standby for long periods', compared with 14 per cent who said they 'always or very often did this'.
- In 2009, 46 per cent of respondents said they 'never left their lights on when out' (6 per cent said they always or very often did this) and 48 per cent said they 'never left the heating on' (9 per cent said they always or very often did this).

Issues the Government should be dealing with, 1986 to 2009

England

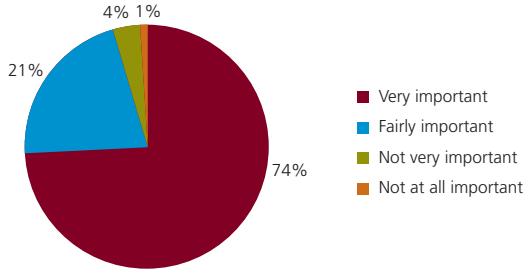


Source: Defra, TNS

- In 2009, the economy, unemployment and the environment are the issues most mentioned by people, without prompting, as the most important issues the Government should be dealing with.
- Fifty-seven per cent of respondents mentioned the economy as the most important issue Government should be dealing with. This compares with 8 per cent of respondents in 2007.
- Unemployment was thought to be the most important issue by 37 per cent of respondents in 2009, compared with 9 per cent in 2007.
- In 2009, 35 per cent of respondents mentioned the environment or pollution as the most important issue, compared with 19 per cent in 2007. Overall, 41 per cent of respondents mentioned, unprompted, at least one environmental issue as being an important issue, compared with 26 per cent in 2007.

Importance of green space, 2009

England

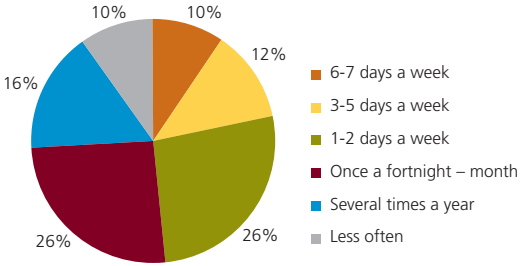


Source: Defra

- Over 95 per cent of people thought that it was very or fairly important to have green spaces near to where they live.

Frequency of green space use, 2009

England

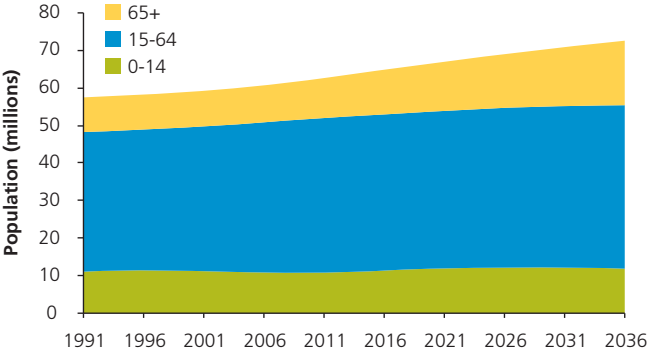


Source: Defra

- Twenty-two per cent of people visited green space three or more times a week. Twenty-six per cent visited less than once a month.

Population estimates and projections by age group, 1991 to 2036

United Kingdom

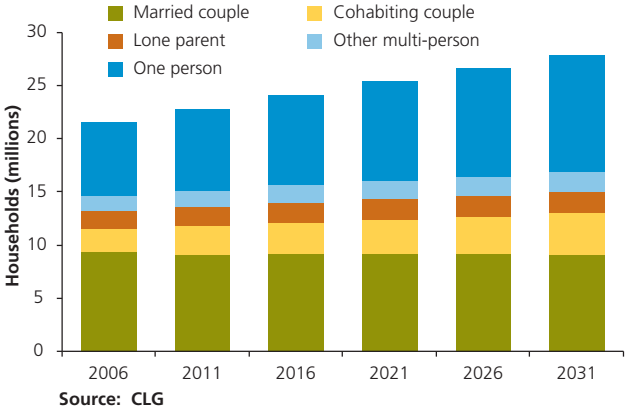


Source: ONS

- The population of the UK was estimated to be close to 61.4 million in mid-2008, an increase of over 400,000 on the previous year. The population is projected to approach 73 million by 2036.
- The projection indicates an ageing population: those over 65 are projected to increase from 16 per cent of the total population in 2008 to 24 per cent by 2036. Those aged between 15-64 years are projected to decrease from 66 per cent to 60 per cent, whilst those under 14 are projected to decrease from 18 per cent to 16 per cent by 2036.

Household estimates and projections, by household type, 2006 to 2031

England

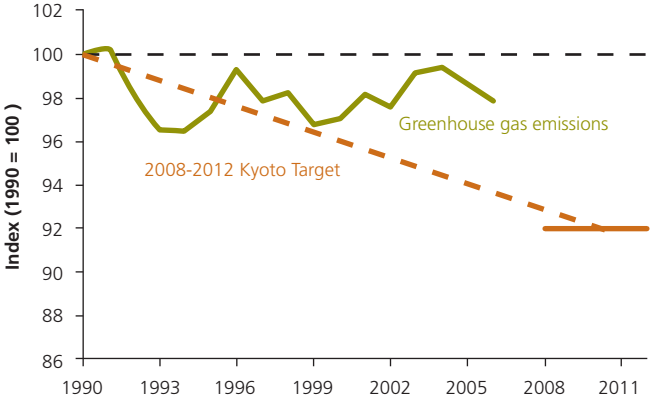


Source: CLG

- In 2006 the number of households in England was estimated to be just over 21.5 million, of which 44 per cent (9.4 million) were headed by a married couple and 32 per cent (6.8 million) were single person households. The average household size in 2006 was 2.32 people.
- By 2031 the number of households is projected to rise to 27.8 million, with all household types increasing in number except for married couple households. Single person households are projected to increase to 10.9 million (39 per cent of the total). Co-habiting couple households are projected to show the largest percentage increase between 2006 and 2031 of 74 per cent. The average household size is projected to fall to 2.13 in 2031.

EU emissions of greenhouse gases compared with Kyoto Protocol target, 1990 to 2012

EU-15

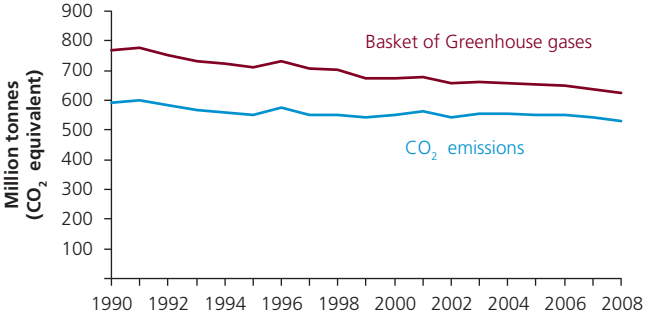


Source: European Environment Agency (EEA)

- Under the Kyoto Protocol, the EU-15 has a target to reduce greenhouse gas emissions to 8 per cent below 1990 (base-year) levels by 2008-2012.
- In 2006 total EU-15 emissions fell by almost 1 per cent compared with 2005. There was a 2 per cent fall compared with 1990.
- Total emissions in the EU-27 (including the new member states) decreased by approximately 8 per cent between 1990 and 2006.

Emissions of greenhouse gases, 1990 to 2008

United Kingdom



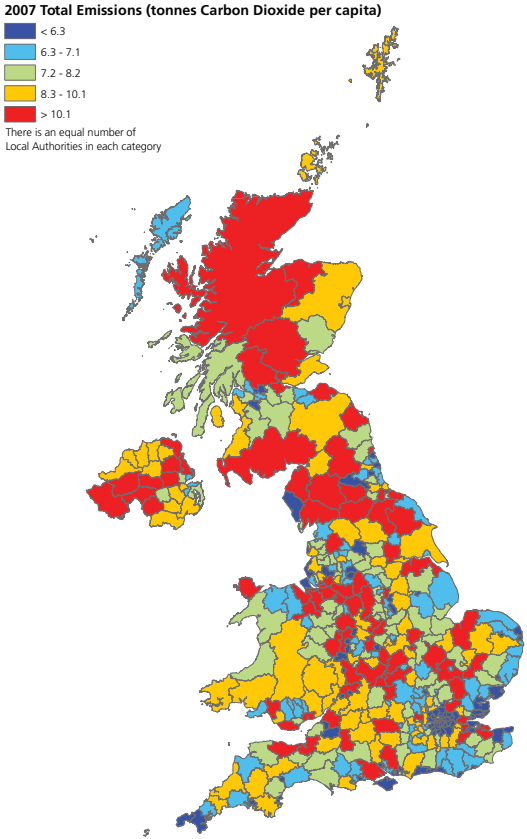
Notes: 2008 data are provisional

Source: Defra, DECC, AEA Energy and Environment

- In 2008, emissions of the 'basket' of six greenhouse gases were provisionally estimated to be 624 million tonnes (CO_2 equivalent), 19 per cent below emissions in 1990.
- The basket of six greenhouse gases consists of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride. All of these are weighted by global warming potential (GWP). The GWP for each gas is defined as its warming influence relative to carbon dioxide.
- Emissions of carbon dioxide, the main greenhouse gas, were provisionally estimated to be 532 million tonnes in 2008, just 10 per cent lower than in 1990. Emissions decreased by roughly 2 per cent between 2007 and 2008.

Carbon dioxide emissions for local authority areas, 2005 to 2007

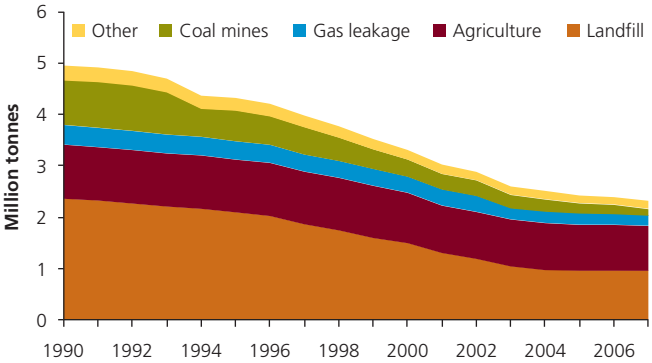
United Kingdom



- The map shows total emissions per capita of carbon dioxide (CO_2) in the UK allocated to local authority areas on an end-user basis (incorporating all industry and commerce, domestic, and land use emissions).
- Estimated total CO_2 emissions per person has reduced since 2005. In 2005 total CO_2 emissions per person was estimated at 8.7 tonnes, in 2006 the estimate reduced to 8.6 tonnes, and in 2007 total CO_2 emissions per person was estimated at 8.4 tonnes.
- There is a great deal of variation between local authority areas mainly because of the economy and geography of different local areas.
- Between 2005 and 2007, 19 local authority areas experienced an increase in CO_2 emissions of more than 5 per cent, whilst 108 areas experienced a decrease of more than 5 per cent. The area of Dumfries and Galloway in Scotland experienced the highest increase (20 per cent), whilst Copeland in the North West saw the largest decrease (28 per cent).

Methane emissions by source, 1990 to 2007

United Kingdom

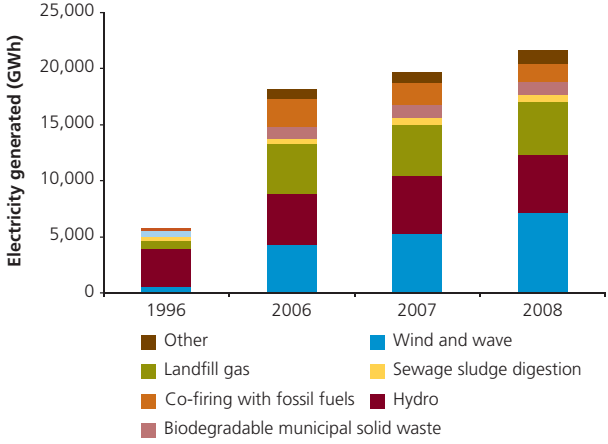


Source: DECC, AEA Energy and Environment

- Methane accounted for about 8 per cent of the UK's greenhouse gas emissions in 2007. Total UK emissions of methane, excluding those from natural sources, were 53 per cent below the 1990 levels.
- In 2007, the main sources of methane were landfill sites (41 per cent) and agriculture (38 per cent). Since 1990, emissions from landfill have reduced by 59 per cent, and emissions from agriculture by 17 per cent.
- Of the remaining sources, since 1990, emissions from coal mines have reduced by 86 per cent, and emissions from gas leakage have reduced by 45 per cent.

Electricity generated by renewable sources, 1996 to 2008

United Kingdom

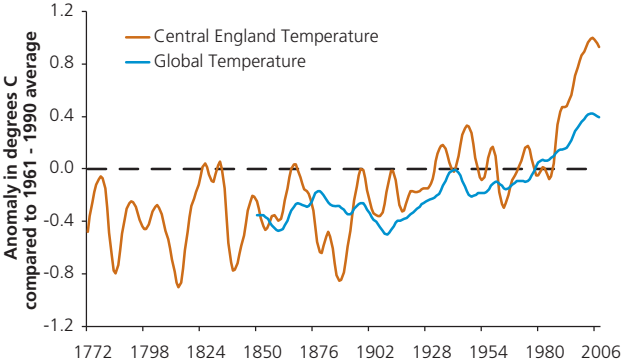


Source: DECC

- Electricity generated from renewable sources has been increasing steadily since 1996. In 2008, 10 per cent more electricity was produced from renewable sources than in 2007.
- In 2008, 6 per cent of the total electricity generated in the UK was from renewable sources. This figure was 5 per cent in 2006.
- There was a 35 per cent increase in the amount of energy generated from 'wind and wave' between 2007 and 2008 making it the largest renewable source in 2008. This was also the case in 2007, but in 2006 'hydro power' was the renewable source generating the highest amount of electricity.

Average surface temperature, 1772 to 2008

Global and Central England

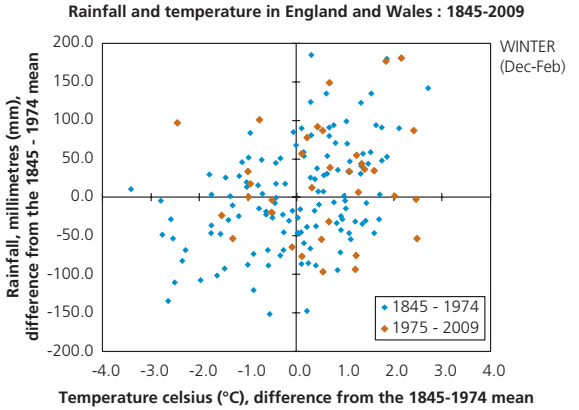


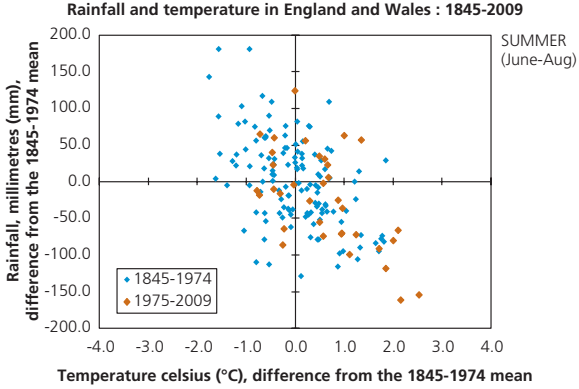
Source: Hadley Centre

- The chart shows the difference between average yearly Central England temperature and the 1961 to 1990 Central England average after smoothing. It also shows the difference between average global temperature and the 1961 to 1990 global average after smoothing.
- Over the past century average global temperatures have risen by around 0.7°C and 2008 was 0.40°C above the average for 1961 to 1990. The warmest year since records began in 1850 was 2004 at 0.43°C above the average for 1961 to 1990.
- Studies show that most of the observed warming since the middle of the twentieth century was very likely caused by human activities. The IPCC's Third Assessment Report concluded that global temperatures will rise by a further 1.4° C by the end of the 21st century.

Rainfall and temperature in England and Wales, 1845 to 2009

England and Wales





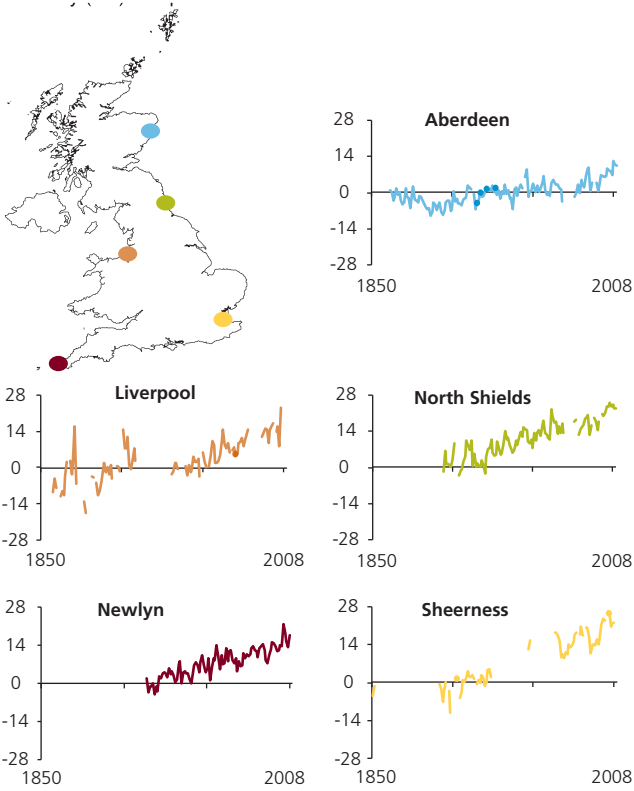
Source: Centre for Ecology & Hydrology (Wallingford), Met Office

- The charts on the previous page are scatter plots of departures from the average rainfall and average temperatures for the summer and winter periods since 1845. The plots for each of the last 35 years are shown as red diamonds.
- On the winter chart the recent years tend to fall more in the top right quarter, corresponding to warmer, wetter winters. On the summer chart recent years tend to fall more in the bottom right quarter, corresponding to hotter, drier summers compared with earlier periods.
- This tendency is consistent with recent climate change scenarios but the climate is naturally variable and any apparent short term trends should be treated with caution.

Sea level rise at selected sites, 1850 to 2008

United Kingdom

Anomaly (cm) compared with 1920 baseline

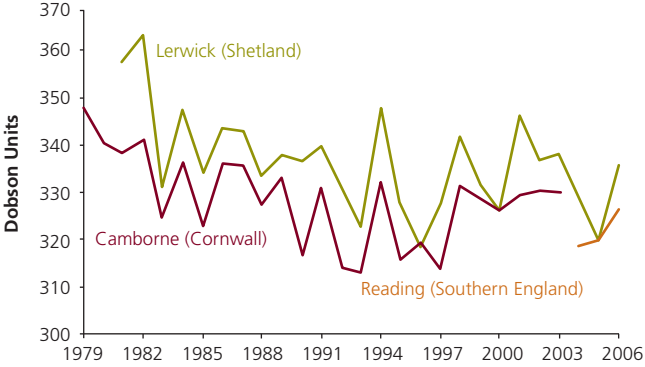


Source: Proudman Oceanographic Laboratory

- Global average sea level rose by 10-20 cm during the past century and it has been predicted that it might rise by about 50 cm in the next 100 years. Rising sea levels are the result of various factors including the thermal expansion of the ocean and the melting of low glaciers.
- The five sites shown have the longest sea level records in the UK. All indicate a rise in historic mean sea level. The sea level at Aberdeen has risen by approximately 10 cm since 1920. Similarly the sea level at Newlyn has risen by approximately 20 cm during the same period.
- The sea level at Sheerness, Liverpool and North Shields has risen by over 20 cm since 1920. By 2006 the sea level at Sheerness had risen by 22 cm, in 2007 the sea level at Liverpool had risen by 28 cm, and in 2008 the sea level at North Shields had risen 23 cm above the 1920 recorded level.

Column ozone levels at Lerwick, Camborne and Reading, 1979 to 2006

United Kingdom



Note: The Camborne site closed in December 2003

Source: Meteorological Office

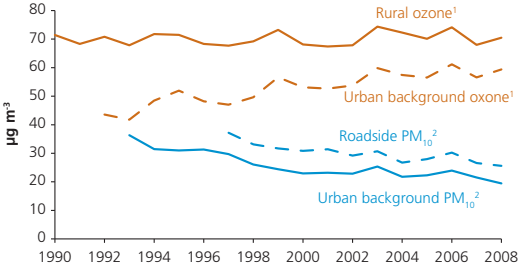
- The stratospheric ozone layer protects us from damaging ultraviolet radiation from the sun. It is depleted by man-made emissions of substances containing chlorine and bromine.
- Column ozone measurements in the UK have fluctuated, but generally decreased during the 1980s and 1990s, at about 3 per cent a decade. More recently it appears that the trends may be levelling out, but it is too soon to be sure. Levels of ozone-depleting substances in the lower atmosphere have been reduced since the 1980s, but the recovery of the ozone layer will take decades.

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) is an acid gas and as local air pollution it can affect health by affecting the lining of the nose, throat, and airways in the lungs. It also affects vegetation through acidification,
- Nitrogen oxides (NO_x) are acid gases and ozone pre-cursors and can also affect human health and vegetation. Nitrogen dioxide is thought to have both short and long term effects on airways and lung function.
- Airborne particulate matter (usually measured as PM_{10}) 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.
- 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, O_3 can persist for several days and can be transported long distances. It can cause irritation to the eyes and nose and exceptionally the airway lining (when levels are very high), and can also damage plants and crops.

Annual levels of particles and ozone in the air, 1990 to 2008

United Kingdom



Notes:

1. Ozone: annual mean of the daily maximum 8 hour running mean concentration.

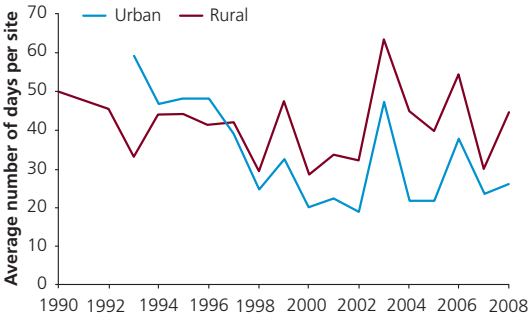
2. PM_{10}: annual mean concentration.

Source: Defra, AEA Energy and Environment

- 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 PM_{10} levels have been steadily decreasing since monitoring began in 1993. However, there is an upward trend in background urban ozone levels, which may be due to the reduction in urban emissions of nitrogen oxides that destroy ozone close to their emission source.
- Between 1993 and 2008 urban background ozone levels increased from 42 to 59 micrograms per cubic metre (µg m^{-3}). Rural ozone levels averaged 71 µg m^{-3} in 2008 compared to 68 µg m^{-3} in 2007 and 59 µg m^{-3} in 1987. There is no clear long term trend.

Days when air pollution is moderate or higher, 1990 to 2008

United Kingdom

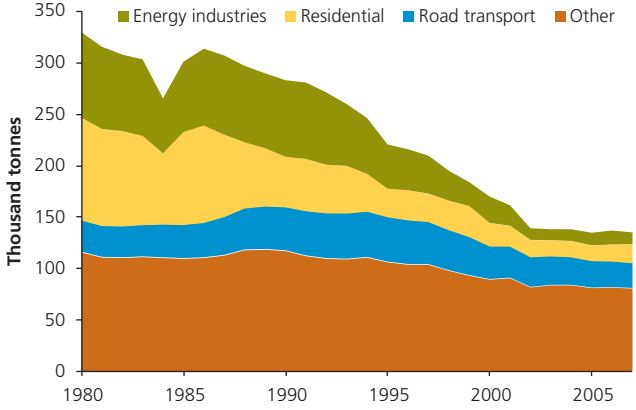


Source: Defra, AEA Energy and Environment

- The number of days when air pollution was assessed as being moderate or higher was lower in 2008 than in 1990 for rural areas and 1993 for urban areas (first available data). However, both rural and urban sites show a high degree of variability between years.
- The weather can cause significant variation from year to year in the number of days of moderate or higher air pollution. The hot summer and other pollution episodes in 2003 and 2006 led to an unusually high number of pollution days.
- In urban areas, air pollution in 2008 was recorded as moderate or higher on 26 days, compared with 23 days in 2007 and 59 days in 1993.
- In rural areas, air pollution in 2008 was recorded as moderate or higher on 45 days, compared with 30 days in 2007 and 50 days in 1990.

Particulate (PM_{10}) emissions by source, 1980 to 2007

United Kingdom

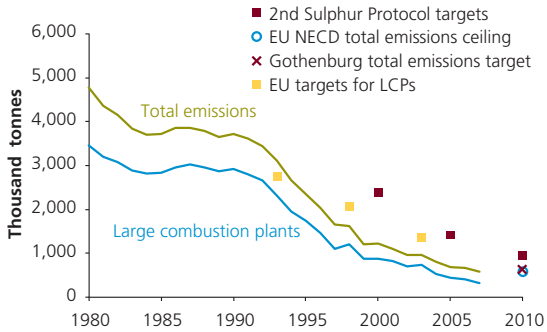


Source: AEA Energy & Environment

- Coal combustion, diesel combustion, construction, mining and quarrying are the major sources of particulate (PM_{10}) emissions.
- Between 1980 and 2007 total PM_{10} emissions fell by 59 per cent (194 thousand tonnes). Over the same period, PM_{10} emissions for residential fossil fuel use fell by 82 per cent, and similarly emissions from energy industries fell by 86 per cent.
- PM_{10} emissions from road transport steadily increased from 1980, peaking at over 44 thousand tonnes in 1995. By 2007 however, emissions had reduced to 25 thousand tonnes, 19 per cent below the 1980 level.

Sulphur dioxide emissions and targets, by source, 1980 to 2007

United Kingdom

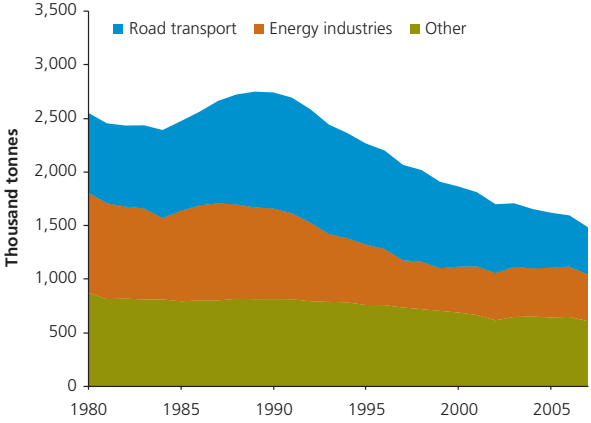


Source: AEA Energy & Environment

- Most sulphur dioxide (SO_2) emissions come from the burning of coal and fuel oil. Between 1990 and 2007 total SO_2 emissions fell by 84 per cent, from 3.7 million tonnes to 591 thousand tonnes.
- There are targets for SO_2 emission reductions by 2010, a reduction to 625 thousand tonnes under UNECE Gothenburg Protocol, and 585 thousand tonnes under the EU National Emissions Ceiling Directive.
- Under the UNECE Second Sulphur Protocol, the UK is required to reduce emissions to 80 per cent below 1980 levels by 2010, with intermediate targets for 2000 and 2005. In 2007, SO_2 emissions in the UK were 88 per cent below 1980 levels.
- SO_2 emissions from Large Combustion Plants (LCPs) fell by 91 per cent since 1980, exceeding the EC LCP Directive of a 60 per cent reduction by 2003 and intermediate targets.

Nitrogen oxides emissions by source, 1980 to 2007

United Kingdom

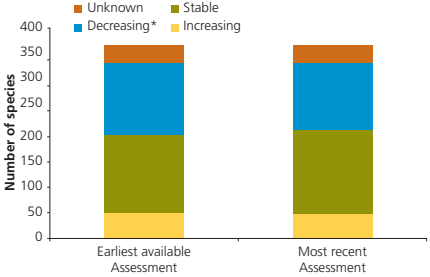


Source: AEA Energy & Environment

- The combustion of petrol, diesel and coal are the major sources of nitrogen oxides (NO_x) emissions.
- Between 1980 and 2007 total emissions of NO_x fell by 42 per cent. In 2007, road transport accounted for 30 per cent of total NO_x emissions, and the energy industries accounted for a further 29 per cent.
- NO_x emissions from road transport peaked at over one million tonnes between 1988 and 1993, and have fallen by 59 per cent since 1990 to around 441 thousand tonnes in 2007.
- NO_x emissions from energy industries fell by 54 per cent between 1980 and 2000, since then emissions have fluctuated between 430 and 470 thousand tonnes.

Biodiversity conservation
(a) Priority Species status, 1999 to 2008

United Kingdom



Notes: *'Decreasing' includes 17 species assessed as lost within the 'earliest available assessments' and 20 species assessed as 'lost' within the 'most recent assessments'. 74 per cent of the 'earliest available' assessments were made in 1999 or 2002, but some were made in later years. 85 per cent of the 'most recent' assessments were made in 2008, but some were made in earlier years. Based on 371 listed Priority Species.

Source: JNCC, UK Biodiversity Partnership, Defra

(b) Priority Habitat status, 1999 to 2008

United Kingdom

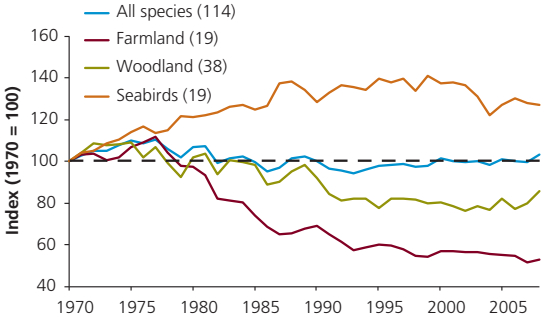
Notes: 72 per cent of the 'earliest available' assessments were made in 1999 or 2002, but some were made in later years. 81 per cent of the 'most recent' assessments were made in 2008, but some were made in earlier years. Based on 45 listed Priority Habitats.

Source: JNCC, UK Biodiversity Partnership, Defra

- Priority Species and Habitats are those that have been identified as being most in need of conservation action in the UK. Their status has been assessed once every three years since 1999.
- Comparison of the earliest available and most recent assessment for each species show that the number either 'stable' or 'increasing' (in number or extent) has risen by 3.5 per cent from 202 to 214. The number decreasing (or lost) fell from 137 to 125.
- In 2008, an assessment was made for 291 species, and 88 were declining and 8 had been lost from the UK since the UK Biodiversity Action Plan (BAP) was published in 1994. Those that are stable may have populations well below target levels.
- Comparison of the earliest available and most recent assessment for each habitat shows the number either 'stable' or 'increasing' (in extent) has fallen by 2.5 per cent from 21 to 20. In 2008, an assessment was made of 35 habitats; 15 (44 per cent) were declining in extent.

Population of wild birds, 1970 to 2008

United Kingdom



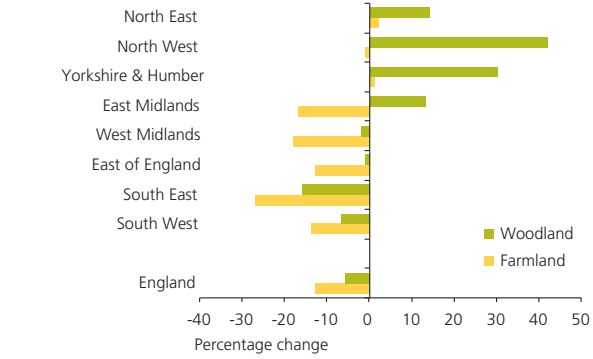
Notes: Figures in brackets give the number of species included in each category

Source: RSPB, BTO, Defra

- The all bird species index for the UK (114 species) remained broadly stable throughout the period from 1970 to 2008. The index increased by 3 per cent between 2007 and 2008.
- The breeding farmland birds index for the UK (19 species) was 47 per cent lower in 2008 than its 1970 level. Most of the decline in the farmland birds index occurred between the mid-1970s and mid-1990s. The index increased by 2 per cent between 2007 and 2008.
- In 2008, the breeding woodland birds index for the UK (38 species) was 14 per cent lower than its 1970 level. The index increased by 7 per cent between 2007 and 2008.
- The breeding seabirds index for the UK (19 species) increased by 27 per cent between 1970 and 2008. The index decreased by 1 per cent between 2007 and 2008.

Population of wild birds, by region, 1994 to 2007

England

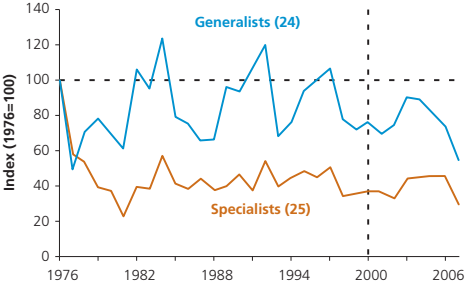


Source: RSPB, BTO, Defra

- Between 1994 and 2007, the populations of farmland birds declined by more than 10 per cent in five regions in England. They were the South West, the South East, the East of England, the East Midlands, and the West Midlands. During the same period the overall 'Farmland bird index' for England showed a decline of 13 per cent.
- During the same period, in four regions the population of woodland birds showed an increase of more than 10 per cent. They were the North East, the North West, Yorkshire & Humber and the East Midlands region. However the index for the South East decreased by more than 10 per cent. During the same period, there was a 6 per cent decline for the overall 'Woodland birds index' for England.
- Care is needed to interpret the regional indices because the indices for each region cover different species.

Populations of butterflies, 1976 to 2007

United Kingdom



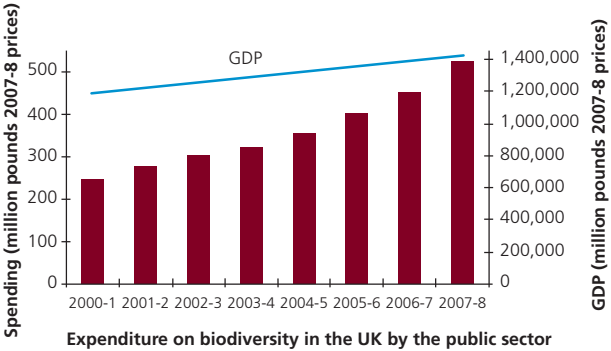
Note: Figures in brackets show the numbers included in each category.

Source: Butterfly Conservation, Centre for Ecology and Hydrology, Defra, Joint Nature Conservation Committee

- Since 1976, the measures for populations of butterflies associated strongly with semi-natural habitats (specialists) and for those found in the wider countryside (generalists) show declines of 70 per cent and 45 per cent respectively.
- Large fluctuations in numbers between years are typical features of butterfly populations. Analysis shows that since 1976 specialists have declined significantly but for generalists there has been little or no overall change (despite the apparent decline).
- Since 2000 specialists show a decline from 37 per cent to 30 per cent of the 1976 level. Generalists have shown a similar decline from 76 per cent to 55 per cent of the 1976 level. The underlying analysis shows that there is little or no significant overall change for either measure despite the apparent decline.

Public sector expenditure on biodiversity in the UK, 2000-1 to 2007-8

United Kingdom



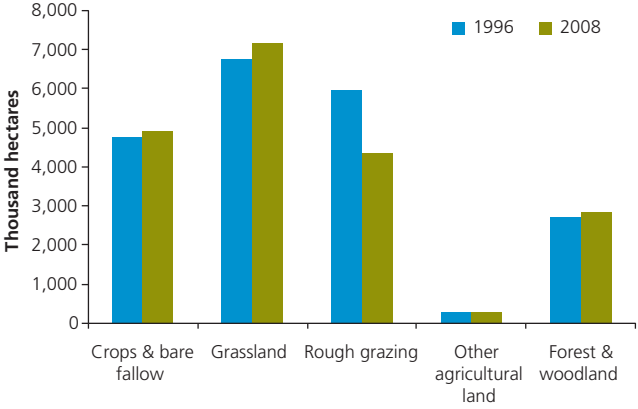
Expenditure on biodiversity in the UK by the public sector deflated using UK GDP deflator

Source: Defra

- Spending is one way of assessing the priority that is given to biodiversity within Government.
- In 2007-8, £525 million pounds of public sector funding was spent on UK biodiversity, more than double what was spent in 2000-1. Over the same period UK GDP increased by 19 per cent.
- For the purpose of this measure only biodiversity related grant money and programme expenditure has been included. The above figures do not include any associated operational costs.

Agricultural and forestry land use, 1996 and 2008

United Kingdom



Source: Defra, Forestry Commission

- Land use refers to the main activity taking place on an area of land. Around three-quarters of the total UK land area is under agricultural uses.
- Between 1996 and 2008 the area under crops and bare fallow (including all uncropped arable land) increased by 3 per cent. Area under grassland increased by 6 per cent during the same period.
- Area under rough grazing fell by around a quarter between 1996 and 2008, whilst other agricultural land (including roads, paths, buildings and land on holdings used for non agricultural purposes) remained constant for both years. The area of forestry and woodland increased by 4 per cent between 1996 and 2008.

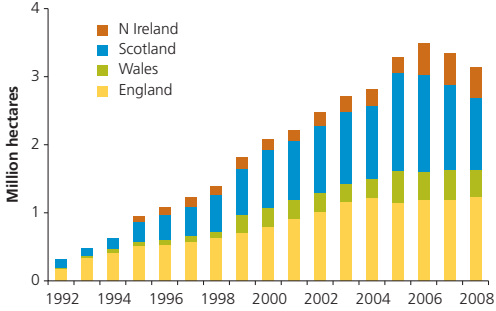
Farming and environmental stewardship
Land covered by agri-environment schemes,1992 to 2008

(a) Entry level schemes, England and Wales

Notes: Entry level schemes have less strict criteria for qualification than other agri-environment schemes like the Higher Level stewardship schemes shown in the other graph.

Source: WAG, CCW, NE

(b) Higher level schemes, United Kingdom



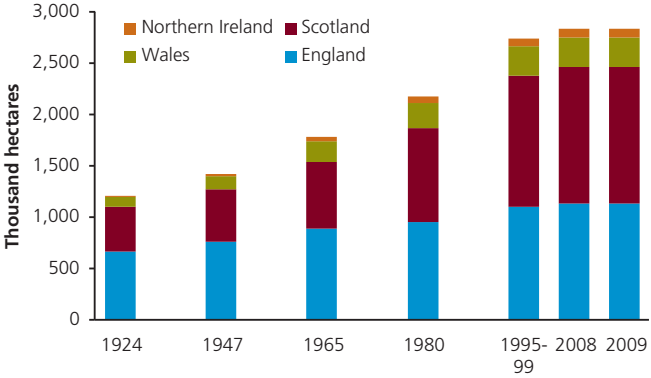
Notes: Higher level or targeted agri-environment schemes have stricter criteria for qualification than other agri-environment schemes such as the Entry Level Scheme in England.

Source: WAG, CCW, SE, NE, DARD, Defra

- The entry level schemes aim to encourage large numbers of farmers, across all farmland, to implement simple and effective environmental management on their farms.
- In 2008, an area of over 5.3 million hectares was covered by entry level schemes in England and Wales, compared with 5 million hectares in 2007, and 4.1 million hectares in 2006.
- 'Higher Level' schemes aim to deliver significant environmental benefits in high priority situations and areas and involve complex management regimes.
- Such schemes covered 3.1 million hectares in the UK in 2008, compared with 1.8 million in 1999. There was an increase in the area covered by higher level schemes in England between 2007 and 2008, from 1.2 million hectares to 1.24 million hectares.

Area of woodland, 1924 to 2009

United Kingdom



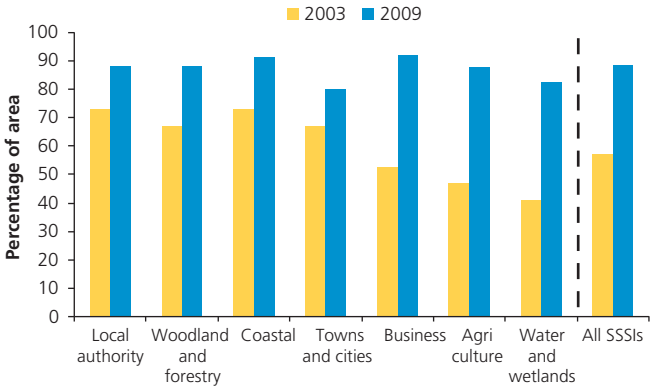
Note: Figures for 1995 – 99 and previous years are not National Statistics

Source: Forestry Commission

- The area of woodland in the UK has increased since the early 20th Century from 1.2 million hectares in 1924 to 2.8 million hectares (12 per cent of the total land area in the UK) in March 2009.
- As at March 2009, woodland covered around 17 per cent of the land area in Scotland, 14 per cent in Wales, 9 per cent in England and 7 per cent in Northern Ireland.

SSSI habitats in favourable or unfavourable recovering condition by sector, 2003 to 2009

England



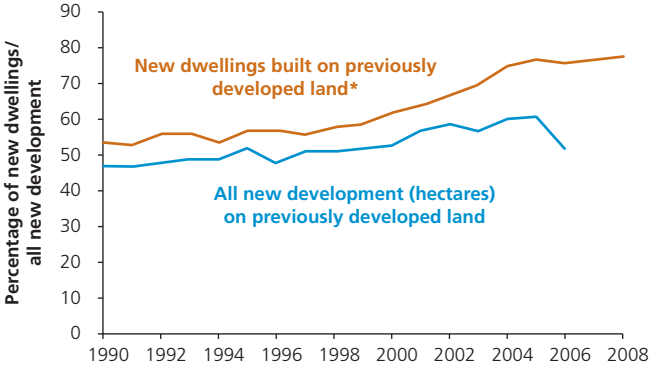
Source: Natural England

- Sites of special scientific interest (SSSI) are intended to safeguard the best of England's wildlife and geography.
- Between 2003 and 2009, the proportion of all sites in favourable or recovering condition in England increased from 57 per cent to 88 per cent; an improvement of 31 percentage points. The proportion of sites in favourable or recovering condition increased for all sectors between 2003 and 2009.
- Despite the improvement, further improvement is needed to meet the Government's target – to bring 95 per cent of nationally important wildlife sites into favourable condition by 2010.

New dwellings built on previously developed land

England

(a) new dwellings built on previously developed land or through conversions (b) all new development on previously developed land, 1990 to 2008



***Includes conversions. Up to 2002 the conversion of existing buildings was estimated to add three percentage points, from 2003 the process of estimation has been elaborated**

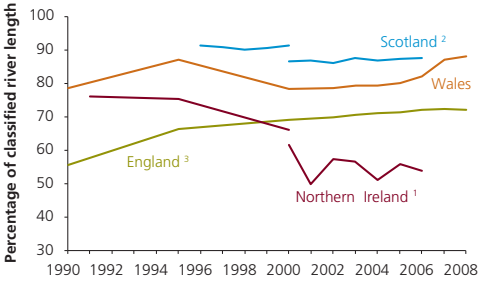
Source: CLG

- The percentage of new dwellings arising from building on previously developed land or through the conversion of existing buildings increased from 54 per cent in 1990 to 78 per cent in 2008 (provisional estimate).
- The percentage of all new development (not just residential) occurring on previously developed land (measured by land area) increased from 47 per cent in 1990 to 61 per cent in 2007, but fell to 52 per cent in 2006.

River quality

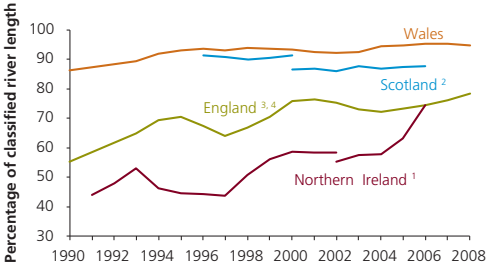
(a) Rivers of good biological quality, 1999 to 2008

United Kingdom



(b) Rivers of good chemical quality, 1999 to 2008

United Kingdom



Notes:

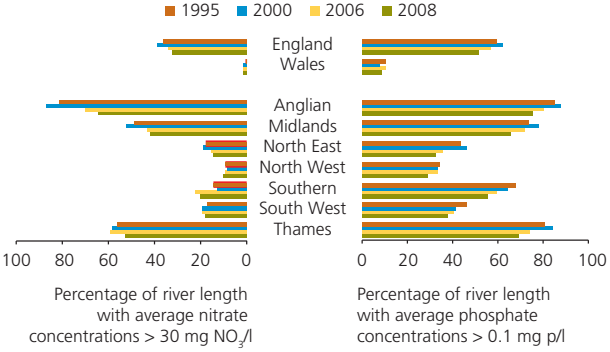
1. **The length of rivers monitored in Northern Ireland more than doubled between 1995 and 2000.**
2. **In 2000 Scottish River Classification Network changed to monitor chemical, biological and aesthetic quality.**
3. **From 2007, England gathered General Quality Assessment (GQA) data based on a smaller monitoring network.**
4. **From 2007, Biochemical Oxygen Demand (BOD) ceased to be monitored in England for the purposes of Chemical water quality.**

Source: EA, SEPA, NIEA

- Between 1990 and 2008 the percentage of rivers of good biological quality in England rose from 55 to 72 per cent. Similarly, 79 per cent of English rivers were of good chemical quality in 2008, compared with 55 per cent in 1990.
- In 2008, 88 per cent of rivers in Wales were of good biological quality. In all years since 1993 over 90 per cent of rivers in Wales have been of good chemical quality.
- In 2006, 54 per cent of rivers in Northern Ireland were of good biological quality, and 74 per cent of rivers were of good chemical quality.
- In Scotland, the percentage of rivers of good quality has remained stable at around 88 per cent between 2000 and 2006, based on a combined chemical, biological and aesthetic assessment.
- River quality is to be classified under the EU Water Framework Directive from 2007 onwards.
- Scotland and Northern Ireland are now focusing on the EU Water Framework Directive classification, gathering relevant data and developing new indicators. Further updates to this information are not currently available.

Nitrate and phosphate concentrations in rivers, 1995 to 2008

England and Wales

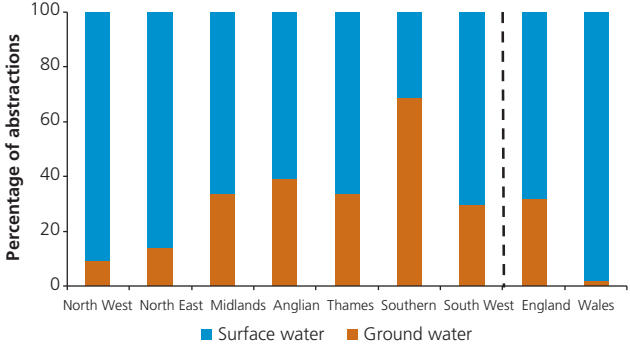


Source: Environment Agency

- Plants need phosphorus and nitrogen to grow. Both of these nutrients are naturally found in water. Higher levels of phosphorus in water can lead to increased algal growth in freshwater. Higher levels of nitrate are of concern in relation to drinking water abstractions and can lead to increased algal growth in the sea.
- Rivers with the highest concentrations of phosphate and nitrate are mainly in central and eastern England, reflecting the geology, agricultural inputs and higher population. The Anglian region is the Environment Agency region with the highest levels of phosphate and nitrate in its rivers.
- Since 2000, levels of phosphate found in English rivers have been falling across the country. A similar trend can be observed for nitrate concentrations in English rivers.

Abstractions for public water supply from surface water and groundwater, by region, 2007

England and Wales

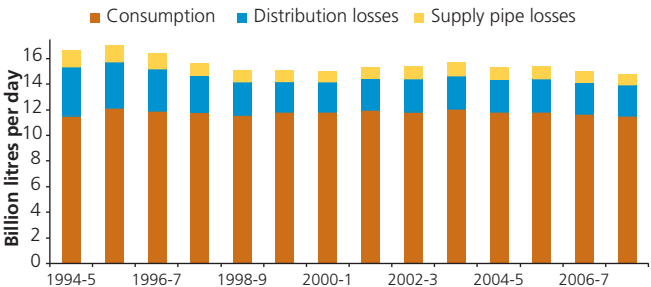


Source: Environment Agency

- In 2007, over 16 billion litres of water per day were abstracted for the public water supply in England and Wales (equivalent to around 6 billion tonnes per year). More than 70 per cent of this water came from surface water and the rest from groundwater (water contained in underground rock layers).
- There is considerable regional variation. Almost 70 per cent of supplies in the Southern region (broadly Kent, Surrey, Sussex and Hampshire) came from groundwater compared with 32 per cent in England as a whole, 10 per cent in the North West and 2 per cent in Wales.

Public water supply and leakage, 1994-5 to 2007-8

England and Wales

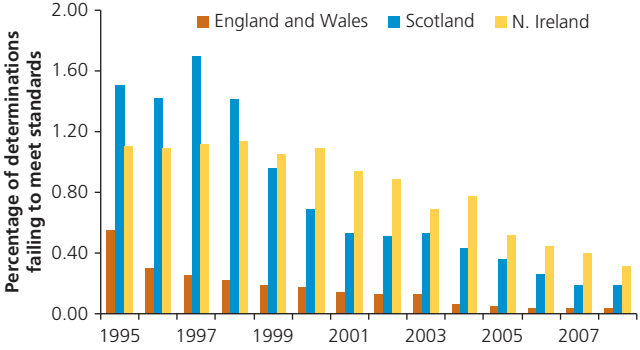


Source: Ofwat

- During 2007-8 more than 3 billion litres of water were lost each day in England and Wales owing to leakage (about a fifth of total distribution). However between 1994-5 and 1999-00 total leakage fell by 35 per cent, since when the level has remained broadly the same.
- 'Distribution losses' include all losses of drinkable (potable) water between the treatment plant and highway boundary. 'Supply pipe' losses are leakage from customers' pipes between the highway boundary and stop tap (here they also include 'operational losses'). Consumption excludes all such losses.

Drinking water quality, 1995 to 2008

United Kingdom

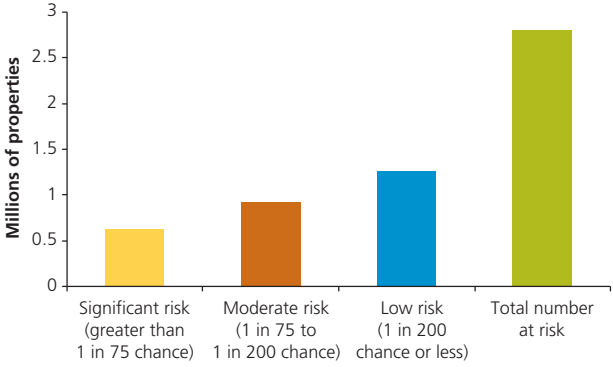


Source: DWI, Drinking Water Quality Regulator for Scotland, DWI (NI)

- In the UK, water companies are responsible for assessing the quality of water supplied to their customers. The assessment process involves regular sampling of water treatment works, service reservoirs and discrete water supply zone.
- In 2008, in England and Wales, over 2 million determinations were made and 0.04 per cent failed to meet the standards. In Scotland over 348 thousand determinations were made and 0.19 per cent failed to meet the standards. In Northern Ireland over 124 thousand determinations were made and 0.31 per cent failed to meet the standards.

Properties at risk of flooding, 2008

England and Wales

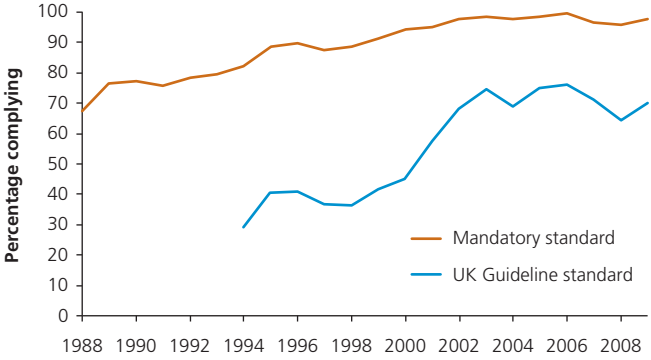


Source Environment Agency, Defra

- In England and Wales an estimated 2.8 million properties lie in areas at risk of flooding. Of these over 620,000 are in areas where the risk is considered to be significant, that is a greater chance of being flooded more than once in every 75 years.
- This assessment is based on the probability of flooding taking place, taking into account existing flood defences. It does not provide information on when flooding may be serious enough to cause damage.

Compliance with EC Bathing Water Directive mandatory and UK guideline standards, 1988 to 2009

United Kingdom

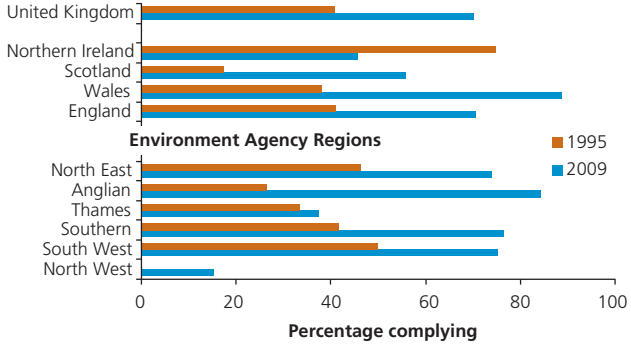


Source: Environment Agency, SEPA, NIEA

- In 2009, all but 14 of the 587 coastal bathing waters in the UK met the mandatory standards of the European Bathing Water Directive compared with two thirds of waters in 1988. Seventy per cent met the tougher UK guideline standards in 2009 – one of the requirements for *Blue Flag status* – compared with just over 4 in 10 in 1995.
- After a steady improvement from 1988 to 2006, when almost 100 per cent of bathing waters met the mandatory standards, there has been a small drop in the last three years, with an improvement in 2009. In 2009, 98 per cent of bathing waters met the mandatory standard.

Compliance with EC Bathing Water Directive UK guideline standards, by region, 1995 and 2009

United Kingdom

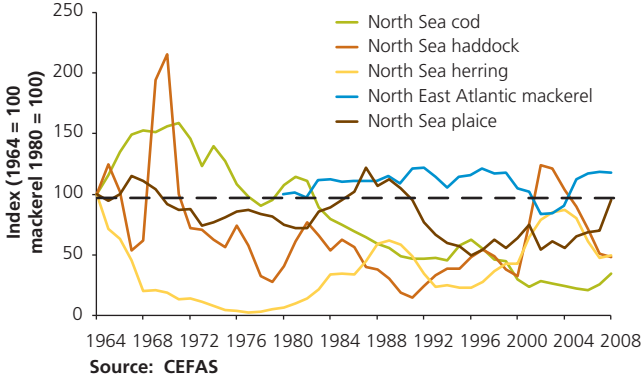


Source: Environment Agency, SEPA, NIEA

- In 2009, 70 per cent of UK bathing waters met the more stringent UK guideline standards of the Bathing Water Directive (one of the requirements for *Blue Flag status*). The number of UK waters reaching guideline standards improved from 189 out of 464 coastal bathing waters in 1995 to 412 out of 587 in 2009.
- The biggest improvement in bathing water quality has been in the Anglian region from 26 per cent in 1995 to 84 per cent in 2009 meeting UK guidelines standards. Compliance in England has increased from 41 per cent in 1995 to 71 per cent.
- During the same period, compliance in Scotland increased from 17 per cent to 56 per cent, and in Wales compliance increased from 38 per cent to 89 per cent. Compliance in Northern Ireland had fallen from 75 per cent to 46 per cent.

North Sea fish stocks and stocks of North East Atlantic mackerel, 1964 to 2008

United Kingdom

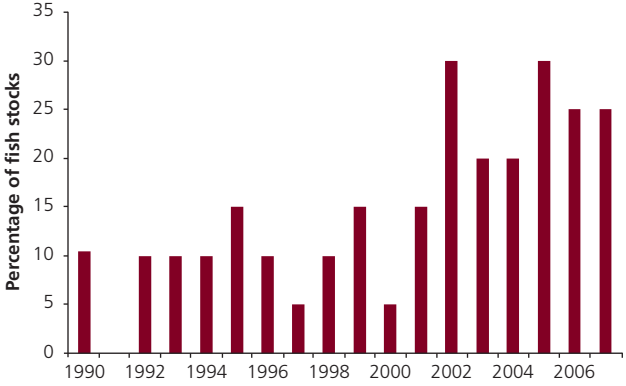


Source: CEFAS

- Fish stocks can fluctuate substantially over relatively short periods and trends may vary from species to species. The North Sea herring population was seriously affected in the 1970s, the fishery was closed between 1978 and 1982 allowing stocks to recover. Between 2004 and 2008 stocks dropped by 37 per cent relative to the population in 1964.
- Stocks of North Sea cod and North Sea haddock have fallen since 1964. By 2008, the population of North Sea cod had fallen 66 per cent, and North Sea haddock has fallen by 51 per cent relative to the 1964 population.
- The population of North Sea plaice has fluctuated since 1964, but in 2008 stocks returned to a level 5 per cent lower than the population in 1964. The population of North East Atlantic mackerel has increased since 1964, with stocks in 2008 18 per cent higher relative to the 1964 population.

Sustainability of fish stocks around the UK, 1990 to 2007

United Kingdom



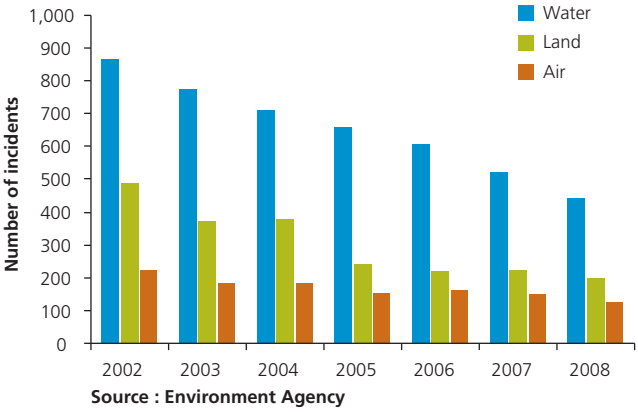
Note: Based on 20 stocks for which accurate time series are available, derived from stock assessment reports.

Source: ICES, CEFAS

- Sustainable fisheries are essential for a healthy and diverse marine ecosystem. They are also important for a vibrant and long term fishing industry.
- During the 1990s the percentage of fish stocks considered to be harvested sustainably and at full reproductive capacity was no more than 10 per cent, but had increased to 25 per cent in 2007.
- Despite these increases, between 70 to 75 per cent of UK fish stocks have either reduced reproductive capacity or have been harvested unsustainably each year since 2001.

Serious pollution incidents affecting water, air and land, 2002 to 2008

England and Wales

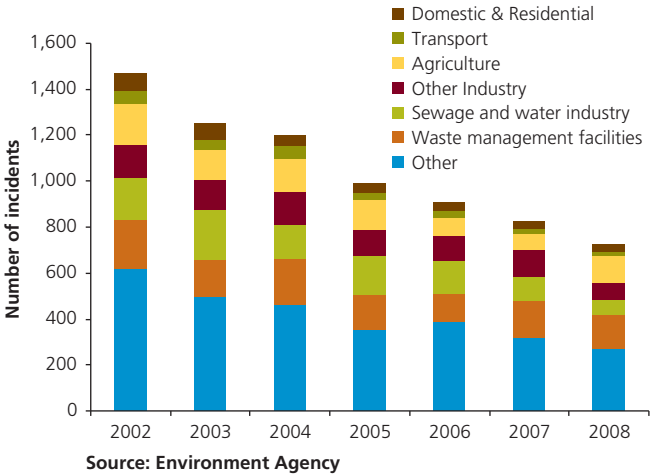


Source : Environment Agency

- There were 723 serious (category 1 and 2) pollution incidents in 2008 – a 13 per cent reduction compared with 2007 figures. There was no reduction in the number of major (category 1) pollution incidents, but a 14 per cent reduction in significant (category 2) pollution incidents.
- Pollution incidents have been decreasing steadily since 2002. The number of serious air pollution incidents declined by 44 per cent; land pollution incidents declined by 59 per cent; and water pollution incidents declined by 49 per cent.

Serious pollution incident sources: 2002 to 2008

England and Wales

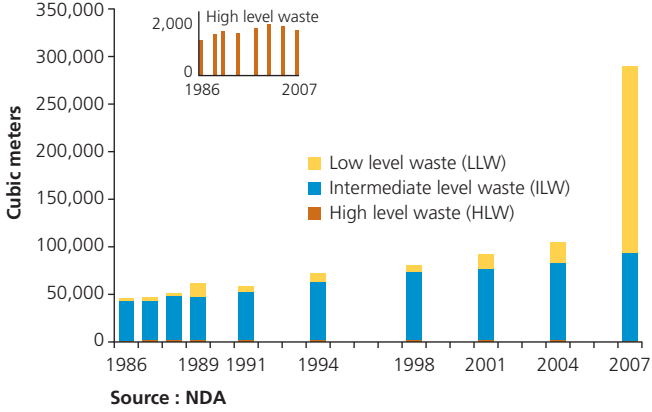


Source: Environment Agency

- In 2008 waste management facilities were responsible for almost two thirds of all the serious (category 1 and 2) air pollution incidents and for 28 per cent of serious land pollution incidents. Overall, the waste sector was responsible of 20 per cent of all serious pollution incidents. The most common waste materials responsible for such incidents were; asbestos, vehicle parts and household rubbish.
- Agriculture caused 16 per cent of all serious pollution incidents, with the sewage and water industry causing a further 10 per cent. Other industries also caused 10 per cent of all serious pollution incidents.

Radioactive waste stock, 1986 to 2007

United Kingdom

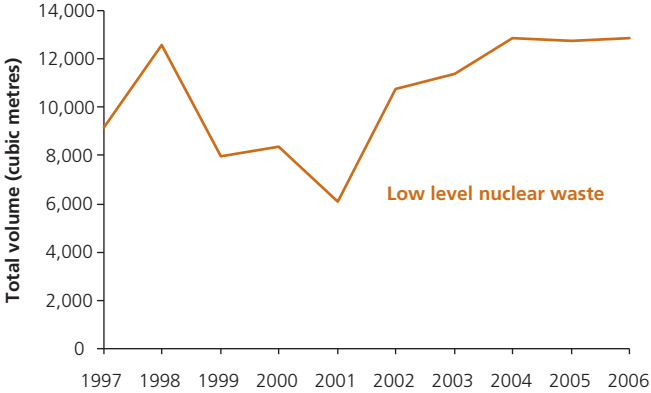


Source : NDA

- High level waste, from the reprocessing of nuclear fuel, increased overall by 28 percent between 1986 and 2007 but had reduced between 2001 and 2007.
- Intermediate level waste mainly includes nuclear reactor components and the irradiated metal cladding for nuclear fuel, had more than doubled since 1986.
- Low level waste, which mainly includes paper, plastics, soil and worn out nuclear workers' clothing, is stored for a short period before disposal in special facilities. There has been an 80-fold increase in such waste since 1986.

Radioactive waste disposal, 1997 to 2006

United Kingdom



Source: NDA

- Most of the UK's solid low level nuclear waste (LLW) is disposed of at a nuclear disposal facility, the Low Level Waste Repository (LLWR), in Cumbria.
- Overall, between 1997 and 2006 there has been a 40 per cent increase in the volume of low level waste consigned to the LLWR.
- Currently, in the UK, there are no facilities to dispose of high level nuclear waste (HLW) and intermediate level nuclear waste (ILW). The waste in these categories is kept in stores.

Explanatory notes and data tables

This annex provides both explanatory notes and data tables. More detailed information about the information in this publication is available from the e-Digest of environment statistics:

www.defra.gov.uk/evidence/statistics/environment

Waste and Recycling

Pages 10 to 13: Household waste and recycling

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

Residual household waste per head

Kg per person

	1997-8	2003-4	2006-7	2007-8	2008-9
Residual per head	440	420	351	324	295

Percentage of recycling

	1997-8	2005-6	2006-7	2007-8	2008-9
Green Recycling	1.6	9.6	11.4	12.9	14.8
Dry Recycling	6.6	17.1	19.4	21.6	22.8
Total	8.2	26.7	30.9	34.5	37.7

Recycling rates for local authorities

Further details about the local authority recycling rate information in this publication can be found via the municipal waste section of the e-Digest:

www.defra.gov.uk/evidence/statistics/environment/wastats

Pages 14 and 15: Landfill waste

Biodegradable municipal waste landfilled

Thousand tonnes

	2001-2	2002-3	2006-7	2007-8	2008-9
Estimated BMW to Landfill	15,706	15,320	11,549	10,582	9,326

Total waste landfilled and non-municipal/non-inert waste to landfill

The change from financial year to calendar year reporting is a consequence of changes to the Defra and Environment Agency data collection systems.

Thousand tonnes

	2000-1	2002-3	2006	2007	2008
Non-municipal/ non-inert	27,046	22,830	20,710	20,543	19,079
Total landfill	79,923	75,671	64,937	60,738	53,838

Page 16: Waste arising by sector

Estimates are based on administrative data where possible and supplemented by survey data. 'Other' includes waste from agriculture, sewage and dredged materials.

Thousand tonnes

	2006
Construction, demolition and excavation	102,832
Municipal	28,742
Mining and quarrying	61,160
Commerical and industrial	75,527
Other	13,901
Total	282,162

Pages 17 and 18: Municipal waste management in the EU

For further information contact Defra's Environment Statistics Service. Email: enviro.statistics@defra.gsi.gov.uk

Sustainable Consumption

For further information about any of the sustainable consumption information in this publication contact Defra's Environment Statistics Service.

Email: enviro.statistics@defra.gsi.gov.uk

Page 19: Greenhouse gas emissions relating to UK household consumption

Million tonnes CO_2 equivalent

	1992	2000	2004	2005	2006
Other goods and services	215	254	267	263	262
Food and drink, catering	154	159	161	159	160
Aviation	19	34	40	41	42
Public transport	17	23	26	27	27
Indirect emissions	113	87	98	102	103
Domestic fuel and private transport	150	156	162	162	160
Total	669	713	753	754	755

Page 20: Impacts of UK household consumption

Index (2000=100)

	2003	2004	2005	2006	2007
Household spending	110	114	116	118	122
Carbon dioxide	101	102	101	98	95
Water use	105	103	104	103	103
Waste not recycled	94	90	84	81	75
Energy consumption	103	104	102	100	97

Page 21: Private car CO_2 emissions and car-kilometres and household spending

Index (1990=100)

	1991	2000	2005	2006	2007
CO_2 emissions	99	109	115	114	114
Household spending	98	130	150	153	157
Car kms (GB)	100	112	118	120	120

Page 22: Food related greenhouse gas emissions from UK households

Kilotonnes CO_2 equivalent

	2002	2003	2004	2005	2006
Food shopping (car use)	2,649	2,948	2,741	3,549	3,860
Cold storage	8,019	8,355	8,241	8,103	8,404
Electric cooking	6,021	6,414	6,465	6,497	6,888
Gas cooking	1,416	1,416	1,411	1,414	1,414
Total	18,105	19,133	18,858	19,563	20,565

Page 23: CO_2 emissions relating to hot water use per year in an average home built before 1990

	Kg per year
Dishwasher	142
Washing machine	118
Shower	89
Kitchen sink	149
Basin	101
Bath	103
Total Hot Water Use	702

Public Attitudes and Behaviours

Further details about any of the public attitudes and behaviours information in this publication can be found via the public attitudes section of the e-Digest:

http://www.defra.gov.uk/evidence/statistics/environment/pubatt

Page 24: Environmentally friendly behaviour

'I'm already doing this and intend to keep it up'

Percentage of respondents

	2007	2009
Recycling more	71	83
Waste less food	63	75
Cutting down gas and electricity use	58	76
Use less water at home	52	69
Flying less	29	19

Page 25: Wasteful behaviour

Positive actions towards the environment

Percentage of respondents

	Always/very often	Never
Not buying something because it has too much packaging	14	46
Only boil the kettle with as much water as you need	47	6
Recycling items	75	3

Negative actions towards the environment

Percentage of respondents

	Always/very often	Never
Leave TV/PC on standby	14	52
Leave lights on when out	6	46
Leave heating on when out	9	48

Page 26: Issues the Government should be dealing with

Percentage of respondents

	1986	1996	2001	2007	2009
Crime	17	19	30	49	32
Health/social services	22	42	58	47	26
Education	14	39	43	36	24
Environment	8	15	25	19	35
Pensions & benefits	15	10	19	17	17
Unemployment	75	28	17	9	37
The economy	4	8	11	8	57

Page 27: Importance of green space

'How often do you visit public gardens, parks, commons or other green spaces?'

Percentage of respondents

	2009
6-7 days a week	10
3-5 days a week	12
1-2 days a week	27
Once a fortnight - month	26
Several times a year	16
Less often	10

'How important is it for you to have public gardens, parks, commons or other green spaces nearby'

Percentage of respondents

	2009
Very important	74
Fairly important	21
Not very important	4
Not important at all	1

Contextual

Page 28: Population estimates and projections

Projection figures are from the 2008-based national population projections. The projection is sensitive to variations and influences associated with future fertility, mortality and migration.

Population (millions)

Age	1991	2008	2015	2025	2036
0-14	11.01	10.75	11.18	11.89	11.96
15-64	37.37	40.7	41.52	42.81	43.52
65+	9.06	9.93	11.64	13.95	17.13
Total	57.44	61.38	64.34	68.65	72.61

Page 29: Household estimates and projections

Households (millions)

	2006	2016	2021	2026	2031
Married couple	9.40	9.12	9.12	9.13	9.18
Cohabiting couple	2.19	3.03	3.32	3.57	3.80
Lone parent	1.66	1.85	1.92	1.98	2.02
Other multi-person	1.45	1.65	1.74	1.82	1.91
One person	6.82	8.46	9.34	10.18	10.90
All households	21.51	24.11	25.44	26.67	27.82

Climate Change

Page 30: EU-15 emissions of greenhouse gases compared with Kyoto Protocol target

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

Index (1990=100)

	1991	2000	2004	2005	2006
Greenhouse gas emissions	100	97	99	99	98
Kyoto Target Path	100	96	94	94	94

Page 31: UK emissions of greenhouse gases

For further information about the greenhouse gas emissions information in this publication contact DECC's Climate Change Statistics team.

Email: climatechange.statistics@decc.gsi.gov.uk

Million tonnes (CO_2 equivalent)

	1990	2000	2006	2007	2008p
Basket of gases	773	675	648	637	624
Carbon dioxide	593	551	551	543	532

Pages 32 and 33: Carbon dioxide emissions from local authority areas

For further information about the local authority carbon dioxide emissions information in this publication contact DECC's Climate Change Statistics team.

Email: climatechange.statistics@decc.gsi.gov.uk

Page 34: Methane emissions by source

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.

Million tonnes

	1990	2000	2005	2006	2007
Landfill	2.4	1.5	1.0	1.0	1.0
Agriculture	1.1	1.0	0.9	0.9	0.9
Gas leakage	0.4	0.3	0.2	0.2	0.2
Coal mines	0.9	0.3	0.2	0.2	0.1
Other	0.3	0.2	0.1	0.1	0.2
Total	5.0	3.3	2.4	2.4	2.3

Page 35: Electricity generated by renewable sources

Gigawatt hours

	1996	2006	2007	2008
Wind and wave	488	4,225	5,274	7,097
Hydro	3,392	4,593	5,088	5,168
Landfill gas	708	4,424	4,677	4,757
Sewage sludge digestion	410	456	496	564
Biodegradable municipal solid waste	489	1,083	1,177	1,226
Co-firing with fossil fuels	0	2,528	1,956	1,613
Other	197	808	978	1,172
Total	5,685	18,117	19,646	21,597

Page 36: Average surface temperature

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

	1850	1900	1950	2000	2008
Central England Temperature	-0.24	-0.07	0.19	0.86	0.93
Global Temperature	-0.35	-0.28	-0.21	0.36	0.40

Pages 37 and 38: Rainfall and temperature in England and Wales

For further information contact Defra's Environment Statistics Service. Email: enviro.statistics@defra.gsi.gov.uk

Pages 39 and 40: Sea level rise at selected sites

For further information contact Defra's Environment Statistics Service. Email: enviro.statistics@defra.gsi.gov.uk

Global Atmosphere

Page 41: Column ozone levels in the UK

Dobson units

	1979	1990	2003	2005	2006
Lerwick (Shetland)	–	337	339	320	336
Camborne (Cornwall)	349	317	330	–	–
Reading (Southern England)	–	–	–	320	327

Air Quality

Pages 42 to 44: Air quality

Annual levels of particles and ozone in the air

Micrograms per cubic metre (μg/m^{-3})

	1995	2000	2006	2007	2008
PM_{10} (Urban background)	31	23	24	22	19
PM_{10} (Roadside)	–	31	30	27	26
Ozone (Urban background)	52	53	61	57	59
Ozone (Rural)	72	68	74	68	71

Days when air pollution is moderate or higher

Average number of days

	1995	2000	2006	2007	2008
Rural Average	44	28	55	30	45
Urban Average	48	20	38	23	26

Page 45: Particulate (PM_{10}) emissions by source

Thousand tonnes

	1980	1990	2000	2006	2007
Road transport	31	42	32	26	25
Residential	100	49	23	16	18
Energy industries	83	74	26	13	11
Other	116	118	90	82	81
Total	330	283	170	137	135

Page 46: Sulphur dioxide emissions by source

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 and based on the estimated proportions from the relevant sources: power stations, refineries, iron and steel and other industrial sources.

Thousand tonnes

	1980	1990	2000	2006	2007
Large combustion plants	3,457	2,929	873	410	325
Total emissions	4,781	3,724	1,231	671	591

Page 47: Nitrogen oxides emissions by source

Thousand tonnes

	1980	1990	2000	2006	2007
Road transport	746	1,084	749	478	441
Energy industries	936	848	430	472	438
Other	871	813	688	647	607
Total	2,553	2,744	1,867	1,597	1,486

Wildlife

Pages 48 and 49: Status of 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 of BAP implementation takes place every three years.

For further information contact Defra's Environment Statistics Service. Email: enviro.statistics@defra.gsi.gov.uk

Pages 50 and 51: Population of wild birds

Bird populations are considered to be a good indicator of the broad state of wildlife because birds occupy a wide range of habitats, they tend to be near or at the top of food chains and there is considerable long-term data on changes in bird populations which helps in the interpretation of shorter term fluctuations.

Species included in these indices are native to the UK and have more than 500 breeding pairs across the UK. Individual species populations within the indicators may be increasing or decreasing, irrespective of the overall trends. The indices are considered to give reliable medium to long-term trends but strong reliance should not be attached to levels for individual years or short term changes from year to year.

Population of wild birds

Index (1970=100)

	1971	1980	1995	2007	2008
All species (114)	102.8	107.0	98.0	99.6	103.3
Farmland (19)	103.3	97.2	60.5	51.8	53.0
Woodland (38)	104.4	102.1	77.8	80.1	85.9
Seabirds (19)	104.2	121.2	139.9	128.3	127.5

Percentage change in populations of wild birds by region, 1994-2007

	Farmland	Woodland
South West	-14	-7
South East	-27	-16
East of England	-13	-1
West Midlands	-18	-2
East Midlands	-17	13
Yorkshire & Humber	1	30
North West	-1	42
North East	2	14
England	-13	-6

Page 52: Butterfly populations

Butterfly populations are considered to be a good indicator of biodiversity as they respond rapidly to changes in environment and management, occur in a wide range of habitats, and are representative of many other insects, which collectively account for more than 50 per cent of terrestrial UK wildlife species.

Specialists are low mobility species restricted to semi-natural habitats, while generalists are mobile species that occur in a wide range of habitats in the wider countryside.

Index (1976=100)

	1977	1990	2000	2006	2007
All-species (52)	52	78	69	75	49
Specialists (25)	58	47	37	45	30
Generalists (24)	49	94	76	74	55
Migrants (3)	36	156	646	733	263

Page 53: Public sector expenditure on biodiversity

Million £

	2000-1	2002-3	2004-5	2006-7	2007-8
UK public sector expenditure	248.0	305.2	356.8	453.7	525.4

Land

Page 54: Agricultural and forestry land use

Thousand hectares

	1996	2008
Crops & bare fallow	4,759	4,908
Grassland	6,749	7,177
Rough grazing	5,983	4,359
Other agricultural land	285	289
Forest & woodland	2,728	2,841
Total	20,504	19,574

Pages 55 and 56: Land covered by agri-environment schemes

Entry level schemes

Million hectares

	2005	2006	2007	2008
England	1.38	3.92	4.73	5.02
Wales	0.22	0.22	0.27	0.29

Higher level schemes

Million hectares

	1992	2000	2006	2007	2008
England	0.18	0.81	1.18	1.20	1.24
Wales	0.01	0.27	0.43	0.44	0.39
Scotland	0.12	0.84	1.43	1.27	1.07
N Ireland	0.00	0.15	0.46	0.45	0.44
Total	0.31	2.08	3.42	3.36	3.14

Page 57: Area of woodland

Thousand hectares

	1924	1947	1965	1980	2009
England	660	755	886	948	1,128
Scotland	435	513	656	920	1,341
Wales	103	128	201	241	284
Northern Ireland	13	23	42	67	88
UK	1,211	1,419	1,784	2,175	2,841

Page 58: Percentage of SSSI habitats in favourable or unfavourable recovering condition by sector

Woodland indicator covers c76,000 ha of non-Forest Enterprise owned woodland Sites of Special Scientific Interest (SSSIs) in England.

Local authorities indicator covers c33,500 ha of SSSI-notified land is in local authority ownership.

Coastal indicator covers c300,000 ha of SSSI saltmarsh, sand dunes, rocky shores, shingle and intertidal habitats.

Towns & cities indicator covers c39,000 ha of SSSI within urban areas having a population greater than 10,000 in 1991 census.

Business indicator covers c85,000 ha of SSSI owned or managed by commercial companies (including FTSE 350 listed companies and national utilities).

Agriculture indicator covers c380,000 ha of farmed SSSI habitats (grassland and heathland).

Water & wetlands indicator covers c270,000 ha of bogs, fens, grazing marshes, rivers and lakes.

	2003	2009
Local authority	73	88
Woodland and forestry	67	88
Coastal	73	91
Towns and cities	67	80
Business	53	92
Agriculture	47	88
Water and wetlands	41	83
All SSSIs	57	88

Page 59: New dwellings built on previously developed land

Percentage

	2000	2006	2007	2008
New dwellings built on previously developed land	62	76	77	78
All new development on previously developed land	53	52	–	–

Inland Waters

Pages 60 and 61: River water quality

The way in which river water quality is assessed is currently in transition to meet the demands of the EU Water Framework Directive (WFD), which will provide a consistent approach to managing and monitoring environmental water quality across all Member States.

From 2007 in England, a reduced General Quality Assessment (GQA) monitoring network has been used to monitor river water quality. Resource has been re-directed to implement the WFD monitoring programme. Scotland and Northern Ireland are also focusing on the EU Water Framework Directive classification, gathering relevant data and developing new indicators. Further updates to this information are not currently available.

Biological river water quality

Percentage of monitoring network

	2004	2005	2006	2007	2008
England	71	71	72	72	72
Wales	79	80	82	87	88
Northern Ireland	51	56	54	–	–
Scotland	87	87	88	–	–

Chemical river water quality

Percentage of monitoring network

	2004	2005	2006	2007	2008
England	72	73	74	76	79
Wales	94	95	95	95	95
Northern Ireland	58	63	74	–	–
Scotland	87	87	88	–	–

Page 62: Nitrate and phosphate concentrations in rivers

Rivers with an average nitrate concentration level greater than 30 mg NO_3/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 50 mgNO_3/l to be met by 95 per cent of samples, which is also the threshold established by the World Health Organisation.

Percentage of river length

	Nitrate >30mgNO_3/l		**Phosphate** >0.1mgP/l	
	England	Wales	England	Wales
1995	36	1	60	10
2000	39	1	62	8
2006	34	1	56	11
2008	32	1	52	9

Page 63: Abstractions for the public water supply from surface water and groundwater by region

2007	Surface water	Groundwater
North West	90	10
North East	86	14
Midlands	66	34
Anglian	60	40
Thames	66	34
Southern	31	69
South West	70	30
England	68	32
Wales	98	2

Page 64: Water supply and leakage

Million litres per day

	1994-5	2000-1	2005-6	2006-7	2007-8
Distribution	3,866	2,365	2,611	2,545	2,468
Supply pipe	1,246	878	966	873	823
Consumption	11,478	11,748	11,780	11,576	11,464

Page 65: Drinking water quality

Figures for 2004-5 onwards are not directly comparable to previous years because of the implementation of new Water Supply (Water Quality) Regulations throughout the UK. Figures shown are tests of EU and national parameters, as these are mandatory parameters, and the closest for comparison with previous years' data.

Percentage of determinations failing to meet standards

	1995	2000	2005	2007	2008
England and Wales	0.55	0.17	0.05	0.04	0.04
Scotland	1.51	0.69	0.36	0.19	0.19
N. Ireland	1.11	1.09	0.52	0.40	0.31

Page 66: Properties at risk of flooding

Million properties

	2008
Significant risk (greater than 1 in 75 chance)	0.63
Moderate risk (1 in 75 - 1-200 chance)	0.91
Low risk (1 in 200 chance or less)	1.26
Total number at risk	2.80

Coastal and Marine Waters

Pages 67 and 68: Bathing water

The EC Bathing Water Directive (76/160/EEC) uses physical, chemical and microbiological parameters to assess bathing water quality. Samples of water are taken at all designated bathing waters two weeks before and then during the bathing season. The Directive sets mandatory and more stringent guideline values for a number of the parameters. Compliance with the Directive's standards is assessed using total and faecal coliforms, which are generally considered to be the most important indicators of the extent to which water is contaminated by faecal matter. The highest guideline standard also takes the measurements for faecal streptococci into account and this standard constitutes the water quality criterion of the Blue Flag award scheme.

Percentage of coastal waters meeting standards

	1988	1995	2000	2008	2009
Mandatory standard	67	89	94	96	98
Guideline standard		41	45	65	70

Percentage of coastal waters meeting guideline standards

	1995	2009
England	41	71
Wales	38	89
Scotland	17	56
Northern Ireland	75	46
UK	41	70

Page 69: North sea fish stocks and stocks of North East Atlantic mackerel

Index (1964=100 (mackerel 1980=100))

	1965	1981	2000	2007	2008
North Sea cod	116	114	29	25	34
North Sea haddock	125	62	33	51	49
North Sea herring	71	10	43	47	50
North East Atlantic mackerel	–	101	105	119	118
North Sea plaice	95	72	64	70	95

Page 70: Fish stocks around the UK at full reproductive capacity and harvested sustainably

Percentage of stocks

	1990	2000	2005	2006	2007
Fish Stocks	11	5	30	25	25

Pollution Incidents

Pages 71 and 72: Number of serious pollution incidents

Number of serious pollution incidents affecting water, air or land

	2002	2004	2006	2007	2008
Water	866	708	605	522	442
Air	225	183	161	151	126
Land	489	377	219	222	199

Number of serious pollution incidents by source

	2002	2004	2006	2007	2008
Other	618	461	388	322	271
Waste management facilities	212	204	124	159	146
Sewage and water industry	181	144	141	104	70
Other industry	149	146	107	118	74
Agriculture	180	145	85	72	113
Transport	53	55	24	19	18
Domestic and residential	75	44	41	33	31

Radioactivity

Pages 73 and 74: Radioactive waste

Radioactive waste stocks

cubic metres

	1986	2001	2004	2007
High level waste (HLW)	1,351	1,961	1,890	1,730
Intermediate level waste (ILW)	41,887	75,276	82,500	92,500
Low level waste (LLW)	2,429	14,584	20,900	196,000

Radioactive waste disposal

cubic metres

	1997	2000	2004	2005	2006
Total volume	9,200	8,400	12,900	12,800	12,900

Symbols used in this booklet

– = Data not available

p = Provisional data

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