State of the Environment - South East England

February 2010

We are the Environment Agency. It's our job to look after your environment and make it **a better place** - for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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State of the Environment - South East England

On these pages you will find the latest information about your environment.

Welcome to our ninth State of the Environment report for the South East. First published in 2000, it is the barometer of the region's environmental health. Our aim is that the information presented here will inform the decisions and actions across the region that can help protect and improve the environment for everyone who lives here.

Here are just a few of this year's headlines

Our river and coastal habitats across the South East and our vital water resources are already under pressure from climate change. We also need to accommodate 666,000 new homes by 2026, with forecast population growth of half a million over the next six years. We believe this will be possible, but only if we change the way we live in the South East to protect the environment for the future.

Some river flows could fall by as much as 35% by 2050, as population and climate change pressures bite. But the average person in the South East uses 156 litres of water per day. This will have to fall to 130 litres if future demand is to be met.

An additional 17,000 properties were protected from flooding in the last six years and we invested £12 million last year alone. But there are still 403,000 properties at risk of river and sea flooding in the South East, more than any other region of the UK.

Household recycling rates have improved from 16.4% to 38.4% in the last eight years and the proportion of municipal waste going to landfill has fallen below half for the first time last year. But we still send more waste to landfill than any other region and if we continue at current rates, the region's landfills could be full in seven years.

The South East is a great place in which to live, to work and to relax. Our challenge now is to ensure the decisions and actions we all take will secure the sustainable prosperity of the region over the next decades, and protect the high-quality environment we currently enjoy for future generations.

We will update these indicators as new data becomes available, so check back regularly for current information on the state of South East England's environment.

Contents

Sustainability

The South East of England is a prosperous region, with comparatively low rates of unemployment, high economic activity and productivity rates and a higher skills profile as compared to other regions of the UK. We need to ensure that this prosperity continues to grow in a sustainable way, reducing our ecological footprint but continuing to maintain a high quality of life.

Key message 1: **There are 8.38 million people living in the South East, making it the region with the highest population. Predictions show that the population is likely to increase by almost half a million by 2016.**

Key message 2: The South East has the largest ecological footprint per person of all UK regions.

Key message 3: Generation of electricity from renewable sources is increasing in the South East, However, it only meets 3.8% of current traditional sales in the Region, so further increases are needed to help meet the UK target to supply 10% of electricity demand by 2010.

INDICATOR 1 – Ecological footprint

Indicator – at a glance

- The South East has the highest ecological footprint of all the Government regions.
- In the South East, South Buckinghamshire has the highest ecological footprint and Slough has the lowest.

Background

- Ecological footprint is a measure of the impact of human activities on the natural environment that sustains us. With the help of data and resources generated by the WWF Ecological Budget UK project, governments, regional assemblies and local authorities throughout the UK, we are learning how to use the ecological footprint to help measure progress towards sustainable development and to inform policy[1].
- The footprint expresses the area of land and sea that is required to feed us, provide resources, produce energy, assimilate waste, and to re-absorb the greenhouse gases produced by our use of fossil fuels. This approach uses land as its 'currency', and provides a notional figure – the global hectare per person (gha/person) (an area equivalent to a normal hectare but adjusted for average global productivity) – to quantify the area required to support an individual, a community or a nation's population at its present standard of living[1].
- A study by WWF has found that if everyone used as many of the Earth's resources as we do in the South East, we would need three and a half planets to support the world's consumption[2].
- Data in this section are from the Stockholm Environment Institute[1].

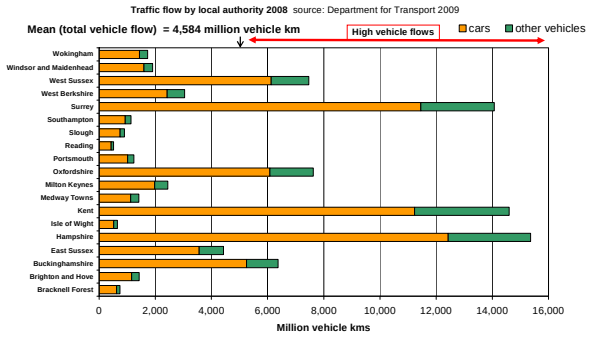
Trends

- The South East has the highest ecological footprint of all the Government regions (5.09 gha/person), and the North East has the lowest ecological footprint (4.27 gha/person) [1].
- The ecological footprint of the South East is higher than the UK average footprint of 4.64 gha/person [1].
- In the South East, South Buckinghamshire has the highest footprint (5.84 gha/person), and Slough has the lowest ecological footprint (4.38 gha/person) [1].
- The total ecological footprint for the South East in global hectares is over 41 million, this amounts to an area over 21 times the region[1].
- The main contributors to the ecological footprint in the South East are food (26%) - mainly fruit and vegetables, and meat products – transport (24%) - mainly from private vehicle use - and housing (21%) – from fuel use. The footprint from transport is higher

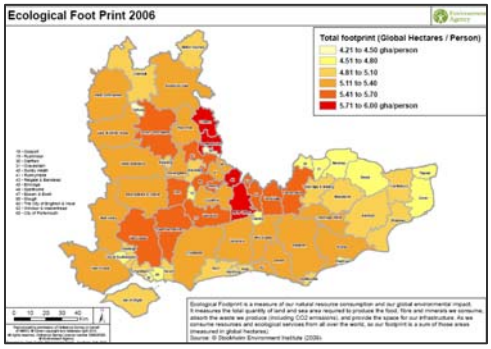
than the UK average of 19% due to increased use of private vehicles in the South East[1].

Useful facts

- During 2008, Hampshire residents travelled the greatest distance by car (12,428 million vehicle kilometres)[3].
- In 2008, 43% of South East adult residents owned a bicycle and an additional 1% had access to one. This can be compared with 82% owning cars[3].
- Despite the number of residents owning/having access to bicycles, only 3% cycled to work, compared with 10% who walked and 72% who drove by car (during October and December 2007)[3].



Traffic flows in the South East 2008



Ecological footprint for the South East 2006

INDICATOR 2 – Energy use

Indicator – at a glance

- Currently in the South East, electricity generated from renewable sources is equivalent to 9.4% of domestic sales and 6.5% of commercial and industrial sales in 2008.
- The South East is the third highest domestic electricity user of all the regions, but the third lowest user of industrial and commercial electricity.
- The South East is the third lowest domestic gas user of all the regions, and the lowest user of industrial and commercial gas.

Background

- The 'UK Low Carbon Transition Plan' plots how the UK will meet the 34% cut in emissions on 1990 levels by 2020, set out in the budget. We have already reduced emissions by 21% – equivalent to cutting emissions entirely from four cities the size of London[4].
- Data for this indicator is from the Department for Energy and Climate Change (DECC) and looks at the amount of electricity generated from renewable sources, the number of sites and the installed capacity[4].

- The UK Government has a target to provide 10% of electricity demand from renewable sources by 2010, and 20% by 2020. Production in the South East is assisting this.

Trends

Renewable energy (electricity):

- There has been an overall increase in electricity generated from renewable sources since 2003, despite a slight decline in 2007 and 2008[4].
- In 2008 the South East region had the second greatest total number of sites generating electricity from renewable sources in England and of those, had the greatest number of other biofuel sites, such as biomass and sewage gas[4].
- The main source of renewable energy in the South East is landfill gas[4].
- In 2008 the South East had the third highest total installed capacity to generate electricity from renewable sources (375,000 kW) in England. Of this, 145,000 kW (39%) were from landfill gas and 136,000 kW (36%) from other biofuels[4].
- In 2008 the South East region generated the third highest total amount of electricity from renewable sources (1,554 GWh) in England. Of this, 855 GWh were from landfill gas[4].
- Between 2007 and 2008 there was a 0.9% increase in installed renewable capacity in the South East, which was less than the 1.4% increase between 2006 and 2007[4].

Electricity:

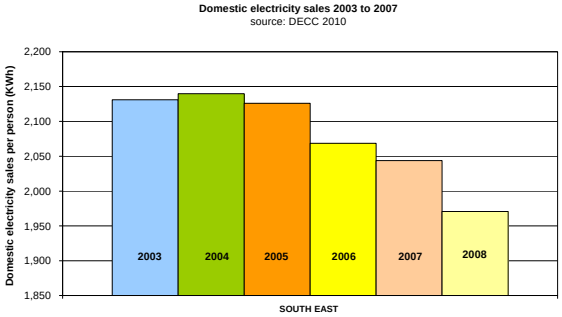
- In 2008 in the South East, the average domestic consumption of electricity was 1,971 kWh per person, making our consumption the 3rd highest of all regions. This was a 3.6% reduction from 2007 and a 7.9% reduction from 5 years previously[4].
- The South East consumed 6.2% more electricity for domestic purposes (per person) than the England average[4].
- In 2008 in the South East the average industrial and commercial consumption of electricity was 71,984 kWh per metered supply, making our consumption the 3rd lowest of all regions. This was a 0.7% increase from 2007, but a 5.4% reduction from 5 years previously[4].
- The South East consumed 8.3% less electricity for industrial and commercial purposes (per metered supply) than the England average[4].

Gas:

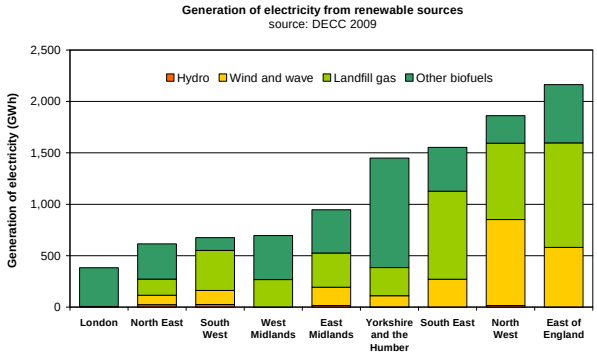
- Average domestic gas consumption in the South East was the 3rd lowest of all regions in 2007, at 6,250 kWh per person[4]. This was a 4.4% reduction from 2007[4].
- The South East consumed 1.3% less gas for domestic purposes (per person) than the England average[4].
- Average industrial and commercial gas consumption in the South East was the lowest of all regions in 2008[7], at 459,996 kWh per metered supply. This was a 4% increase from 2007[4].
- The South East consumed 25% less gas for industrial and commercial purposes (per metered supply) than the England average[4].

Useful facts

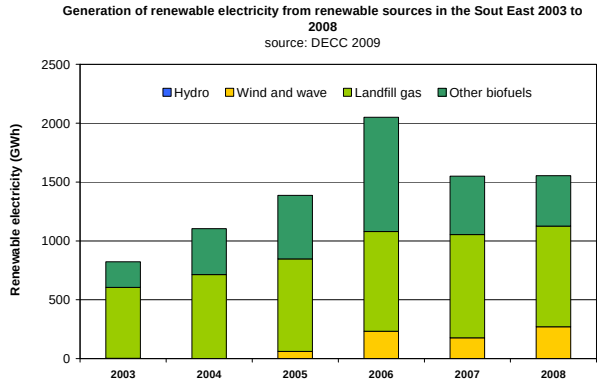
- In 1948 primary energy consumption in the UK was 143 million tonnes oil equivalent (Mtoe), about 2.87 tonnes per person. Sixty years later, in 2008, this has risen by 64% to 234 Mtoe. However, per person the increase was only 39% to 3.98 tonnes per person due to increase in population[5,6].
- 90% of the UK's primary energy use came from coal in 1948, with most towns having their own power station and gas works. By 2008 only 16% came from coal with oil and natural gas providing 76% and nuclear and renewables providing 8% of the primary energy use.



Domestic electricity consumption per person in the South East



Generation of electricity from renewable sources 2008



Generation of electricity from renewable sources in the South East 2003/2008

INDICATOR 3 – Population

Indicator – at a glance

- There are 8.38 million people living in the South East, making it the region with the highest population.
- Predictions show that the population is likely to increase by almost half a million by 2016.

Background

- Although rural districts comprise over half the area of the South East, they contain only 28% of the resident population[6].
- In contrast, urban districts account for just 18% of the land area, but house over half the region's population[6].
- On average, population density in urban districts is between five and six times greater than in rural districts[6].
- Data used in this section are the Office of National Statistics (ONS)[7].

Trends

- In 2008, the South East had a population of 8.38 million people, making it the region with the highest population[7].
- Population in the South East is increasing. Since 2007, it has increased by 71,400, and 527,000 since 1997[7].
- The population in the region is predicted to increase by almost half a million by 2016[7].
- There are 5.12 million people of working age and 1.67 million people of retirement age in the region[7].
- By 2031 the current population of 8.31 million is projected to increase by 1.58 million or by 19%, to 9.89 million[7].

Useful facts

- South East employment rates are the highest in England; yet over 140,000 people in the South East aged 40 to 70 are currently not working and are seeking employment. Using the Index of Multiple Deprivation, almost 6% of the region's population live within areas that rank within the 20% most deprived areas of the country[8].

Useful links and references

References

1. Stockholm Environment Institute (2009)
2. WWF-UK (2006)
3. Department for Transport (2009)
4. Department of Energy and Climate Change (2010)
5. Department of Energy and Climate Change (2009). 60th Anniversary of the Digest of UK Energy Statistics.
6. Defra and Office for National Statistics (2008). In: SEE-IN (2008), Regional Monitoring Report
7. ONS (2009)
8. Communities and Local Government (2007). The English Indices of Deprivation

Useful links

- Sustainable Development Commission: www.sd-commission.org.uk/
- Defra sustainability information: http://www.defra.gov.uk/sustainable/government/
- For more information on the ecological footprint see: http://www.resource-accounting.org.uk/
- The UK Low Carbon Transition Plan see: http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx

Climate change

Our climate is changing and will continue to change because of high emissions of greenhouse gases. The South East is particularly vulnerable to climate change, with low lying areas close to the sea, and low average levels of rainfall. We have already recently experienced ten of the hottest summers on record and also some of the heaviest rainfall events. Extreme weather events are likely to occur more frequently.

Key Message 1: Annual average temperatures are increasing. The decade between 1999 and 2009 had the highest average temperatures since records began 350 years ago.

Key Message 2: We need to reduce greenhouse gas emissions to prevent further, catastrophic, temperature rises.

Key Message 3: Global sea levels are rising at a rate of 3.4 millimetres per year.

Key Message 4: The UK's climate projections show that we can expect more extreme weather events, such as heatwaves, droughts and heavy winter rainfall.

Indicator 1 - New UK Climate Change Projections

Indicator at a glance

- For the UK as a whole, all areas will warm, and more so in the summer than in the winter. This means we will experience hotter, drier summers and warmer wetter winters with more extreme weather events.
- Summer rainfall in the South East is likely to decline. The biggest changes, down by about 40% are seen in parts of the far south of England (decreases range from 65% to 6%).

Background

- In June, the UK's Climate Impacts Programme published projections of the likely UK climate for the rest of this century. These new forecasts, known as the UKCP09 Projections, are based on complex modelling of the global atmosphere and oceans[1].
- The UK Climate Impacts Programme (UKCIP) was established in 1997 to help co-ordinate scientific research into the impacts of climate change[1].
- The UK Climate Projections (UKCP09) replaces the older UKCIP02 scenarios[1].
- There is little information yet on prolonged droughts.
- Projected higher temperatures will increase water temperatures.
- There may be slightly higher summer river flows than UKCIP02 predicted[1].
- Data in this section are taken from the New UK Climate Change Projections[1].

Trends

UK Climate Change Projections 2009 for the South East[1]

Potential Change	Amount of Change from 1961 – 1990 (1)		
	In the 2020s	In the 2050s	In the 2080s
Hotter summers	+1.6 ºC (0.6 to 2.8) ºC	+2.8 ºC (1.3 to 4.7) ºC	3.9 ºC (2.1 to 6.5) ºC
Drier summers	-8% (-28% to +15%) change in rainfall	-20% (-42% to +7%) change in rainfall	-24% (-50% to +7%) change in rainfall
Warmer winters	1.4 ºC (0.6 to 2.2) ºC	2.2 ºC (1.2 to 3.5) ºC	3.1 ºC (1.6 to 4.7 ºC
Wetter winters	7% (-5% to 21%) change in precipitation	18% (2% to 39%) change in precipitation	24% (4% to 56%) change in precipitation
Overall change in rainfall	-1% (-6% to +5%) change in rainfall	-2% (-8% to +4%) change in rainfall	-3% (-10% to +5%) change in rainfall
Sea level rises			37 to 93 cm (2)

(1) These are the central estimates for the medium emissions scenarios for the South East River Basin District with the 10% and 90% probability values in brackets. (2) For 2095 for UK, range is medium emissions 50th percentile to high emissions 95th percentile plus contribution from ice sheet melt.

Useful facts

- It is possible that the changes could be more extreme than those in the table above. For example, under a worst case scenario summer rainfall could decrease by 58% in the 2080's if global greenhouse gas emissions are high.
- Local Area Agreements (LAAs) are three year agreements which set out the priorities for a local area agreed between central government and a local area (the local authority and Local Strategic Partnership) and other key partners at the local level[2,3].
- There are 3 LAA indicators which address climate change[2,3]. These are:
  - No. 185: Carbon dioxide reduction from Local Authority operations – 4 local authorities signed-up.
  - No. 186: Per capita carbon dioxide emissions in the local authority area – 15 local authorities signed-up.
  - No. 188: Planning to adapt to climate change – 6 local authorities signed-up.

INDICATOR 2 – Greenhouse gas emissions

Indicator – at a glance

- Total UK greenhouse gas and carbon dioxide emissions were 2% lower in 2008 than 2007 and 19.1% lower in 2008 than in 1990.
- Total carbon dioxide emissions from the use of energy in the South East from the four main user groups (industrial and commercial, domestic, road transport, and land use/change) were 1.5% lower in 2007 than in 2006, and 1.9% lower in 2007 than 2005.

Background

- UK levels of emissions must fall each year to meet the Government's target of an 80% reduction by 2050[4].
- The majority of greenhouse gas emissions are carbon dioxide, so the indicator will look at total greenhouse gases and carbon dioxide emissions separately.
- As the developing nations industrialise, so the production of goods has moved away from the developed countries. As a result, as much as a third of the UK's emissions have been "exported" to developing countries[5].
- The indicator includes economic costs related to the reduction in carbon. The costs include the 2009 central traded price (£21 per tonne) – emissions from sectors covered directly or indirectly by the EU Emissions. Trading System (ETS) - and the central non-traded price (£51 per tonne) – emissions from sectors not covered by ETS[6].
- The cost of carbon represents the associated economic costs to society of the environmental damage caused by a tonne of carbon (or CO_2 equivalent) emitted into the atmosphere[6].
- Global greenhouse gas emissions from international products consumed in the UK are twice the emissions associated with the consumption of domestic products. According to research, carbon dioxide emissions associated with UK consumption increased by 115 million tonnes (18%), between 1992 and 2004[7].
- The data for this indicator are taken from Defra, Department of Energy and Climate Change and the Environment Agency[4,8,9].

Trends

South East greenhouse gas and carbon dioxide emissions:

- Both greenhouse gas and carbon dioxide emissions (from EA regulated sources) in the South East fell by just over 11% (a reduction of 1 million tonnes of carbon (equivalent) valued at £21 million (central traded price) or £51 million (central non-traded price) between 2007 and 2008[6,8].

South East carbon dioxide emissions from energy use:

- Total carbon dioxide emissions from the four main user groups (industrial and commercial, domestic, road transport, and land use/change) in the South East were 1.5% lower in 2007 than 2006 (a reduction of 273 thousand tonnes of carbon (equivalent) valued at about £5.7 million (central traded price) or £14 million (central non-traded price)[6,9].
- Emissions were 1.9% lower in 2007 than 2005 (a reduction of 341 thousand tonnes of carbon (equivalent) valued at about £7 million (central traded price) or £17 million (central non-traded price)[6,9].
- In the South East, for the four main user groups, carbon dioxide emissions per capita were 2.4% lower in 2007 than 2006, (a reduction of 0.05 tonnes of carbon (equivalent) valued at £1.05 per capita (central traded price) or £2.55 per capita (central non-traded price)[6,9]
- Per capita emissions were 3.3% lower in 2007 than 2005 (a reduction of 0.08 tonnes of carbon (equivalent) valued at £1.70 per capita (central traded price) or £4.10 per capita (central non-traded price)[6,9].
- In 2007, for the four main user groups, the South East produced the second lowest amount of carbon dioxide emissions per capita out of all the regions (along with the East of England), where London produced the least and the North East produced the highest amount[6,9].

UK greenhouse gas emissions:

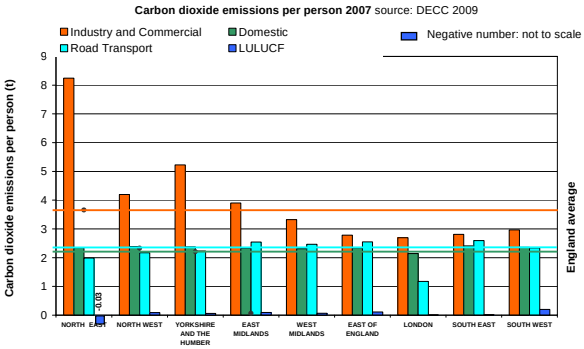
- Total UK greenhouse gas emissions were 2% lower in 2008 than 2007 (a reduction of 3.49 million tonnes of carbon (equivalent). The associated cost of carbon is around £73 million (central traded price), or £178 million (central non-traded price)[4,6]. Current greenhouse gas emissions are now 19.1% lower than 1990 levels (a total reduction of 40 million tonnes of carbon (equivalent) valued at around £840 million (central traded price) or £2,040 million (central non-traded price)[4,6].

UK carbon dioxide emissions:

- UK carbon dioxide emissions were also 2% lower in 2008 than in 2007 (a reduction of 2.95 million tonnes of carbon (equivalent). The associated cost of carbon is valued at £62 million (central traded price) or £150 million (central non-traded price)[4,6].
- Current carbon dioxide emissions are now 10.2% lower than 1990 levels (a reduction of 17 million tonnes of carbon (equivalent) valued at £360million (central traded price) or £870 million (central non-traded price)[4,6].

Useful facts

- In July 2009 the Government published its strategy for climate and energy, 'The UK Low Carbon Transition Plan', which sets out a plan to reduce carbon dioxide emissions by 18% on 2008 levels by 2020[10]. Elements of the Plan include:
  - To get 40% of our electricity from low carbon sources by 2020, with 30% coming from renewable sources.
  - To fund up to four demonstration carbon capture and storage schemes from coal fired power station and ease the building of new nuclear power stations.
  - To make homes greener by spending £3.2 billion on energy efficiency including rolling out smart meters, introducing financial incentives to householders and targeting those on low income.
  - To tackle road transport by cutting the average CO_2 emissions from new cars by 40% across the EU.
- Carbon dioxide and methane are the main greenhouse gases but many others contribute to global warming. They all cause a different amount of warming depending on their chemistry but the most potent are many times that of carbon dioxide.
- The greenhouse gases already in the atmosphere will cause some global warming with carbon dioxide causing 72% of the of the warming, methane 18%, nitrous oxide 8% and other gases 1%[11].



Regional carbon dioxide emissions for the four main user groups 2007

INDICATOR 3 – Temperatures

Indicator – at a glance

- There has been an upward trend in average temperatures in the UK over the last 350 years and this is particularly relevant to the South East. In Eastbourne, East Sussex the average trend in temperature has been an increase of over 1 degree Celsius during the last 50 years.

Background

- Met Office records show that the average annual temperature in the UK has increased by nearly two degrees Celsius in the last 350 years[12].
- Over the last 350 years, 10 of the hottest 15 years in the UK have occurred in the last 10 years[12].
- Long-term average temperatures measured by the Met Office over the last 100 years show that average monthly temperatures over the whole UK have noticeably increased since 1914, with the fastest warming happening since 1985. Daily maximum temperatures in winter have increased, indicating that winters are getting warmer. Daily minimum temperatures in summer have also increased. The strongest increases in

mean monthly temperature have been in the South East, along with the Midlands and East Anglia. There has also been a significant decrease in cold weather with fewer winter cold spells[12].

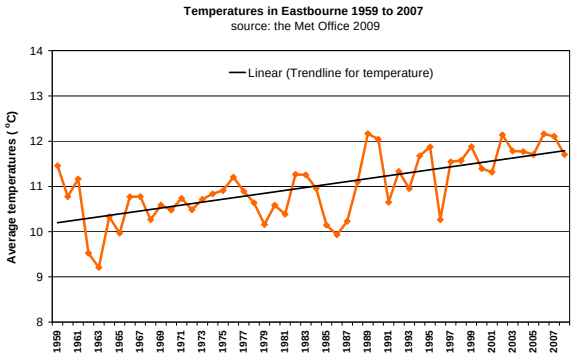
- Data used in this section are from the Met Office[12].

Trends

- Although the average annual temperatures in Eastbourne, East Sussex have fluctuated over the last fifty years, there has been a generally significant upwards trend[12].

Useful facts

- January is the coldest month, with mean daily minimum temperatures varying from over 3°C along the coast to about 0.5°C over the higher ground. July is the warmest with a mean maxima close to 20°C over higher ground and along the south coast. In August 2003 a new UK record temperature of 38.5°C was set at Faversham, Kent[12].
- By the 2070s the climate in London and the South East may be similar to that currently experienced in Lisbon[13].
- At the Copenhagen Summit it was agreed that we should not allow temperatures to warm by more than 2°C to avoid dangerous climate change. An increase in global temperatures of 2°C might cause widespread harm including extensive damage to coral reefs, severe impacts in the Sahel region, and the loss of small mountain glaciers worldwide.



Average annual temperatures at Eastbourne, East Sussex

INDICATOR 4 – Rainfall

Indicator – at a glance

- During the winter of 2008/09, the South East received 22% more rainfall than the long-term average.
- During the summer of 2009, in the South East received only 4% more rainfall than the long-term average.

Background

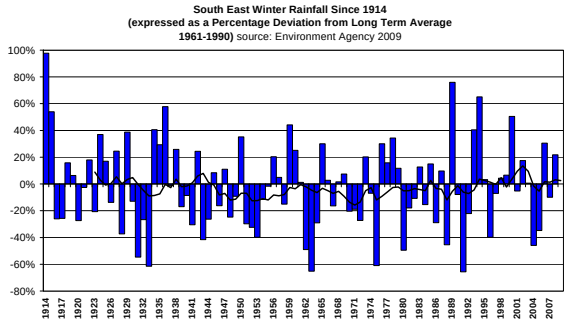
- The long-term trends show that we are generally getting less rain in spring and summer. Climate modelling shows that we should expect greater variation in weather, and so it is important that we are prepared for both heavy periods of rainfall, as well as drought conditions, to increase in frequency in the coming years. We need to be more efficient in storing water, particularly from winter rainfall.
- The data for this indicator are taken from the Environment Agency[8].

Trends

- In the South East, there has been a general trend towards wetter winters[8].
- During the winter of 2008/09, the South East received 22% more rainfall than the long-term average[8].
- This was, however, less than some previous years, where the greatest increase from long-term averages over the last 20 years was in 1989 (76%), but there have also been regular trends with below average rainfalls too[8].
- During the summer of 2009, in the South East received only 4% more rainfall than the long-term average[8].
- This was less than some recent summer trends, but there have also been regular trends with below average rainfalls too.
- The wettest areas of the region are the South Downs with an average of over 950 millimetres per year. In contrast, the north Kent coast normally receives less than 650 millimetres of rain per year[8].
- The region can be subject to dry periods that place demands upon water supplies and require conservation measures such as summer hosepipe bans. In the period November 2004 to February 2006, only about 75% of the normal rainfall occurred over the area, making it the driest such period since 1932/34[8].

Useful facts

- Across the UK, autumn and winter rainfall has increased but more so in the North West than the South East. Summer rainfall has decreased everywhere whilst spring rainfall has decreased in the south and east, but increased in the north and west.



Winter rainfall 1914 to 2009, with trend line showing 10 year running averages

INDICATOR 5 – Sea level change at Sheerness, Dover and Lowestoft

Indicator – at a glance

- Between 1834 and 2006 the sea level at Sheerness, Kent rose by 250 millimetres.
- In Dover, Kent the sea level rose by 19 millimetres in the last 9 years.

Background

- Data are available for 44 sites around the UK. Representative sites selected are Sheerness and Dover in Kent, with Lowestoft, Suffolk used as a trend comparison (same coastline)[14].
- There is some occurrence of glacial isostatic rebound (the rising of the land mass in the northern UK, post glaciation, causing a sinking in the south-east corner) which means that the actual sea level rise as a result of thermal expansion is slightly less than forecast.
- With very high levels of ice sheet melt the sea level could rise by up to 1.9 metres by 2095.
- A Defra and Environment Agency study has outlined that actual sea level change (minus land level change) around the Thames Estuary is between +0.9 to 1.2 millimetres per year.

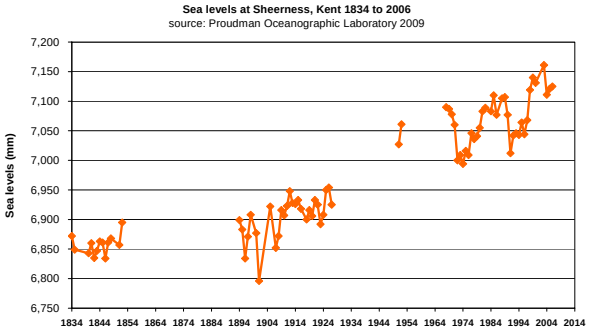
- Data from tide gauges around the world show that global mean sea level has risen over the last 100 years. Based on available analyses the rise has been in the range 100-200 millimetres[15].
- The indicator uses sea level data from the Proudman Oceanographic Laboratory[14].
- For more information visit Proudman Oceanographic Laboratory[14].

Trends

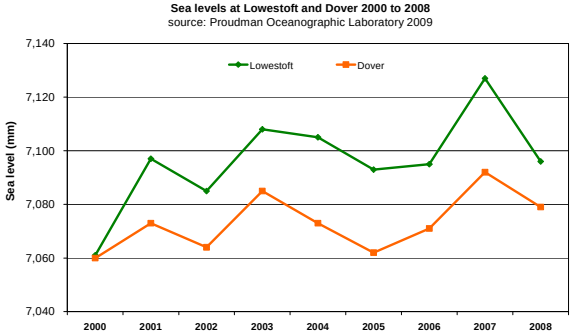
- Between 1834 and 2006 sea levels at Sheerness, Kent have risen by 250 millimetres, which is an average of 1.5 millimetres per year[14].
- However, sea levels at Sheerness have risen by 6.3 millimetres per year in the last nine years recorded[14].
- At Dover, Kent there has been an average rise of 2.1 millimetres per year in the last nine years[14].
- As a comparison, at Lowestoft, Suffolk (same coastline as the two Kent monitoring sites), there has been an average rise of 3.9 millimetres per year in the last nine years[14].

Useful facts

- Across the globe the sea level can vary by as much as 2 metres. Where there is warm, less dense water, sea levels will be higher than colder, denser water and ocean currents cause inequalities[16].
- After the last ice-age 21,000 years ago, the sea level rose by about 120 metres to its current level. As a result the English Channel was formed and the Isle of Wight was cut off from the mainland[17].
- If all the ice in the ice caps were to melt the sea would rise by up to another 70 metres[11].



Sea levels at Sheerness, Kent



Sea levels at Dover, Kent and Lowestoft, Suffolk

Useful links and references

References

1. UK Climate Impact Programme (2010). Data provider
2. Communities and Local Government (2009)
3. Improvement and Development Agency for local Government (2009)
4. Department for Environment, Food and Rural Affairs (2009)
5. Stockholm Environmental Institute (2009)
6. Department of Energy and Climate Change (2009). Carbon Valuation in UK Policy Appraisal: A revised approach. Climate Change Economics, Annex 4
7. Centre for International Climate and Environmental Research in Oslo (2008)
8. Environment Agency (2009)
9. Department of Energy and Climate Change (2009)
10. Department of Energy and Climate Change (2009). The UK Low Carbon Transition Plan
11. Intergovernmental Panel on Climate Change (2007). 4th Assessment Report
12. The Met Office (2009)
13. Regional Partnership Board (2009)
14. Proudman Oceanographic Laboratory (2009)
15. Climate Research Unit (2000). Information Sheet 10
16. Nasa (1992)
17. Intergovernmental Panel on Climate Change (2001). 3rd Assessment Report

Useful links

- UKCIP – for advice and guidance on what you can do to adapt to a changing climate. (http://www.ukcip.org.uk/)
- Climate South East – the main local source of help with acting on the impacts of climate change (http://www.climatesoutheast.org.uk/)
- Defra – The UK climate projections (UKCP09) provide information on how the UK's climate is likely to change in the 21st century, as it responds to rising levels of greenhouse gases in the atmosphere. (http://ukclimateprojections.defra.gov.uk/)
- Energy Saving Trust – for advice on how you can reduce your energy use and greenhouse gas emissions. (http://www.est.org.uk/)
- http://sei-international.org/index.php/news-and-media/1276-carbon-dioxide-emissions-associated-with-uk-consumption-increase
- IPCC fourth assessment report - http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf
- IPCC third assessment report - http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm#1
- Climate Research Unit, Information Sheet 15, 2008http://www.metoffice.gov.uk/climate/uk/so/
- http://www.cru. Climate Research Unit, Information Sheet 15, 2008uea.ac.uk/cru/info/ukrainfall/
- http://sealevel.jpl.nasa.gov/gallery/science.html

Flood risk

Flood risk in the South East is increasing due to development pressures, climate change and coastal erosion. With 1,250 kilometres of coastline, 3,540 kilometres of main river and almost 900,000 properties already at risk from some form of flooding in the region, the impacts of flood risk presents a major challenge to safe and sustainable growth across the region.

Key message 1: There are almost 900,000 properties in the South East at risk of one or more forms of flooding.

Key message 2: The South East has over 403,000 properties at risk of flooding from rivers and the sea[1]. However, only 31% of these have a significant likelihood of flooding.

Key message 3: 52% homes and businesses at risk of river and sea flooding in the South East will receive free flood warnings.

INDICATOR 1 – Number of properties at risk of/susceptible to flooding

Indicator – at a glance

- There are almost 900,000 properties at risk of one or more forms of flooding in the South East. There is an overlap in the numbers of properties at risk from (a) surface water flooding and (b) flooding from rivers and the sea and, consequently, the total number quoted above is less than when the two categories are added together.
- Using the National Flood Risk Assessment, the South East has the 3rd highest number of properties at risk of flooding from rivers and the sea, compared to all regions in England.
- It has been estimated that 668,900 properties in the South East are at risk from surface water flooding.
- This means that as of 2009, 25% of all properties in the South East are at risk of flooding from one source or another (based upon housing stock numbers given by CLG, 2007).

Background

- Natural flooding occurs when there is heavy rainfall that fills rivers and streams above their normal capacity, or if there are very high river or coastal tides that cause levels to rise or surge. Other forms of flooding may occur from poor drainage.
- Flooding can also occur from surface water, when the ground, rivers and drains cannot absorb heavy rainfall, particularly if land is saturated, river flows are already high or drains become blocked and unable to cope with excess water.
- Floods can happen anywhere at anytime, caused by rising ground water levels, burst water mains, run-off from sudden and intense rain and even rapid snow melt.
- Over the next 2 years, maps will be published to show those areas of the coast at risk of coastal erosion. Coastal erosion renders these areas to higher risks of flooding.
- Data used in this section are from the Environment Agency.

Trends

- In the South East there are just over 403,000 properties (domestic and commercial) at risk of flooding from the river or sea[1]. This is the 3rd highest regional total in England.
- Of these, 31% have a significant likelihood of flooding. The remaining 69% have a moderate or low likelihood of flooding[1].
- 52% are currently registered to receive some form of warning – either our own Floodline Warnings Direct system, or other media[1].
- Differences in the number of properties at risk of flooding can vary from one year to the next due to changes in the methods used to calculate and map these numbers.
- In response to the Pitt Review, 11 authorities in SE England received money to tackle surface water flooding. The money amounted to just over £1.7million[2].

Useful facts

- There are 1,250 kilometres of coastline and 3,540 kilometres of main river in the South East and, therefore, to achieve long-term economic prosperity, decision makers need to consider flood and coastal risk in their plans, strategies and decisions.
- In 2010 the Environment Agency will move towards an 'op-out' system for warning people. This means that they will automatically be warned when their property is at risk of flooding, unless they choose to op-out of this warning.
- During 2008 4% of new houses were built on areas of high flood risk in the South East, a decline from 9% in 2003. This is lower than the England average of 9% in 2008[3].

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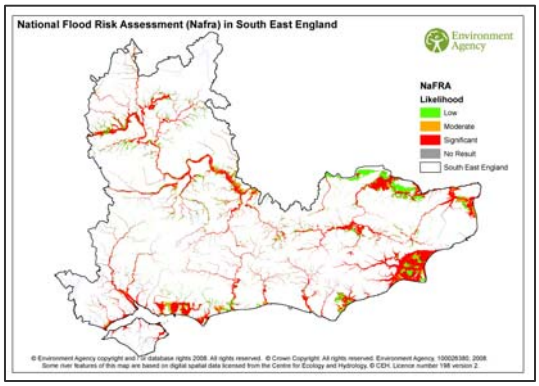


National Flood Risk Assessment in the South East

INDICATOR 2 – Houses protected from flooding

Indicator – at a glance

- During 2008/09, an additional 2,700 properties have been protected from flooding, giving a total of 17,000 over the last 6 years.

Background

- Flood defences are built and maintained by the EA to help protect households and business from flooding.
- The Environment Agency's response to flood risk takes account of the predicted impacts of climate change.
- Data used in this section are from the Environment Agency.

Trends

- In the South East during 2008/09, £12 million have been spent on flood defences[4].
- In the South East during 2008/09, 2,700 additional properties (domestic and commercial) have been protected from flooding. This gives a total of over 17,000 properties protected during the last 6 years[4].
- It is anticipated that in the next two years a further 2,670 properties will be protected[4].

Useful facts

- On average, every £1 currently invested in new and improved flood risk management assets reduces the long-term cost of flooding and coastal erosion damages by around £8.
- New and improved flood defences mean that the householders and businesses protected by them are gaining a financial benefit over the long-term of about £20,000 on average for each household provided with additional protection.
- Annual damage from flooding in the South East in the 2080s could reach £4 billion per year.
- Repairing a house after a flood can cost between £10,000 and £50,000 depending upon the flood depth.

- The costs of applying resistance measures such as waterproof doors, windows and airbricks can range from £3,000 to £10,000 for a whole house. This is likely to pay for itself after a single flood.

Useful links and references

References

1. Environment Agency (2009). National flood risk assessment
2. Cabinet Office (2008). Learning lessons from the 2007 floods, an independent review by Sir Michael Pitt (commonly referred to as 'the Pitt Review')
3. Communities and Local Government (2009)
4. Environment Agency (2009). Long term investment strategy

Useful links

- www.environment-agency.gov.uk, search for flood
- www.floodforum.org.uk
- www.abi.org.uk, search for flood
- www.defra.gov.uk/environment/flooding

Water resources

In the South East, water is a scarce and often over-committed resource. The pressures on water resources and the water environment mean that careful planning is essential to ensure there will be enough water for people and the environment in future.

Key message 1: In 2008/09, each person used, on average, 156 litres per day. This needs to reduce to 130 litres per day, to ensure that there is enough water for people and the environment in the future.

Key message 2: Metered households use less water. In the last five years, the proportion of metered households has increased from 22% to 30%. Water companies in the South East are planning to meter 78% of households by 2020.

Key message 3: 660,000 new homes are planned to be built by 2026. Population growth and climate change will add to the increasing pressures on water resources in the South East. By 2050 the flows in some of our rivers (as measured by the "Q95 flow" statistic) could reduce by at least 35%.

INDICATOR 1 - Supply and demand

Indicator – at a glance

- The supply-demand balance for the South East has improved since last year, meaning that there are now fewer areas with insufficient water available to meet high demands in dry years.

Background

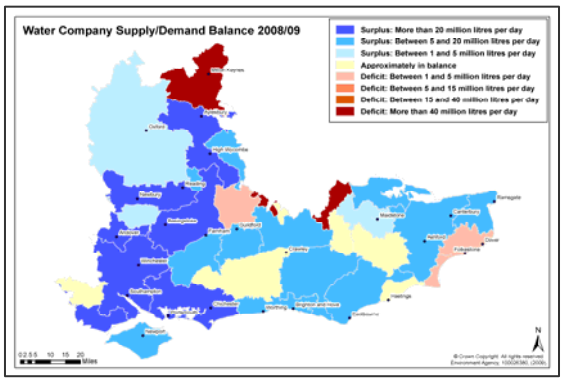
- All water companies have a statutory duty to prepare and maintain a water resources management plan (WRMP) to show how the water company intends to maintain the balance between supply and demand for water over the next 25 years. All parties involved in these plans (Environment Agency, Defra and Ofwat) must ensure that they are sustainable and cost effective.
- The supply-demand balance looks at how much water supply is available compared to forecast demand without restrictions during a dry year, over the planning period, for a particular area (water resource zone). This identifies years that may have a supply-demand deficit in the future.
- The Environment Agency reviews all water companies' water resources management plans and works with the companies to develop solutions to any predicted deficits in supply.
- Data used in this section are from the Water Company annual review June returns and the Water Company's water resource management plans[1,2].

Trends

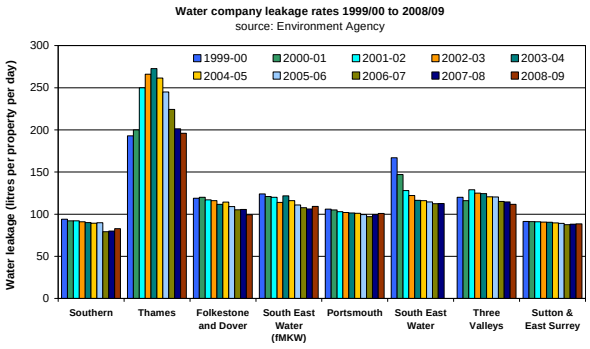
- The supply-demand balance for the South East has improved since last year, meaning that there are fewer areas with insufficient water available to meet high demands in a dry year. As a consequence, customer supply restrictions will be required less often[1,2].
- The improvement in the supply-demand situation is due to a number of small supply schemes introduced by the water companies nationally, such as upgrading boreholes[1,2].

Useful facts

- Leakage levels in the South East have declined. In 1999/00 the total leakage reported by water companies in the South East was 522 million litres per day compared with 507 million litres per day in 2008/09.
- Leakage per property in 2008/09 varied from between 83 to 196 litres per property per day by water companies across the South East, compared to a water industry average of 135 litres per property per day.



Dry year supply demand balance 2008/09



Water company leakage trends

INDICATOR 2 – Household water use – per capita consumption

Indicator – at a glance

- In 2008/09, the average actual per person water consumption in the South East was 156 litres per person per day. This needs to reduce to 135 litres per day by 2016 to meet the Regional Economic Strategy target, en route to the Government aspiration of 130 litres per person per day by 2030[2,3].
- People living in metered households tend, on average, to consume less than people in un-metered households. In 2008/09 they consumed 23 litres per person per day less.

Background

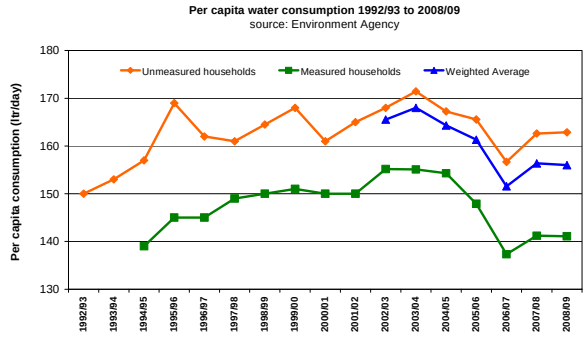
- Household water use is measured as per capita consumption (pcc) - the amount of household water used per person - this is normally expressed in litres per person per day.
- Water companies need to know how much water people use now and predict how much they will use in the future, so they can ensure they can meet or manage this demand for water.
- Per capita consumption is used by the water companies in their Water Resource Management Plans - these show how each company plans to maintain a balance between demand for water and their supply over the next 25 years.
- Water companies report on progress in implementing their plans to maintain a supply-demand balance, to their regulators OFWAT and the Environment Agency, in June each year.
- Data used in this section are from Water Company annual review June returns[1,2].

Trends

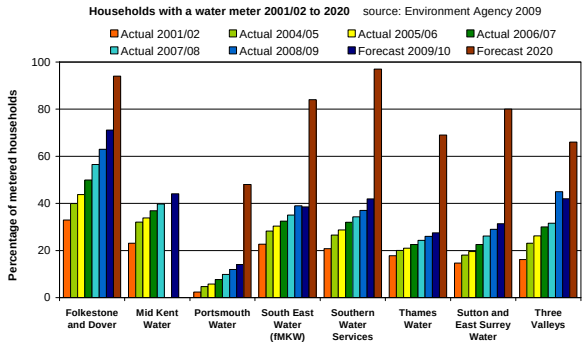
- In 2008/09 in the South East the average actual water consumption was 156 litres per person per day[1,2].
- There was a small reduction in average pcc from 2007/08 to 2008/09 which is consistent with the downward trend observed in the last five years[1,2].
- The average actual pcc is 6% (10 litres per person per day) less than in 2002/03
- On average in 2008/09, measured households consumed 141 litres per person per day, whilst unmeasured households consumed 163 litres per person per day[1,2].

Useful facts

- The proportion of households in the South East with a water meter has increased from 28% in 2007/08 to 30% in 2008/09. This can be compared with 2004/05, when only 22% of all households had a meter[1,2].
- It is forecast that by 2020, 78% of all households in the South East will have a water meter[1,2].



Per person water consumption 1992/93 to 2008/09



Percentage of metered households

(Please note: Data based on Water Company draft water resources management plans. Some figures may change slightly).

INDICATOR 3 – River flows and groundwater levels

Indicator – at a glance

- During the winter of 2008/09, most river levels in the South East were within normal ranges or higher.
- However during the summer of 2009, most river levels were below long term average flows.
- During the winter of 2008/09, most groundwater levels in the South East were within normal ranges or higher.
- However during summer 2009, the South East experienced groundwater levels that were below average for at least half of the period.

Background

- Rivers are an important resource in the South East. Not only do they provide habitats for numerous animal species, they also are an important water resource for public water supply and other abstractors.
- Groundwater is the most important source of water in the South East, providing around 75% of public drinking water supply. It also feeds the Region's nationally important chalk streams and supports many protected wetland habitats. Groundwater is under pressure from pollutants such as nitrates, solvents, pesticides and hydrocarbons
- Data used in this section are from the Environment Agency[1].

Trends

River flows:

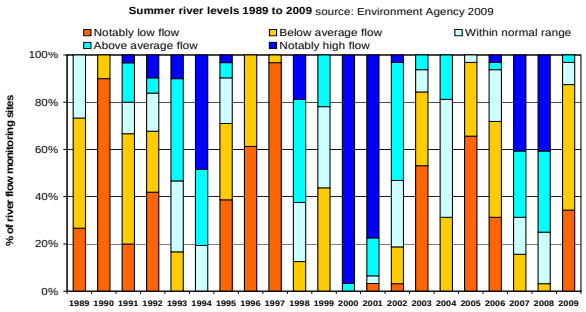
- During the summer of 2009, river levels were mainly below average or worse (87.5%), and only 12.5% of the period saw levels within normal ranges or higher[1] when compared to long term average (time period) flows[1].
- During most of the winter of 2008/09, river levels were mainly within normal ranges or higher (93%). Only 7% of the period saw below average levels[1].

Groundwater:

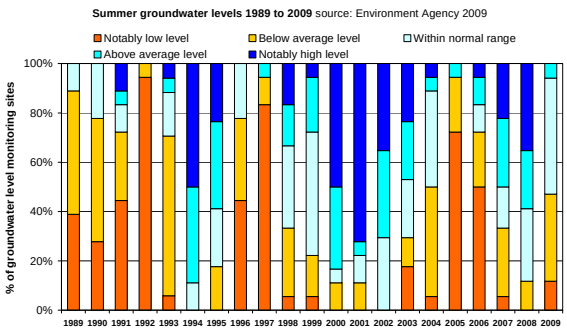
- During the summer of 2009, groundwater levels were within normal ranges or higher approximately half the time, and below average or worse for the remainder of the time[1].
- During the winter of 2008/09, groundwater levels were mainly within normal ranges or higher (94%)[1].

Useful facts

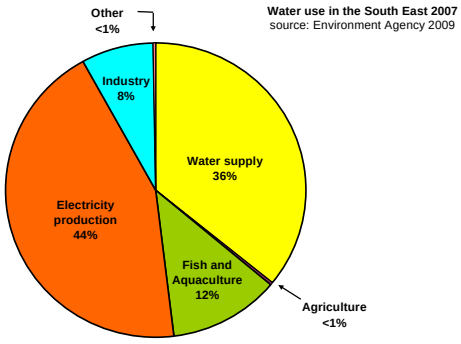
- In 2007 in the South East, 4,162 billion litres of water were abstracted from the environment. This was a 5% reduction compared with 2006.[1]
- Of the quantity abstracted in 2007, 36% abstracted was for public water supply and 44% supplied the electricity industry[1].



Summer river flow levels



Summer groundwater levels



Water use in the South East 2007

Useful links and references

References

1. Environment Agency (2009)
2. Water company draft water resources management plans (2009)
3. Environment Agency (2009). Water for people and the environment – Water Resources Strategy

Useful links

- Ofwat - http://www.ofwat.gov.uk/
- Folkstone and Dover Water - http://southeast.veoliawater.co.uk/
- Portsmouth Water - www.portsmouthwater.co.uk/
- South East Water (formally MKW) - http://www.southeastwater.co.uk/
- Southern Water - http://www.southernwater.co.uk/
- Thames Water - http://www.thameswater.co.uk/
- Sutton and East Surrey Water - http://www.waterplc.com/
- Three Valleys Water - https://central.veoliawater.co.uk/

Waste

The South East is moving towards diverting waste from landfill to be reused and recovered. Significant progress has already been made in reducing the proportion of household waste going to landfill. Initiatives such as Pathway to Zero Waste, Tackling Waste Crime in the South East and waste planning authority strategies are now putting the emphasis on construction, demolition and excavation waste and commercial and industrial waste in line with the Governments 2007 waste strategy.

Key message 1: **In 2008, the region landfilled 11.6 million tonnes of waste and the South East sends more waste to landfill than any other region in the UK.**

Key message 2: There has been a consistent improvement in the amount of household recycling across the region. Local Authorities currently recycle 1.6 million tonnes (39%) of municipal waste in 2008/09. There is a Government target of achieving 40% of municipal waste recycled by 2010.

Key message 3: Fly-tipping is on the increase in the South East. 2008/09 saw 579 'big' (significant/multi loads) and 575 'nasty' (chemical drums, oil, fuel) incidents. Total costs to clear all fly-tipping incidents in the South East in 2008/09 was £4.5 million.

INDICATOR 1 – Household recycling

Indicator – at a glance

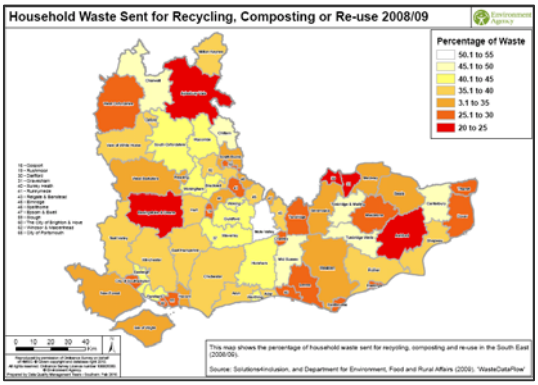
- Between 2000/01 and 2008/09 the proportion of total household waste that was recycled more than doubled.
- Between 2000/01 and 2008/09 household recycling increased by 127%.
- But between 2007/08 and 2008/09 household recycling only increased by 1.5%.

Background

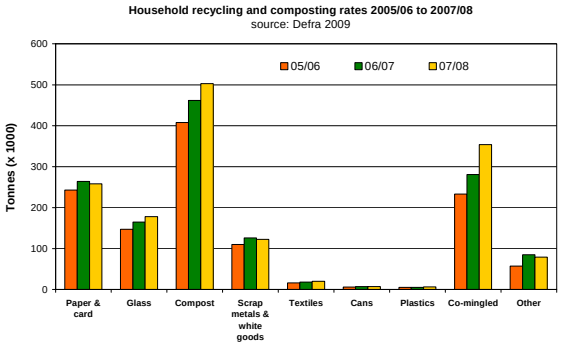
- Landfill space is running out and as a result, it is important that we reduce our waste production and increase our recycling rates.
- Data used in this section are those supplied by local authorities into the 'WasteDataFlow' database which is managed by Defra[1].

Trends

- In the South East there was a reduction of 5% in the total amount of household waste collected by local authorities between 2007/08 and 2008/09[1].
- Between 2000/01 and 2008/09 the proportion of total household waste that was recycled more than doubled, from 16.4% to 38.4%. This is higher than the England average of 37.6%[1].
- The increase in household recycling in the South East was 127% between 2000/01 and 2008/09[1].
- Between 2007/08 and 2008/09 there was only an increase in household recycling of 1.5%[1].



Household waste sent for recycling, composting and re-use



Recycling and composting by waste type

INDICATOR 2 – Landfill capacity

Indicator – at a glance

- During 2008 there were 106 million cubic metres of landfill space in the South East still available for use.
- If the current levels of waste going to landfill persist then the existing available capacity is estimated to be sufficient for 7 years.

Background

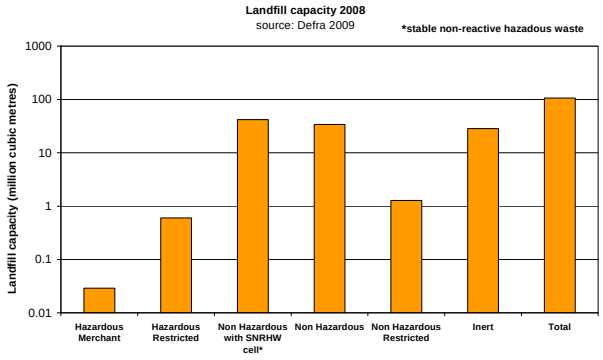
- This indicator looks at how much space is still remaining in landfill sites in the South East, to receive waste.
- Landfill sites in the South East receive waste that originates from other regions, particularly from London. Therefore landfill capacity in the South East is particularly important.
- Landfill sites may be divided into 3 main categories depending on the waste they receive: inert (soil, rubble etc), non-hazardous (municipal waste) and hazardous (asbestos).
- Data used in this section were collected by the Environment Agency from the site returns of permitted waste facilities[2].

Trends

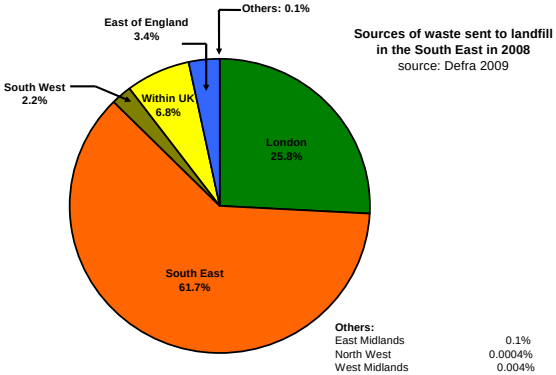
- In the South East in 2008, there were 106.3 million cubic metres of landfill still available for use. This has declined since 2001, when there was approximately 127.8 million cubic metres[2].
- In the South East there is approximately 28 million cubic metres of inert landfill capacity, 76 million cubic metres of non-hazardous and 0.6 million cubic metres of hazardous[2].
- The quantity of total waste (including municipal waste) being deposited in landfill sites in the South East increased from 11.5 to 11.6 million tonnes between 2007 and 2008[2].

Useful facts

- 45% (5.3 million tonnes) of the waste that went to landfill in 2008 was construction, demolition and excavation waste, 37% (4.3 million tonnes) was commercial and industrial, 16% (2 million tonnes) municipal[2].
- Less than 1% (65,000 tonnes) of waste going to landfill in the South East was classified as hazardous[2].
- There is a government target to reduce construction and demolition waste going to landfill by 50% by 2012[2].
- Landfill tax is increasing which means the cost of sending waste to landfill will increase from £40 in 2009 to £48 in 2010, and a further £8 per tonne every year until at least 2012/13.
- A major initiative to reduce waste to landfill is the Pathway to Zero Waste programme. This is a three-year partnership programme which was launched in March 2009, the founding partners being WRAP, SEEDA and the Environment Agency, to show the way to divert construction and demolition, food and wood waste, from landfill so that waste is regarded as a valuable commodity[3].



Landfill capacity 2008



Origins of waste deposited in landfill sites in the South East 2008

INDICATOR 3 – Municipal waste arisings and disposal

Indicator – at a glance

- The amount of municipal waste going to landfill reduced from 51% in 2007/08 to 46% in 2008/09.
- In 2008/09, 663 thousand tonnes of waste were incinerated and used to produce energy, a 113 thousand tonnes increase from 2007/08.

Background

- Data are reported by financial year (1 April–31 March), the most recent available being 2008/09.
- Municipal waste is all waste collected by the local authorities. In the South East 93% of municipal waste is made up of household waste.
- Data used in this section are those supplied by Local Authorities into a database called 'WasteDataFlow', managed by Defra[1].

Trends

Waste arisings:

- In the South East there was a 5% reduction in the total amount of municipal waste collected between 2007/08 and 2008/09, from 4.6 million tonnes to 4.3 million tonnes[1].
- Regular household waste collection made up 43% (or 1.9 million tonnes) of the total municipal waste in 2008/09, a reduction of 1% from 2007/08, and a 15% reduction from 2000/01, when it made up 58% of the municipal waste[1].

Waste disposal:

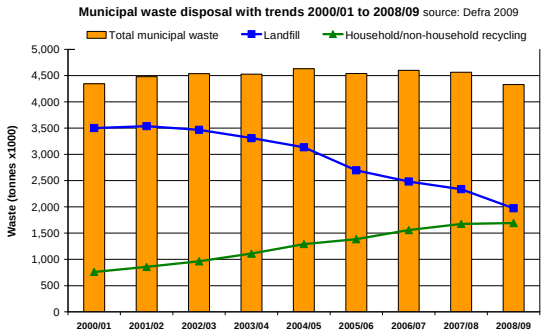
- The amount of municipal waste going to landfill reduced from 51% in 2007/08 to 46% in 2008/09. This equates to sending just under 2 million tonnes of municipal waste to landfill in 2008/09[1].
- There has been a significant reduction in the amount of municipal waste sent to landfill in the South East, since 2000/01 when 81% was disposed of in this way[1].
- Municipal waste to landfill in the South East was lower than the England average, but still almost half of all municipal waste produced[1].
- In the South East 39% (1.7 million tonnes) of our municipal waste was recycled or composted in 2008/09, an increase of 3% from 36% in the previous year[1].
- In 2008/09, 663 thousand tonnes of waste were incinerated and used to produce energy, a 113 thousand tonne increase from 2007/08. This is 15% of all municipal waste, and an increase of 3% on 2007/08[1].

Useful facts

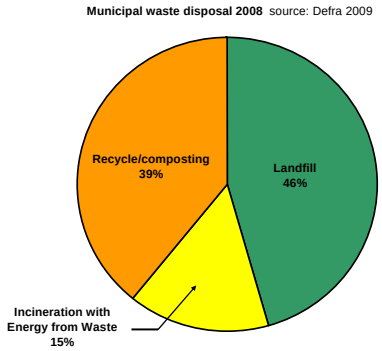
- The local authorities have a target to reduce the amount of biodegradable municipal waste (BMW) that they send to landfill to 35% of the 1995 value by 2020.
- The reduction in the amount of BMW landfilled is monitored by the Landfill Allowances and Trading Scheme (LATS).

Fly-tipping:

- Fly-tipping is the illegal dumping of waste. It can vary in scale significantly from a bin bag of rubbish to large quantities of waste dumped from trucks. Fly-tipped waste may be found anywhere, such as roadsides, in lay-bys or on private land[2].
- A wide variety of wastes are fly-tipped. These can include black bags, large domestic items, such as fridges and mattresses, garden refuse, tyres and clinical waste. Large amounts of waste from construction, demolition and excavation activities are sometimes dumped[2].
- In 2008/09, in the South East there were 579 ‘big’ (significant/multi loads) and 575 ‘nasty’ (chemical drums, oil, fuel) fly-tipping incidents. The total cost to clear all the fly-tipping incidence in the South East was over £4.5 million. Of this amount, the cost to clear the ‘big’ incidents was £234,000[2].
- Of the District and Borough Councils, Medway had the largest number of ‘big’ incidents (109), and Basingstoke and Deane Borough Council had the largest number of ‘nasty’ incidents (51)[2].
- Although some authorities had either/both types of fly-tipping incidents, only East Sussex County Council, Gosport Borough Council, Slough Borough Council and Woking Borough Council reported neither[2].



Total municipal waste with trends showing quantities going to landfill and recycling



Municipal waste disposal 2008/09

Useful links and references

References

1. Department for Environment, Food and Rural Affairs (2009). 'WasteDataFlow'
2. Environment Agency (2008)
3. Waste and Resources Action Programme, South East England Development Agency and the Environment Agency (2009)

Useful links

- WRAP - http://www.wrap.org.uk/
- SEEDA - http://www.seeda.co.uk/pathwaytozerowaste/

Water quality

The quality of the water environment in the South East has dramatically improved over the last 10 years. The condition of our water bodies means that they are able to support a diverse range of animal and plant species, supply the region with its drinking water and support a range of recreational and leisure activities.

New and tougher water quality standards have recently been introduced through the European Water Framework Directive which, whilst challenging, will encourage further improvements to the quality of the region's rivers, lakes, coastal and ground waters over the next 18 years.

Key message 1 The Water Framework Directive classification looks at the whole water environment including wetland features, habitats and wildlife. 21% of our surface water bodies are currently classified as 'good ecological status' and 26% of our groundwater bodies have 'good status'.

Key message 2 75% of our drinking water comes from underground aquifers. These groundwaters are under increasing threat from increasing demand and pollutants such as nitrates, pesticides, solvents and hydrocarbons.

Key message 3 The number of serious water pollution incidents has fallen over the last 5 years from 102 to 48 per year.

Key message 4 New development within the region will put increased pressure on river and coastal habitats as both household water demand, and the amount of effluent discharged back into the water bodies, increases.

INDICATOR 1 – Water Framework Directive (WFD)

Indicator – at a glance

Background

- The Water Framework Directive (WFD) covers the whole of Europe and uses a new approach to measure water quality.
- Under the Water Framework Directive, waters are classified by status which has an ecological and a chemical component for surface waters. Good ecological status is measured on the scale high, good, moderate, poor and bad. Chemical status is measured as good or fail. Groundwater status has a chemical and a quantitative component
- Instead of concentrating solely on the chemical quality of water as we have done in the past, it takes into account ecological quality - that is the whole water environment including wetland features, habitats and wildlife.
- Our aim is to achieve 'good status' in all water bodies by 2015. Where there are reasons why it is not actually possible to achieve the target by 2015, we can extend the deadline to 2021 or 2027
- Data used in this section are from the Environment Agency and are based on WFD classification[1].

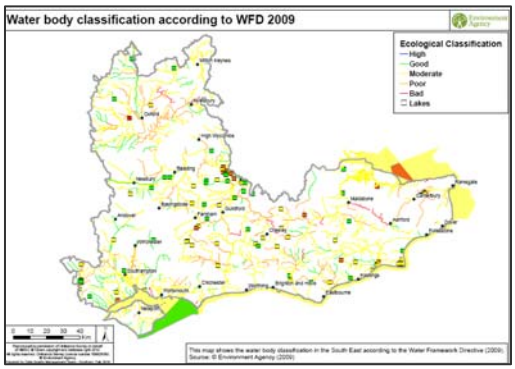
Trends

- The current Water Framework Directive classification in the South East shows that there are:
  - 21% of surface water bodies at good ecological status[1].
  - 63% of surface water bodies at moderate ecological status[1].
  - 15% surface water bodies at poor ecological status[1].
  - 2% of surface water bodies at bad ecological status[1].

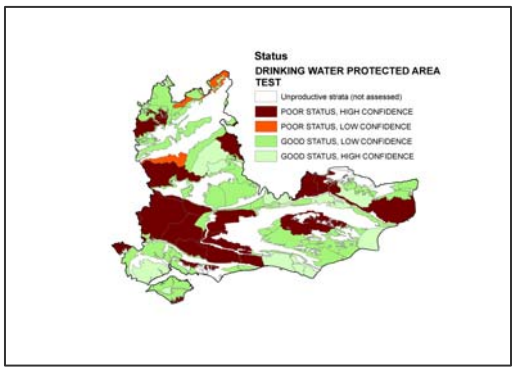
- Concentrations of nitrate in many areas, such as the Test Groundwater Body, are increasing due to the application of fertilizer and organic manure to farmland. Here, levels of nitrate are predicted to exceed the Drinking Water Limit in the near future unless decisive action is taken, which is essential to prevent deterioration[1].
- The Water Framework Directive Drinking Water Protected Area (DrWPA) test investigates contaminant concentrations recorded over a period of time. By identifying significant upward trends that are predicted to exceed an agreed value by 2015, we can focus our work and the efforts of other stakeholders where it is most needed[1].
- Although nitrate is currently the cause of poor chemical status in only a few groundwater bodies, it is likely to be responsible for the majority of predicted failures by 2015[1].

Useful facts

- Any contaminating substance that is capable of entering the ground has the potential to damage groundwater. And once groundwater is polluted it is difficult, if not impossible, to clean up again.
- Farming is not the only activity releasing nitrates - other important sources include treated sewage discharge, leaking mains sewers and old dilute & disperse landfill sites.



Water body classification according to WFD 2009



Status of groundwater in the South East, in relation to drinking water, as predicted for 2015 under the new DrWPA test

INDICATOR 2 – Water and Growth

Indicator – at a glance

- There are 607 sewage works in the South East, discharging approximately 13 billion litres per day of treated effluent into our rivers and seas[1].
- Over the last five years, over £600 million has been spent by the Water Companies in the South East to ensure that our environmental waters are of adequate quality for their intended use which includes drinking water, fishing and recreation[1].

Background

- The South East Plan has calculated that an additional 32,000 houses will be required in the South East per year for the next 15 years to accommodate our increasing population.
- Significant volumes of treated sewage effluent already discharge into our rivers and coastal waters. The increasing number of houses will put additional strain on this system and, in places, sewage is already treated to the best standards that current technology can achieve.
- Each year, four billion litres of water is abstracted from our rivers and groundwater. This increasing demand, coupled with the impact of our changing climate and increased sewage effluent volumes, will put our environment under additional pressure.
- Data used in this section are from the Environment Agency and Water Companies.

Trends

- River water quality has improved significantly over that the past two decades as sewage effluent quality has been improved and heavy industry has declined across the Region[1].
- Bathing Water quality has improved and all of our bathing waters now regularly meet the required standards of the European Bathing Water Directive[1].
- Better treatment of discharges to estuaries have helped to ensure that they remain an important habitat for wildlife[1].

Useful facts

- Bathing Water quality has improved and all of our bathing waters now regularly meet the required standards of the European Bathing water Directive.
- Bathing Water quality at our 83 designated beaches has generally been good over recent years, with all our beaches meeting the mandatory standard and 77% passing the higher 'guideline' standard for water quality. However, more work is needed, as a new Bathing Water Directive will be introduced between 2008 and 2015 setting more stringent standards which we will be required to meet[1].

INDICATOR 3 – Serious water pollution incidents

Indicator – at a glance

- Between 2007 and 2008, there was a 17% reduction in serious water pollution incidents in the South East.

Background

- The environmental impact of pollution incidents is rated from Category 1 to 4:
  - Category 1 represents a persistent, extensive, major impact on the environment[1].
  - Category 2 represents significant damage to the aquatic ecosystem[1].
  - Category 3 represents minor damage to water quality and ecosystems[1].
  - Category 4 represents no impact[1].
- Categories 1 and 2 are being reported below and together are classified as 'serious water pollution incidents'.
- Data for this indicator are taken from the Environment Agency's National Incident Recording System (NIRS)[1].

Trends

- In 2008, there were 48 serious water pollution incidents, 10 fewer than in 2007 and 54 fewer than 5 years ago. The most serious pollution incidents are due to the release of crude or untreated effluent[1].
- Between 2007 and 2008, there was a 17% reduction in serious water pollution incidents in the South East[1].
- Pollution by solvents and hydrocarbons continue to affect groundwater quality in some parts of the region[1].

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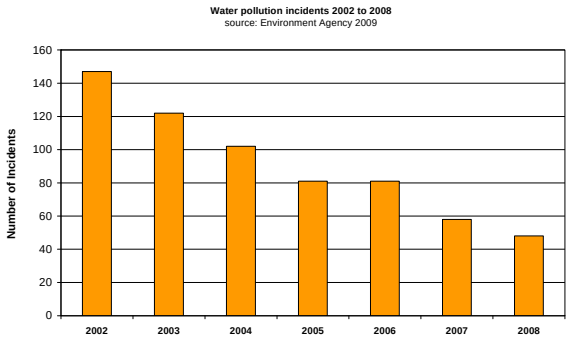


Serious water pollution incidents in the South East

References

References

1. Environment Agency (2009)

Land

The quality of our environment is defined to a great extent by our relationship with land. Improvements to urban and rural land management offer scope to enhance wildlife habitat, water quality and our ability to adapt to climate change.

Key message 1: The way the land is managed can affect the quality of soils and our water environment, and action is required to improve land management practices in order to meet the requirements of the Water Framework Directive.

Key message 2: The number of serious land pollution incidents has been declining annually since 2002 and there were 35% fewer incidents in 2008 than in 2007.

INDICATOR 1 - Agriculture

Indicator – at a glance

- Between 2007 and 2008, there was a reduction of 17,500 hectares of land under agri-environmental schemes in the South East.
- There was a small increase in the area of land sprayed with pesticides in 2007 compared with 2006 in the South East.
- There was, however, a 5.2% reduction in the actual amount of pesticide sprayed in the region during that year.

Background

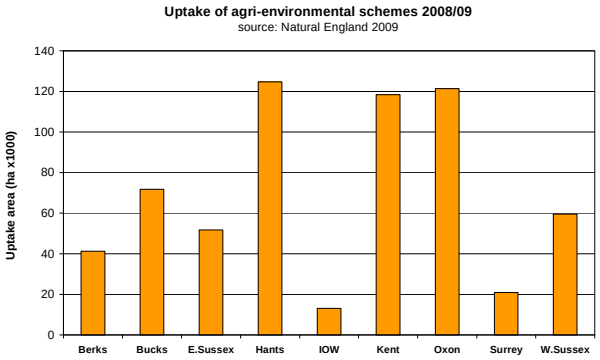
- In 2008, 60% (1.2 million hectares) of the total land area of the South East was categorised as farmland.
- The way that agricultural land is managed can affect the quality of the soil and the amount of diffuse pollution (runoff from the land) that runs into our watercourses.
- Diffuse pollution from agriculture consists mainly of nutrients (nitrate and phosphate), pesticides and sediments.
- The Catchment Sensitive Farming programme works with farmers to help them reduce diffuse pollution and improve the quality of our rivers in designated catchments.
- Environmental Stewardship is an incentive scheme that helps farmers to achieve environmental improvements on their land.
- Data in this section are from Natural England[1], the Environment Agency[2] and the Food and Environment Research Agency[3].

Trends

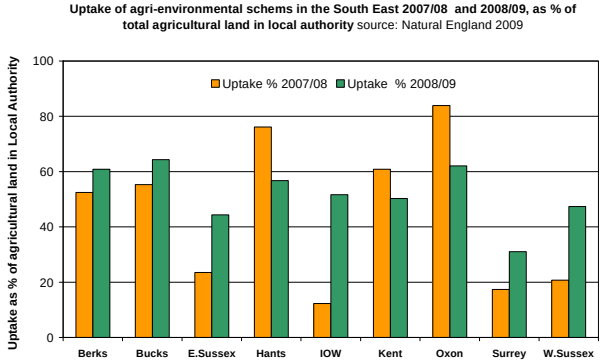
- Environmental Stewardship schemes cover a specific period of time and many of the current schemes are due to end in the next couple of years. This means that if these schemes are not renewed, there may be a negative impact on land and water quality as well as on biodiversity.
- Catchment sensitive farming scheme priority areas in the South East cover 528,600 hectares, which is 27% of the total area of land and 45% of agricultural land in the region[1].
- In the South East in the 2008/09, there were 622,765 hectares of land under agri-environmental schemes. This was a 17,500 hectares reduction from 2007/08[1].
- In the South East in 2009, Nitrate Vulnerable Zones cover 1,409,700 hectare of land[2].
- In the South East in 2007, there was a 0.11 million hectares (1.5%) increase in the area of land sprayed with pesticide, compared with 2006. There was, however, a decrease of 120 tonnes (5.2%) in the quantity of pesticide used during the year[3].

Useful facts

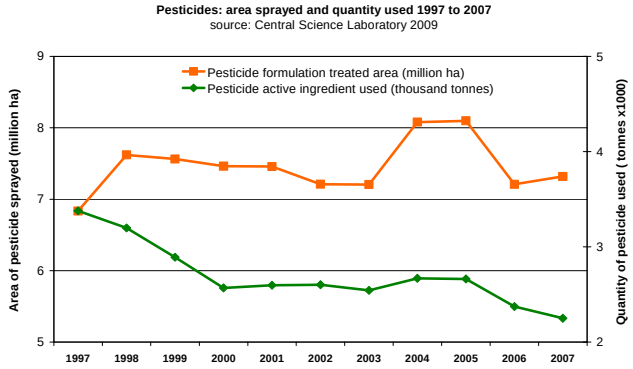
- In 2009 the government launched its soil strategy which aims to protect soils and encourage better management of soils.
- The Downs & Harbour Clean Water Partnership was launched in 2009 to tackle diffuse water pollution in ground, surface and coastal waters. The project area runs from Southampton in the west to Bognor Regis in the east[4].



Uptake of land under agri-environmental schemes for local authorities in 2008/09



Uptake of land under agri-environmental schemes as a percentage of total agricultural land 2007/08 to 2008/09



Area of pesticide treated and quantity of pesticide used 2007

INDICATOR 2 – Regeneration of previously developed land

Indicator – at a glance

- In 2008, 76% of new dwellings built in the South East were constructed on previously developed (brownfield) land.
- In 2008, the average density of new dwelling in the South East was 36 dwellings per hectare.

- In 2008, 4% of new dwellings in the South East were constructed in areas of high flood risk.
- In 2007, there were 4,590 hectares of previous developed land in the South East suitable for housing.

Background

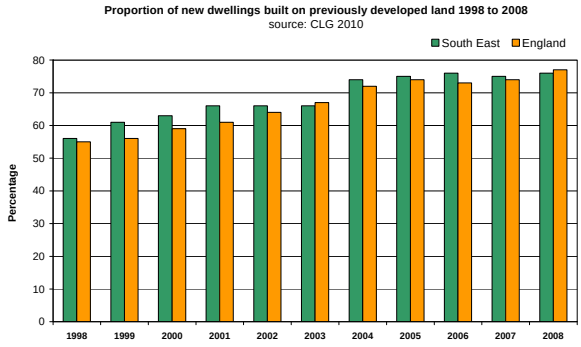
- Previously developed land includes land that is vacant or derelict, and also land currently in use which has the potential for re-development. It may or may not be contaminated.
- This land can be reclaimed and re-used to benefit the local environment and community.
- Re-generation of previously developed land reduces the pressure on greenbelt land as it provides a location for urban growth.
- The data in this section on new homes on previously developed land, density of new homes and new development on flood risk areas are from Communities and Local Government[5].

Trends

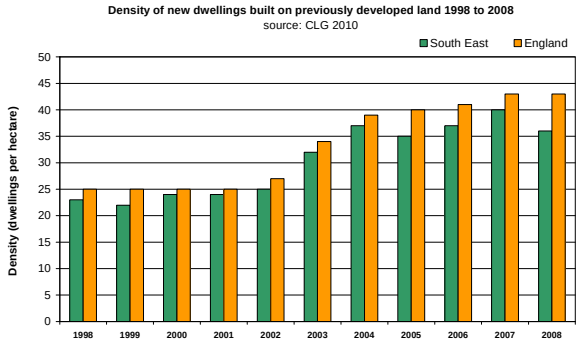
- In the South East in 2008, 76% of new dwellings were constructed on previously developed land. This was 3% less than the England average[5].
- This was a 1% increase from 2007, but a 20% increase from ten years previously, when only 56% of new homes were constructed on these brownfield lands[5].
- In the South East in 2008, the average density of new dwellings (all land types) was 36 dwellings per hectare. This was 7 dwellings per ha less than the England average[5].
- The average density of new dwellings showed a 4 dwelling per hectare decrease from 2007, but an increase of 13 dwellings per hectare from ten years previously[5].
- Over the last 10 years, there has been a consistently higher density of houses per hectare constructed on previously developed land than on new land, both in the South East and in England[5].
- In the South East in 2008, 4% of new dwellings were constructed in areas of high flood risk. This was 5% less than the England average[5].
- The percentage of new dwellings constructed in areas of high flood risk in 2008 was 3% less than in 2007, and 5% less than ten years previously. The England average for this has remained constant over the previous ten years also[5].
- In the South East in 2007, there were 2,900 hectares of vacant and derelict land, and 6,090 hectares of previously developed land in use, both with the potential for re-development in the future[5].

Useful facts

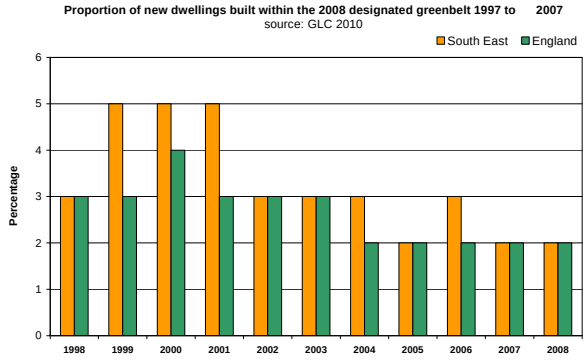
- In 2009, 92 parks and green spaces achieved the Green Flag Award across the South East, an increase from 75 in 2008[6].
- In the South East, green space covers 16,443 kilometres^2 (1.644 million hectares), which is 85% of the region's total area[7].
- The South East is also England's most wooded region and 57% of accessible natural green space is woodland[7].
- Greenbelt land is an area of open space that is used to control urban growth, and protect the countryside from urban sprawl[7].
- Protection of greenbelt land also assists urban regeneration by encouraging re-use of previously developed land[7].
- Greenbelt land promotes access to open spaces and recreation near urban areas, and secures habitats for a diverse range of species[7].
- 'Planning Policy Guidance 2: Green Belts' advises local authorities on Greenbelt policy and sets out the purposes and aims of greenbelt land.
- In the South East in 2008, 2% of new dwellings were constructed within the 2008 Designated Green Belt. This was the same as both the England average in 2008 and the regional number in 2007, and was 1% less than in 1998[5].
- During the ten year period (1998 to 2008) there was a peak of 5% of new dwellings constructed within the 2008 Designated Green Belt for three consecutive years (1999 and 2001)[5].
- In March 2009, there were 308,230 hectares of greenbelt in the South East[7].



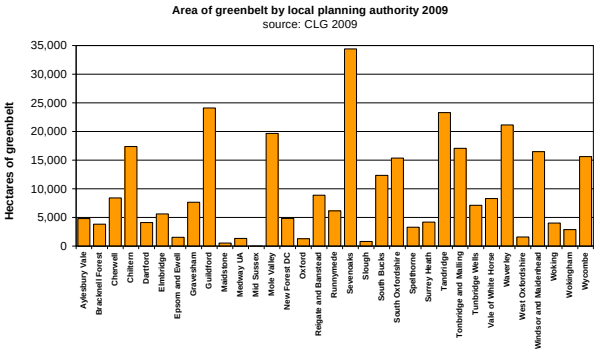
Proportion of new dwellings constructed on previously developed land 1998 to 2008



Density of new dwellings (all land types) 1998 to 2008



Proportion of new dwellings built within the 2008 designated greenbelt, 1998 to 2008



Greenbelt in the South East by planning authority (2009)

INDICATOR 3 – Serious land pollution incidents

Indicator – at a glance

- In the South East in 2008, there were 17 serious land pollution incidents, 9 fewer than in 2007 (a reduction of 35% and 15 fewer than 5 years ago (a reduction of 47%).

Background

- The environmental impact of pollution incidents is rated from Category 1 to 4:
  - Category 1 represents a persistent and extensive, contamination of land[2].
  - Category 2 represents significant contamination of land and damage to terrestrial ecosystems[2].
  - Category 3 represents minor contamination of land and damage to local ecosystems[2].
  - Category 4 represents no impact[2].
- Categories 1 and 2 are being reported below and together are classified as 'serious land pollution incidents',
- Data for this indicator are taken from the Environment Agency's National Incidents Recording System (NIRS)[2].

Trends

- In the South East in 2008, there were 17 serious land pollution incidents, 9 fewer than in 2007 (a reduction of 35% and 15 fewer than 5 years ago (a reduction of 47%)[2].

Useful links and references

References

1. Natural England (2009)
2. Environment Agency (2009)
3. Food and Environmental Research Agency (2009)
4. Natural England, Portsmouth Water and Environment Agency (2009)
5. Communities and Local Government (2010)
6. Green Flag award (2009)
7. South East AONBs Woodlands Programme, the Forestry Commission, and Natural England (2007). An analysis of accessible natural greenspace provision in the South East

Useful links – Environment Agency

- http://www.environment-agency.gov.uk/business/sectors/32767.aspx
- http://www.cleanwaterpartnership.co.uk

Useful links – Other

- http://www.defra.gov.uk/environment/quality/land/soil/index.htm
- http://www.defra.gov.uk/corporate/docs/forms/erdp/es/index.htm
- http://www.communities.gov.uk/corporate/

Air Quality

Pollution causing poor air quality and consequent ill health has long been a concern within the UK. A great range of airborne compounds released by human activities is known to effect human health. These range from combustion products, for example sulphur dioxide and oxides of nitrogen, to compounds specific to individual industrial processes. Poor air quality has negative affects on health and the environment.

Key message 1: In 2009 there were 44 Local Authorities in the South East with one or more Air Quality Management Areas. Five of these areas were declared in 2009.

Key message 2: The South East has an asthma emergency admission ratio of 20% below the national average overall, and a rate of 17% below the national average for children.

Key message 3: The South East has 5.2 million vehicles travelling a total of 54.2 billion miles every year and burning 6.1 million tonnes of fuel in the process.

INDICATOR 1 – Concentrations of pollutants

Indicator – at a glance

- Sulphur dioxide concentrations in the South East have been within the Air Quality Strategy Objective over the last ten years.
- Out of the air quality sites monitored in the South East, concentrations of nitrogen dioxide exceeded the Air Quality Strategy Objective only once at one site (Southampton).
- Particulate matter concentrations in the South East have been within the Air Quality Strategy Objective over the last ten years.

Background

- Generally air quality in the South East has improved over the last few years as we move away from heavy polluting industries.
- Traffic congestion is, however, responsible for increasing amounts of air pollutants nowadays.
- When considering air pollution and health, it is exposure that affects human health, rather than the actual level of emissions. High exposure may occur in areas where pollutants are poorly dispersed, such as narrow streets in urban areas, even though emissions are relatively low.
- Data used in this section are from The Air Quality Archives[1].

Trends

Sulphur dioxide:

- Out of the 5 air quality monitoring sites assessed in the South East over the last 10 years, the urban sites of Southampton and Reading, and the rural site of Rochester have reduced their concentrations the greatest[1].
- Rural sites at Lullington Heath and Harwell have remained more constant during the years[1].
- All sites have been below the Air Quality Strategy objective over the ten years[1].

Nitrogen dioxide:

- Out of the 5 air quality monitoring sites assessed in the South East over the last 10 years, the urban sites of Southampton and Reading have reduced their concentrations the greatest[1].
- Rochester, Lullington Heath and Harwell (rural sites) have remained more constant during the years[1].
- Both Southampton and Reading exceeded the Air Quality Strategy objective during the ten years[1].

Particulate Matter (PM10):

- Particulate matter is mainly produced by traffic pollution, particularly from diesel engines, and these emissions tend to be concentrated in urban areas and along major roads[1].
- The areas with greatest levels of PM10 are the most built up areas; around London, Southampton, Portsmouth and Brighton[1].
- Of the 4 air quality monitoring sites assessed in the South East over the last 10 years, Southampton (urban site) has reduced its concentrations the greatest, but initially had higher concentrations[1].
- Rochester and Harwell (rural sites) and Reading (urban site), have remained more constant during the years, but all sites show a slight peak in 2003[1].
- All sites have been below the Air Quality Strategy objective over the ten years[1].
- For a 10 day period from 24 March 2007, much of South East England experienced particularly high particulate levels (PM10). This was caused by agricultural fires in the Ukraine and Western Russia that combined with industrial pollution from Eastern Europe. This shows how pollution can be transported over a long range and can originate from a source outside the UK[1].

Ozone

- Ozone continues to be a problem and appears to be worsening. Airborne pollution is not constrained by local and national borders. Pollutants such as ozone precursors can travel hundreds of miles from their source. Therefore, action to reduce ozone needs to be co-ordinated on a regional, national and global scale.

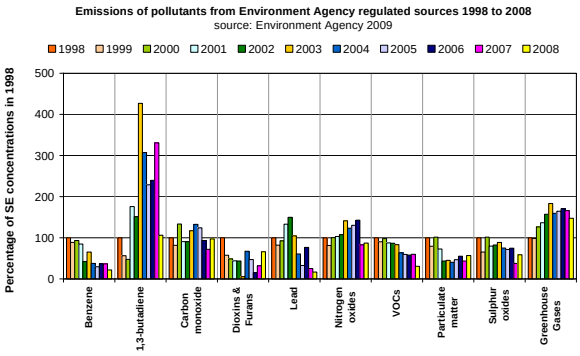
Useful facts

Emissions from EA regulated processes:

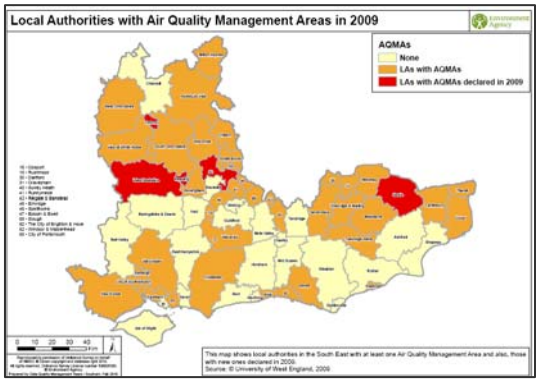
- If we look back over the past century we can see a great improvement in our air quality. This is due to better regulation of highly polluting industries and a reduction in the use of coal in both industry and domestic heating since the industrial revolution.
- We also have very little heavy industry in the South East now and our air quality has benefited as a result.
- Concentrations of 6 pollutants from EA regulated industries reduced between 2007 and 2008, with 1,3-butadiene showing the greatest reduction (40%)[2].
- Four pollutants from EA regulated industries increased between 2007 and 2008, with dioxins and furans showing the greatest increases (108%)[2].
- Between 1998 and 2008 concentrations of 8 pollutants have reduced, with lead and benzene showing the greatest reductions (83% and 78% respectively), although there have been annual fluctuations[2].
- Between 1998 and 2008 concentrations of 3 pollutants have increased, with greenhouse gases showing the greatest increase (48%), although there have been annual fluctuations[2].

Air Quality Management Areas:

- Since 1997 Local Authorities in the UK have been carrying out a review and assessment of air quality in their area. The aim of the review is to assist authorities in carrying out their statutory duty to work towards meeting the national air quality objectives. If a Local Authority finds any places where the objectives are not likely to be achieved, it must declare an Air Quality Management Area there[3].
- As of October, 2009 there are 44 local authorities in the South East with one or more Air Quality Management Areas. 5 of these areas have been declared in 2009 (South Oxfordshire, Swale, West Berkshire, Windsor & Maidenhead and Reading)[3].
- For all of the five new AQMAs declared this year, NO_2 was the main source of the pollution[3].
- At least half of all emissions to air of 1,3-butadiene, benzene, carbon monoxide and nitrogen dioxide are from transport.



Emissions from Environment Agency regulated sources – % of 1998



Local authorities with Air Quality Management Areas in 2009

INDICATOR 2 – No. of days of moderate or higher air pollution

Indicator – at a glance

Days of moderate or higher air pollution

- In 2008, there were 69 days with moderate or high air pollution in the South East, which was slightly worse than in 2007, but less than in some previous years.

Background

- The indicator uses the Government's Air Pollution Bands which describe the health impact of varying levels of pollution on sensitive individuals (those who suffer from heart and lung disease - including asthma and bronchitis - and especially young children and the elderly):
  - When air pollution is LOW (bands 1-3), effects are unlikely to be noticed even by those who are sensitive to air pollution.
  - When air pollution is MODERATE (bands 4-6), sensitive people may notice mild effects but these are unlikely to need action.
  - When air pollution is HIGH (bands 7-9), sensitive people may notice significant effects and may need to take action.
  - When air pollution is VERY HIGH (band 10) effects on sensitive people, described for HIGH pollution, may worsen.
- The indicator shows the number of days when air pollution is moderate or high (band 4 or higher).
- Data used in this section are from AEA Technology[4].

Trends

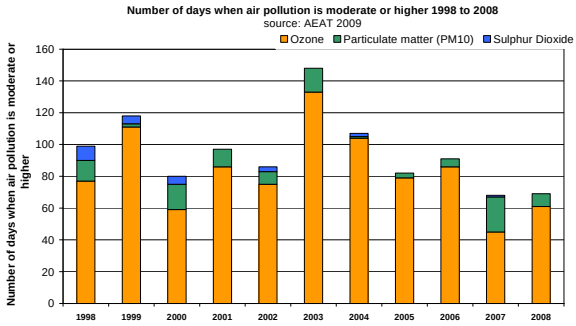
- In the South East in 2008, there were 69 days with moderate or higher air pollution. This was 7 days more than in 2007[4].
- There have been fluctuations in the number of days during the last ten years, with the greatest number of days being in 2003, when there were 133 days[4].
- Looking individually at 5 of the air quality monitoring sites used in the South East, there have also been fluctuations in the number of days with moderate or higher air pollution at these sites over the last 10 years, again with a peak in the number of days in 2003[4].

Useful facts

Serious air pollution incidents:

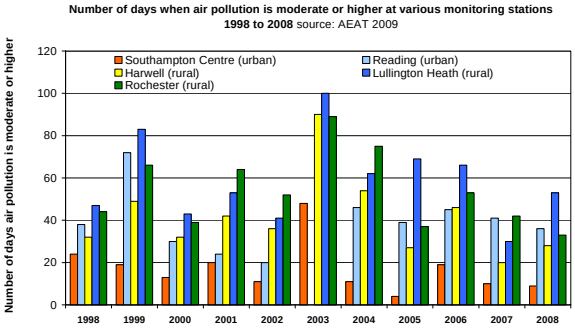
- The environmental impact of pollution incidents is rated from Category 1 to 4:
  - Category 1 represents a persistent, extensive, major impact on the environment[2].
  - Category 2 represents significant damage to air quality[2].
  - Category 3 represents minor damage to air quality[2].
  - Category 4 represents no impact[2].

- Categories 1 and 2 together are classified as 'serious air pollution incidents'.
- Data for this indicator are taken from the Environment Agency's National Incident Recording System (NIRS)[2].
- In the South East in 2008 there were 7 serious air pollution incidents, 24 less than last year (a reduction of 77%), and 16 less than 5 years ago[2].



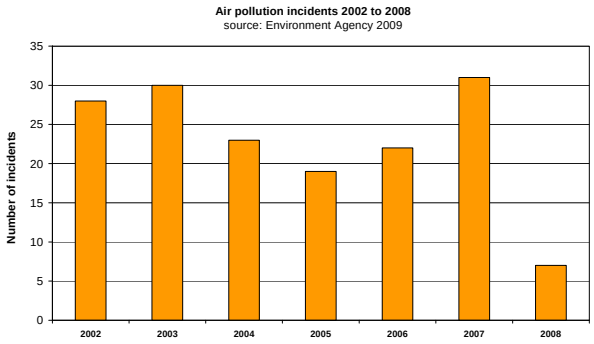
Number of days with moderate or higher air pollution in the South East

(Please note that due to the fact that on some occasions more than one pollutant contributes to raised pollution levels, it is not accurate to just add up the number of days).



Number of days with moderate or higher air pollution at various monitoring sites in the South East

(Please note that due to the fact that on some occasions more than one pollutant contributes to raised pollution levels, it is not accurate to just add up the number of days).



Serious air pollution incidents

Useful links and references

References

1. UK Air Quality Archive (2009)
2. Environment Agency (2009)
3. University of West England (2009)
4. AEA Technology (2009)

Useful links

- www.asthma.org.uk/document.rm?id=530

Wildlife

The South East is home to rich and varied wildlife. However, pressure from climate change continues to impact on species and habitats, an increasing human population creates additional challenges, and invasive non-native species are now an established problem.

Key message 1: Ninety per cent of our nationally important wildlife sites (Sites of Special Scientific Interest) are in 'favourable' or 'unfavourable recovering' condition, an increase of 4% from 2008. This is in line with Government's target of 95% by December 2010.

Key message 2: The American Signal Crayfish was recently discovered in the River Itchen for the first time. It threatens the survival of native crayfish. Invasive, non-native species such as these are increasing in the region both in terms of their extent and their impact.

Key message 3: Under the new Water Framework Directive classification, 38% of waters are at good status for fish. Fish are a key indicator of the quality of the water environment.

INDICATOR 1 – Condition of Sites of Special Scientific Interest

Indicator – at a glance

- Approximately 90% of Sites of Special Scientific Interest (SSSI) in the region are meeting the targets required by Government for December 2010.

Background

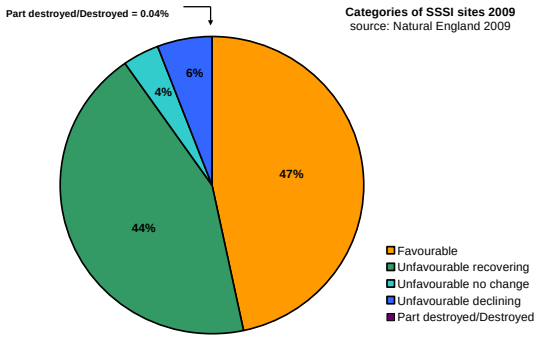
- There are over 136,000 hectares of SSSI land in the South East.
- A Government Public Service Agreement target is to have 95% of SSSI land in England in favourable or recovering condition by December 2010.
- In 2009 the categories 'rivers and streams', 'bracken', and 'arable and horticulture' have the greatest proportion of unfavourable sites and need the most attention to improve their condition.
- For 'rivers and streams' the main causes are physical problems (such as weirs) and high levels of phosphate, nitrate and sedimentation.
- For 'bracken' areas the main reasons are construction and transport, agricultural practices including under grazing, and air and water pollution.
- For 'arable and horticultural' areas the causes are use of herbicides and fertilizers and more intense farming practices.
- Data used in this section are from Natural England[1].

Trends

- Approximately 90% of SSSI sites are meeting the public service agreement (PSA) target, which is a 4% increase from last year[1].
- During the last 5 years, there have been good improvements in the conditions of SSSI sites: an increase of 4,500 hectares of land in 'favourable' condition, and increase of 24,600 hectares of 'unfavourable recovering'[1].
- There was a decrease of 13,800 hectares of SSSI land classified as 'unfavourable no change' and a decrease of 13,000 hectares of 'unfavourable declining' - reflecting the improvement work being done[1].

Useful facts

- We are developing a new Diffuse Water Pollution Plan for our SSSIs in partnership with Natural England. This will provide a realistic approach and timescale for securing improvements in diffuse pollution on SSSIs.



SSSI conditions in the South East, 2009

INDICATOR 2 – Fish populations

Indicator – at a glance

- 38% of rivers and estuaries in the region are meeting the standards required by the Water Framework Directive for fish.
- Salmon populations on the Rivers Test, Itchen and Thames are still well below their healthy conservation limit but they are showing signs of stabilising.
- Salmon have been observed on the Rivers Lymington, Meon, Wallington and Medway, showing that populations are recovering.

Background

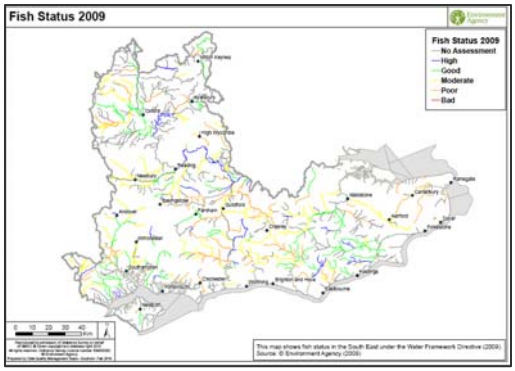
- The main issues that affect river fish populations and diversity include flow, water quality and quality of habitat.
- A key issue that affects salmon populations is poor spawning. Obstructions in rivers prevent salmon reaching their spawning grounds and layers of silt and sediment suffocate their eggs[4]. The government's Catchment Sensitive Farming Programme will help to reduce silt in rivers.
- Not very much is known about the status of the region's sea trout populations and more research is needed.
- Populations of coarse fish (those found in rivers other than salmon and sea trout) in most rivers in the South East are generally healthy, diverse, abundant and self sustaining.
- Data for this indicator was collected by the Environment Agency during routine fish surveys[2].

Trends

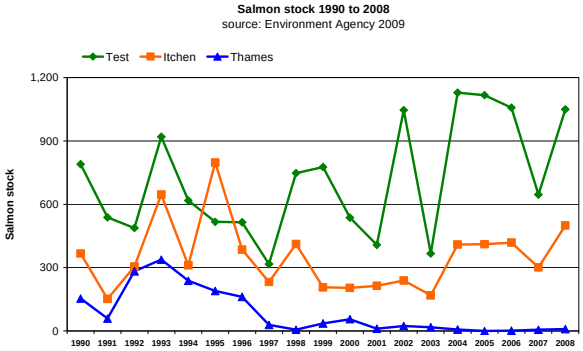
- 38% of rivers and estuaries in the region are meeting the standards required by the Water Framework Directive for fish and it is predicted that this will increase to 48% by 2015[2].
- During the last 19 years, salmon stock populations have increased in both the Rivers Test and Itchen, are now stable, but populations are still negligible in the Thames[2].
- Sea trout stocks are stable in the rivers Test and Itchen and minimal in the Thames[2].
- Across the South East, 17 non-native fish species have been recorded in the wild, which include topmouth gudgeon, wels catfish, pumpkinseed, signal crayfish and grass carp[2].
- The European eel, another migratory species which are normally found throughout river systems, has been declining in recent years[2].
- Estimates of the number of elvers (young eels between a year old and adulthood) entering our river systems suggest a decline of up to 70% since the 1980s due to disease, overexploitation and habitat loss[2].
- New research by the Zoological Society of London suggests that juvenile eel populations in the River Thames have fallen by 98% in the last five years, but it is too early to establish why this has happened. There is no evidence, however, that adult populations have suffered similar changes[2].

Useful facts

- Non-native invasive species can cause significant problems for species that are native as they can be predators, bring disease, cause inter-breeding problems and compete for limited habitats and food supplies[2].
- There is a programme to improve eel migration by installing elver passes on weir where they have been unable to pass[2].



Fish status 2009



Salmon stock in the South East 1990 to 2008

INDICATOR 3 – River habitat restoration

Indicator – at a glance

- 19 kilometres of river habitat were restored in the South East In 2008.

Background

- River basin management will help us improve the condition of wetland wildlife. River Basin Management Plans required under the Water Framework Directive classify the water environment.
- Habitats and rivers need to be restored to encourage wildlife back to the river and surrounding area, to improve people's quality of life and improve flood defences.
- Reedbeds, which are identified as nationally important habitat for various rare and threatened plans, invertebrates and birds (e.g. bittern, aquatic warbler, bearded tit and marsh harrier) are scarce.
- Data used in this section are from the Environment Agency[2].

Trends

- 19 kilometres of river habitat were restored in the South East In 2008[2].
- This includes a project on the River Loddon to improve a 2 kilometres stretch for wild trout and wildlife habitat in the river channel; and the Surrey Wildlife Trust's Water Vole project that has enhanced 2 kilometres of river for the conservation of water voles[2].

Useful facts

- There are currently 77 hectares of reedbed in the region. Current habitat creation projects will expand this by 50% in the next three years[2].
- The Upper Thame Restoration project has enhanced 3 kilometres of river habitat which has created a refuge for fish and improved fish migration[2].

Useful links and references

References

1. Natural England (2009)
2. Environment Agency (2009)

Useful links

- What's in Your Backyard – maps and information about the status of our water environment, improvements predicted by 2015, and actions planned - www.environment-agency.gov.uk/maps
- Our Rivers – maps and information for the campaign for better quality rivers - www.ourrivers.org.uk
- Catchment Sensitive Farming - http://www.defra.gov.uk/foodfarm/landmanage/water/csf/index.htm
- Zoological Society of London - http://www.zsl.org

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