Department for Environment Food & Rural Affairs

England Natural Environment Indicators

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Introduction

The Natural Environment White Paper, published in 2011 under the 2010 to 2015 Coalition Government, set out the Government's strategy for valuing nature in our society and ensuring that it is available for use by future generations. The White Paper outlined four ambitions aimed at mainstreaming the value of nature across society. These were:

➢ Protecting and improving the natural environment
➢ Growing a greener economy
➢ Reconnecting People and Nature
➢ International and EU Leadership

Within these ambitions there were 92 commitments. The England Natural Environment Indicators (ENEI) publication has been produced under commitment 90 of the White Paper:

"We will develop a set of key indicators...to track progress on the ambitions of this White Paper. These will include a new, compact set of biodiversity indicators for the England Biodiversity Strategy. We will consult on them and finalise them by Spring 2012."

The purpose of the ENEIs is to track progress against the broad ambitions of the White Paper as outlined above, to communicate this to stakeholders and interested users and to provide a robust evidence base on which to base future policy interventions. The indicators selected for the publication have been categorised according to one or more of the ambitions, represented by shaded tabs at the edge of each page.

The updated indicators for the England Biodiversity Strategy, referred to in the second part of the commitment, were consulted on and published in December 2014 and can be found here.

Data Notes

Included in this update of the England Natural Environment indicators are a number of improvements and developments to the set of indicators used to track progress against the ambitions of the White Paper. The indicators in chapters 2, 4 and 9 have been reviewed and where appropriate are aligned with the England biodiversity indicators.

Smoothed trends are presented with 95% confidence intervals in chapter 1 and 4 where possible. A confidence interval (CI) is a measure of the reliability of an estimate: a 95% CI means we are 95% confident that the true value of an indicator in a given year falls within the confidence interval around it. Bootstrapping, a standard statistical technique, is used to calculate the confidence interval around each indicator trend in these chapters. The width of the confidence interval for a given indicator is influenced by the number of species in that indicator and the precision of the individual species trends that make up that indicator. The precision of trends varies between species; this is true even for species for which trends come from the same source, due to the variation in sample size. Therefore the size of confidence intervals varies among habitat indicators.

Histograms are also displayed where possible throughout the species indicators. Composite indicators (an indicator formed of multiple indicators) can mask a lot of variation among the species within them. The histogram provided alongside each habitat chart shows the percentage of species within that indicator that have increased, decreased or shown no change. Whether an individual species is increasing or

decreasing has been determined by its rate of annual change over the time period (long or short) of interest. If the rate of annual change would lead to a population decrease of 50% (halving), or a population increase of 100% (doubling) or more over 25 years, the species is said to have shown a 'strong decline' or a 'strong increase' respectively. Rates of change less than these but above +33% (increase) or below -25% (decrease) are labelled 'weak'. Asymmetric thresholds are used for declines and increases to represent symmetrical proportional change in an index. These thresholds for declines are based on the rates used in the Birds of Conservation Concern status assessment for birds in the UK.

Traffic Light Assessment

Each indicator is composed of one or more measures which will show trends over time. Several indicators are represented by a single measure, but where data cannot be combined logically, indicators have more than one measure. Each measure is summarised or assessed separately using a set of 'traffic lights'. The traffic lights show change over time. They do not show whether the measure has reached any published or implied targets or whether the status is 'good' or 'bad'.

The traffic lights are determined by identifying a period over which the change is to be assessed and comparing the value of the measure in the base or start year with the value in the end year.

✓ Improving

≈ Little or no overall change

✗ Deteriorating

⋯ Not yet assessed due to insufficient or no comparable data

Where possible the assessment has been made by evaluating trends using statistical analysis techniques. The assessment may be made by Defra statisticians in collaboration with the data providers, or undertaken by the data providers themselves. A green or red traffic light is only applied when there is sufficient confidence that the change is statistically significant and not simply a product of random fluctuations.

For some indicators, it is not possible to formally determine statistical significance and in such cases the assessment has been made by comparing the difference between the value of the measure in the base or start year and the value in the end year against a 'rule of thumb' threshold. The standard threshold used is three percent. Where the data allow it, a three year average is used to calculate the base year, to reduce the likelihood of any unusual year(s) unduly influencing the assessment. Where an indicator value has changed by less than the threshold of three per cent, the traffic light has been set at amber. The choice of three per cent as the threshold is arbitrary but is commonly used across other Government indicators and use of this approach is kept under review

The traffic lights only reflect the overall change in the measure from the base to latest year and do not reflect fluctuations during the intervening years.

Where data are available, two assessment periods have been used:

1. Long-term – an assessment of change since the earliest date for which data are available, although if the data run is for less than ten years a long-term assessment is not made.
2. Short-term – an assessment of change over the latest five years. In a minority of cases the short term assessment has been carried out over a shorter time period, where the earliest data point is within the past five years but where statistical analysis allows a robust assessment of change over time.

The individual indicators also have a third marker showing the direction of change in the last year. This period is too short for a meaningful assessment. However, when it exceeds a one per cent threshold, the direction of change is given simply as an acknowledgement of very recent trends and as a possible early indication of emerging trends.

	Indicator	Measures	Long Term		Short Term	
1.	Species in the Wider Countryside	Breeding farmland birds	Deteriorating	❌	Deteriorating	❌
		Butterflies of the wider countryside on farmland	Deteriorating	❌	Deteriorating	❌
		Widespread bats	Improving	✔	Little or no overall change	≈
		Breeding wetland birds	Little or no overall change	≈	Deteriorating	❌
		Wintering water birds	Improving	✓	Little or no overall change	≈
		Breeding woodland birds	Deteriorating	❌	Little or no overall change	≈
		Butterflies of the wider countryside in woodland	Deteriorating	❌	Little or no overall change	≈
		Breeding seabirds	Improving	✓	Little or no overall change	≈
2.	Water Quality	Proportion of surface water bodies with status classed as good or high	Not yet assessed	⋯	Deteriorating	❌
3.	Marine Ecosystem Integrity	Fish size class	Deteriorating	❌	Improving	✓
		Marine Litter	Deteriorating	❌	Improving	✓
4.	Priority species and habitats	Relative abundance of priority species	Deteriorating	❌	Little or no overall change	≈
		Status of priority species; frequency of occurrence – insects	Deteriorating	❌	N/A	
		Extent of priority habitats	Not yet assessed	⋯	Not yet assessed	⋯
		Condition of priority habitats	Not yet assessed	⋯	Not yet assessed	⋯
5.	Land Use	Land Use (context)	Not assessed		Not assessed	
		Change in percentage of woodland in active management	Not yet assessed	⋯	Improving	✓
6.	Natural Stocks	Sustainable fisheries	Improving	✓	Improving	✓
		Water abstraction	Little or no overall change	≈	Little or no overall change	≈
		Forest carbon stock	Improving	✓	Improving	✓
		Soil carbon concentration	Little or no overall change	≈	Little or no overall change	≈
7.	Raw Material Consumption	Raw Material Consumption	Improving	✓	Little or no overall change	≈
8.	Value of Ecosystem Services	Value of three woodland ecosystem services	Not yet assessed	⋯	Not yet assessed	⋯

	Indicator	Measures	Long Term	Short Term
9.	Integrating biodiversity and natural environment considerations into business activity	Percentage of large companies (>250 employees) that use an Environmental Management Scheme (EMS)	Not yet assessed ⊙	Not yet assessed ⊙
		Percentage of companies where the environment is formally considered in the supply chain	Not yet assessed ⊙	Not yet assessed ⊙
10.	Public Engagement with the Natural Environment	Proportion of people visiting the natural environment several times or more a week	Not yet assessed ⊙	Not yet assessed ⊙
		Number of visits made by children	Not yet assessed ⊙	Not yet assessed ⊙
		Conservation Volunteering	Improving ✓	Deteriorating ✗
11.	Ease of access to local woodland, green space and countryside	Ease of access to all green space	To be developed	To be developed
12.	Environmental Quality and Health	Number of air pollution days classed as moderate or higher: urban	Not yet assessed ⊙	Not yet assessed ⊙
		Number of air pollution days classed as moderate or higher: rural	Not yet assessed ⊙	Not yet assessed ⊙
		Mortality caused by anthropogenic air pollution	Not yet assessed ⊙	Not yet assessed ⊙
		Percentage of people affected by noise	Not yet assessed ⊙	Little or no overall change ≈
13.	International and EU	Not assessed	Not assessed	Not assessed

Long Term Assessments by NEWP Ambition
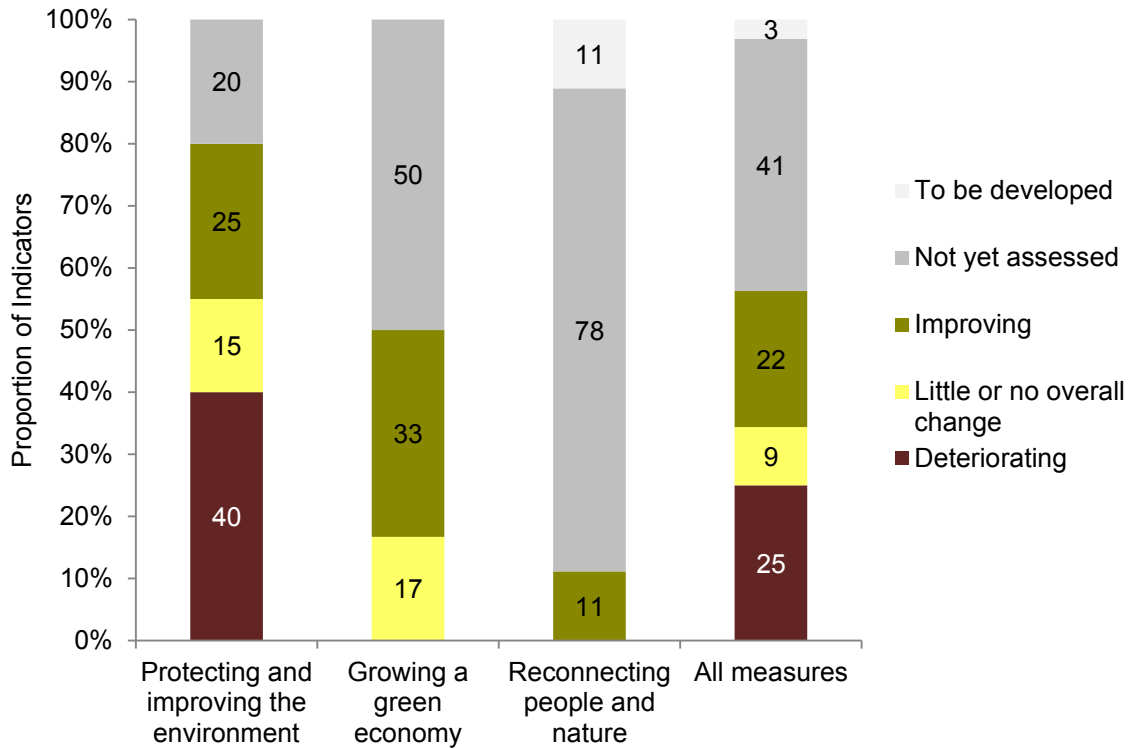
Short Term Assessments by NEWP Ambition
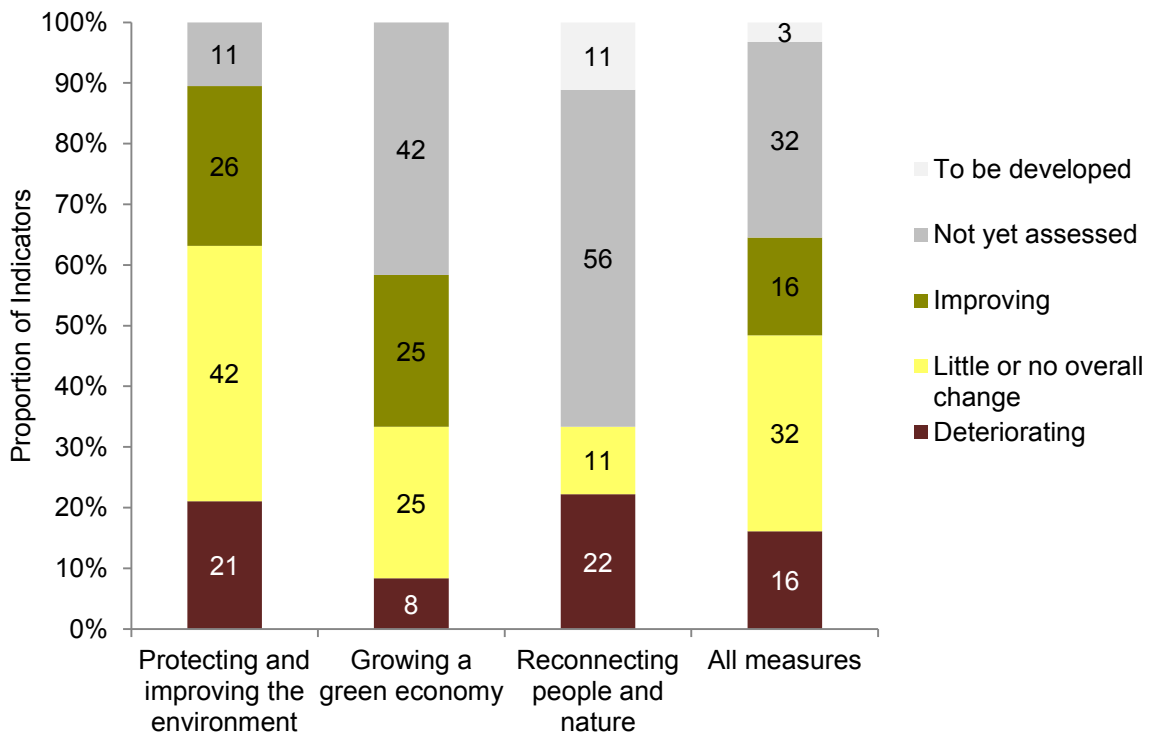
31 measures have been assessed over the long term (a period of 10 years or more), 30 measures have been assessed in the short term. Of these measures 7 (22%) have shown improvement in the long term and 5 (16%) measure have showed improvements in the short term.

The picture is different for each of the four key ambitions outlined in the White Paper:

Protecting and Improving the Environment

The number of measures that have improved or showed little or no overall change under the Protecting and Improving the Environment ambition has risen from 9 measures (40%) in the long term to 13 measures (68%) in the short term. The number of measures showing deterioration has decreased from 8 (40%) in the long term to 4 (21%) in the short term. Both marine litter and the proportion of large fish in the North Sea have improved in the short term, following a long term decline.

Growing a Green Economy

Under the Growing a Green Economy ambition, all 6 of the measures that can be assessed in the long term show either improvement or little or no overall change (50%). In the short term, 6 measures are improving or stable (50%). However, one measure improving in the long term show deterioration in the short term (conservation volunteering). The total of short term measures in improving or stable status is brought up to six by improving assessments of woodland under active management.

Reconnecting People and Nature

A high proportion of measures in the Reconnecting People and Nature ambition cannot yet be assessed in the long term due to insufficiently long time series. The one measure that can be assessed, conservation volunteering, has improved considerably in the long term (although, in recent years, the number of hours people spend volunteering has fallen slightly relative to a peak in 2007-2008). Looking to the short term assessments for this ambition, 3 measures can be assessed. One measure (11%) shows little or no overall change and 2 measures (22%) show deterioration. Deteriorating measures include conservation volunteering and surface water status.

International and EU Leadership

At present there are no measures that can be assessed in either the short term or the long term that support the International and EU Leadership ambition.

1. Species in the Wider Countryside

This indicator relates to the ambition to protect and improve the biodiversity in England. Statistics on the populations of birds, butterflies and bats are used to reflect broader biodiversity changes in the farmland, wetland, woodland and sea environments.

1a) Population of farmland birds, butterflies and bats

The indicator presents changes in the abundance of widespread species in the farmed landscape. It shows changes in the population size of 19 breeding farmland birds and 21 butterflies recorded on farmland habitats, and in the population size of eight bat species, which use a variety of habitats including farmland.

Figure 1.1: Populations of widespread breeding birds on farmland in England, 1970 to 2013
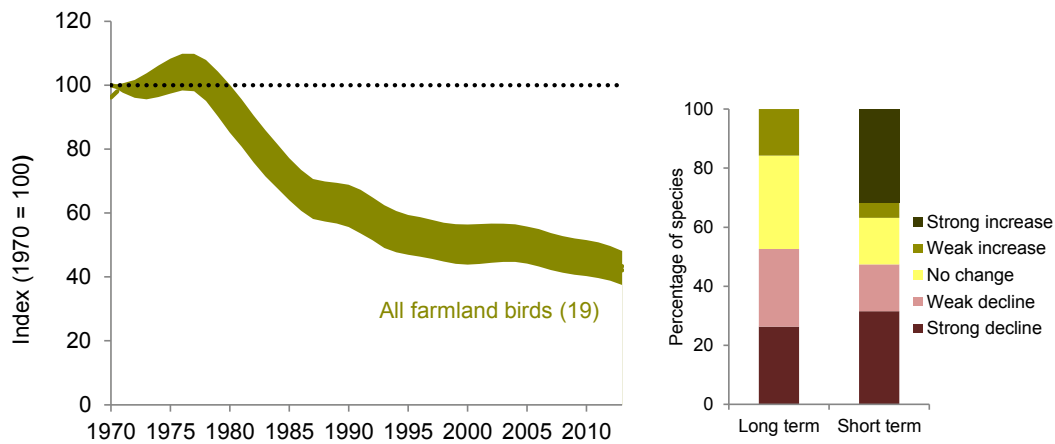
Notes:
1. Figure in brackets shows number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.
Sources: British Trust for Ornithology, Department for Environment Food and Rural Affairs, Joint Nature Conservation Committee and the Royal Society for the Protections of Birds.

Figure 1.2: Populations of widespread bats and butterflies on farmland in England, 1990 to 2013
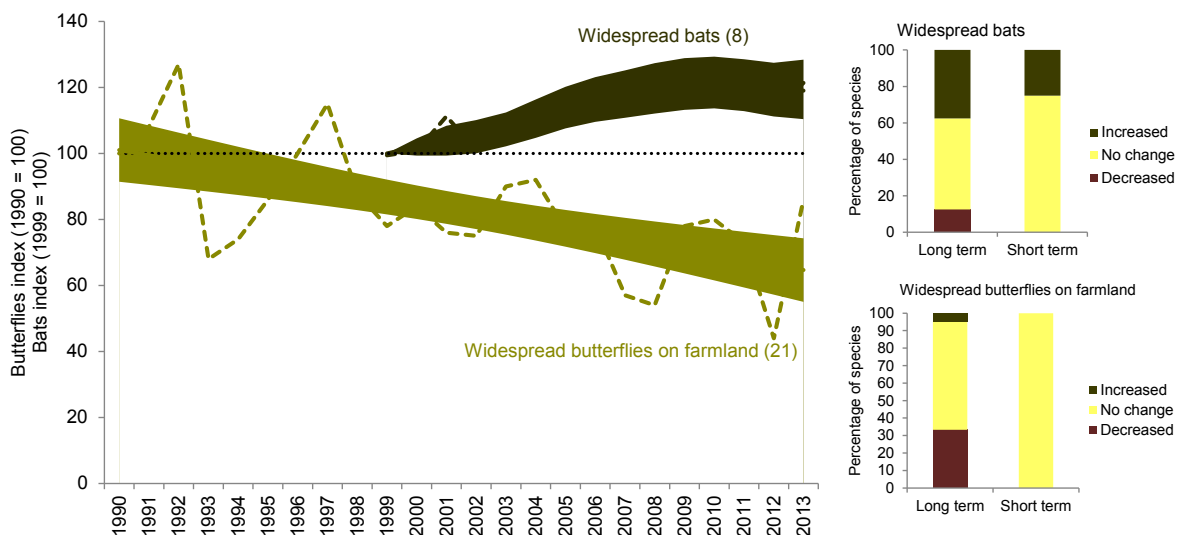
Notes:
1. Figure in brackets shows number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have shown a statistically significant increase, statistically significant decrease or no change.
4. The bats index is a composite of eight species: serotine; Daubenton's bat; Natterer's bat; noctule; common pipistrelle; soprano pipistrelle; brown long-eared bat; and lesser horseshoe bat.
Sources: Butterfly Conservation, Centre for Ecology & Hydrology, Bat Conservation Trust

In 2013, the breeding farmland bird index in England reached its lowest recorded level; 56 per cent lower than its level in 1970. The largest declines in farmland bird populations occurred between the late seventies and the early nineties. The long term decline of farmland birds in England has been driven mainly by the decline of those species that are restricted to or highly dependent on farmland habitats.

Since 1990 butterfly numbers on farmland have fallen by 14 per cent, reaching a historical low point in 2012 and making a substantial recovery in 2013. These figures demonstrate how numbers fluctuate from year to year, but overall, based on the underlying smoothed trend, the indicator has shown a significant decline since 2008. Species in severe decline on farmland include gatekeeper, large skipper, small copper, small tortoiseshell and wall brown.

Between 1999 and 2013, populations of the bats in the indicator have increased by 22 per cent; an assessment of the underlying smoothed trend shows this is a statistically significant increase. In the short term, between 2007 and 2012, the indicator has remained stable. An increase in the lesser horseshoe bat trend has been sustained throughout the period of the indicator and has been attributed to conservation measures and a series of mild winters that have enhanced winter survival.

1b) Populations of wetland birds

The indicator shows changes in abundance of wetland bird species. It presents changes in the population size of 26 breeding wetland birds and 41 wintering water birds, including wildfowl and waders.

Figure 1.3: Trends in populations of breeding wetland birds in England, 1975 to 2013
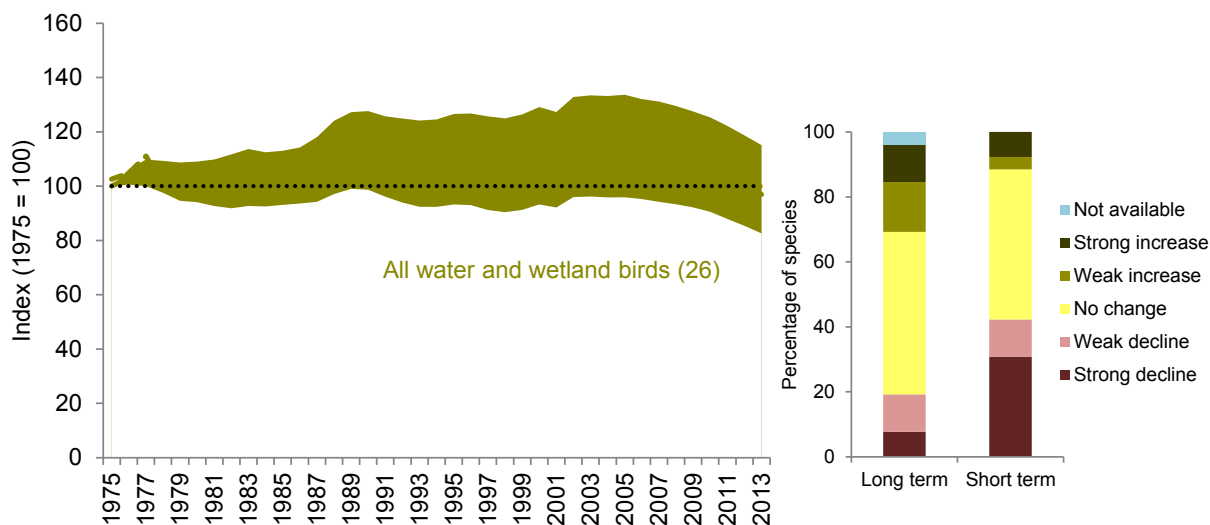
Notes:
1. Figure in brackets shows the number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.
Source: British Trust for Ornithology, Defra, Joint Nature Conservation Committee, Royal Society for the Protection of Birds and The Wildfowl and Wetlands Trust.

Figure 1.4: Trends in populations of wintering waterbirds birds in England, 1975 / 1976 to 2012 / 2013

Notes:
1. Figure in brackets shows the number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line). Data from surveys of wintering waterbirds are based on full counts on wetland and coastal sites of markedly varying size. This means that standard indicator bootstrapping methods cannot be applied and the trend is presented without confidence intervals.
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.
Source: British Trust for Ornithology, Defra, Joint Nature Conservation Committee, the Royal Society for the Protection of Birds and The Wildfowl and Wetlands Trust.

Between 1975 and 2013, populations of breeding wetland birds fluctuated from year to year but have remained broadly stable. However, in 2013 the index in England was two per cent lower than at the start of monitoring in 1975 and has showed a statistically significant decline of nine per cent in the short term between 2007 and 2012.

In the winter of 2012-13, populations of wintering water birds were 93 per cent higher than their 1975-6 level. The smoothed index showed a non-significant decline of three per cent over the short term between 2006/07 and 2011/12.

1c) Populations of woodland birds and butterflies

The indicator shows changes in abundance of species in woodland based on changes in the population size of 34 widespread breeding birds and 23 widespread butterflies, recorded in woodland habitats.

Figure 1.5: Populations of widespread breeding birds in woodland, 1970 to 2013
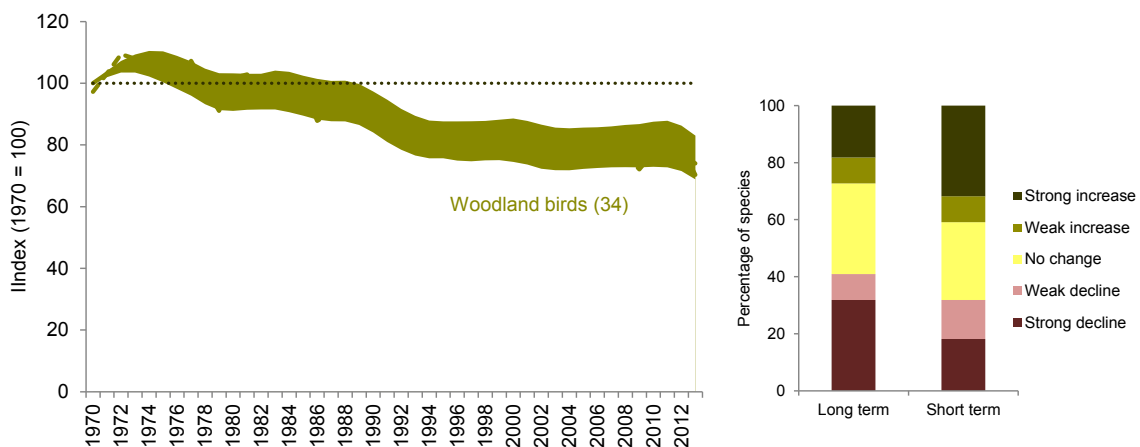
Notes:
1. Figures in brackets show the number of species. There is one less species in the indicator than in previous years: hawfinch has been removed as its population trend is felt to be unreliable. The index has been recalculated with 34 species for the whole period 1970-2013: the effect of removing hawfinch on the trend has been negligible.

2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.
Source: British Trust for Ornithology, Department for Environment, Food and Rural Affairs, Joint Nature Conservation Committee and the Royal Society for the Protection of Birds.

### Figure 1.6: Populations of widespread butterflies in woodland, 1990 to 2013
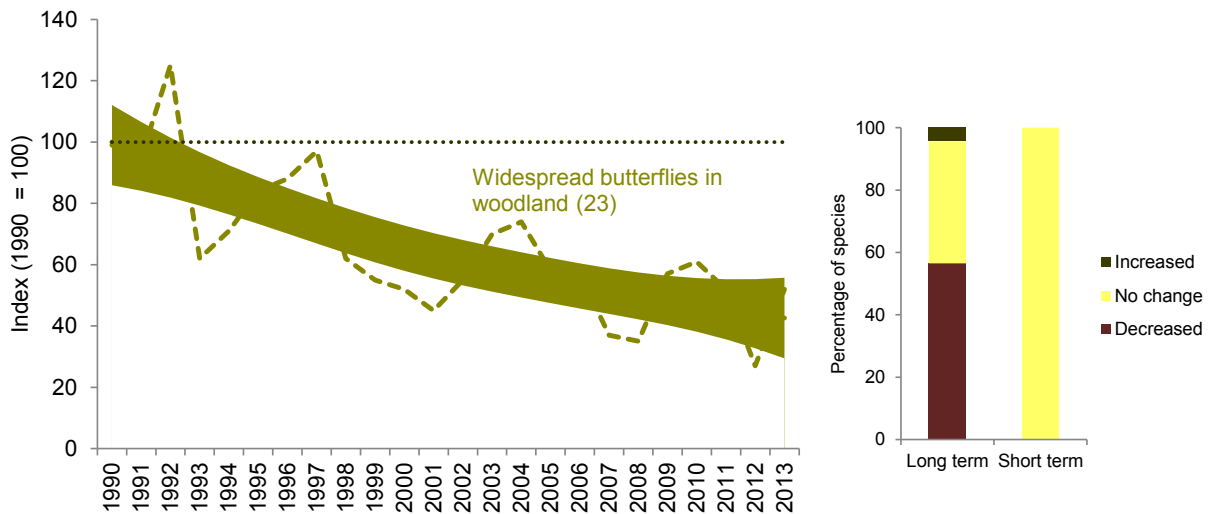
Notes:

1. Figures in brackets show the number of species.
2. Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line) with its 95% confidence interval (shaded).
3. Bar chart shows the percentage of species within the indicator that have shown a statistically significant increase, statistically significant decrease or no change.
Source: Butterfly Conservation, Centre for Ecology & Hydrology.

In 2013, the breeding woodland bird index in England reached its lowest recorded level, 28 per cent lower than in 1970. The greatest decline of woodland birds occurred from the late eighties until the mid-nineties. Apart from the decline evident between 2011 and 2013, the index has been relatively stable in recent years.

The declines in woodland birds have several known and potential causes including a lack of management and increased deer browsing pressure, both of which result in a reduced diversity of woodland structure and, therefore, reduced availability of suitable nesting and foraging habitats. In addition, several declining woodland birds are long-distance migrants, and a decline in the extent or quality of habitats used outside the breeding season and climate change may be affecting these species.

Since 1990 butterfly numbers on woodland have fallen by 48 per cent, reaching a historical low point in 2012 and making a substantial recovery in 2013. These figures demonstrate how numbers fluctuate from year to year; statistical analysis of the underlying smoothed trend shows no overall change since 2008. The major decline of woodland butterflies is thought to be due to a lack of woodland management and loss of open spaces in woods.

1d) Populations of seabirds

Data on seabirds may reflect broad biodiversity changes in coastal areas and the marine environment. This indicator shows changes in the abundance of 11 breeding seabirds around England's coast.

Figure 1.7: Population trend of seabirds, 1986 to 2013

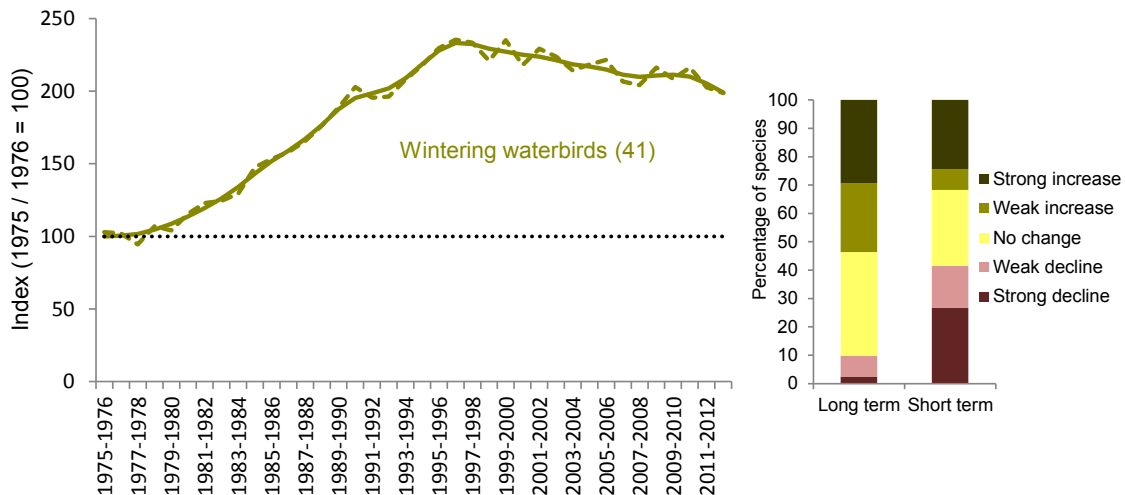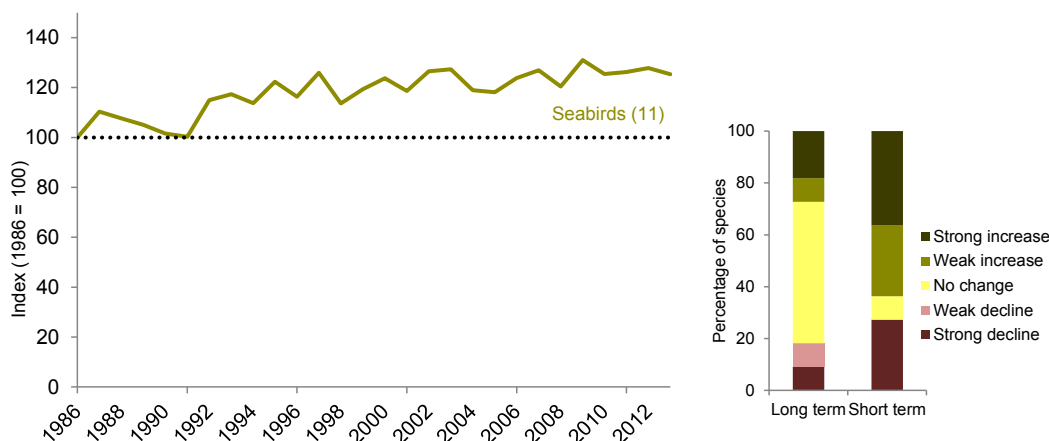**Notes:**
1. Figures in brackets show the number of species.
2. Graph shows unsmoothed trend (solid line) - no smoothed trend is available for seabirds as individual species population trends are analysed using an imputation procedure that does not include smoothing.
3. The England trend published here is not directly comparable with the England seabird trend published in 2013 (see 'Background' section in the England Biodiversity Indicators 2014 publication for more information).
4. Bar chart shows the percentage of species within the indicator that have increased, decreased or shown no change, based on set thresholds of change.
Source: British Trust for Ornithology, Royal Society for the Protection of Birds, Joint Nature Conservation Committee, Department for Environment Food and Rural Affairs.

In 2013, the breeding seabird index in England was 25 per cent higher than its baseline level in 1986. The index has shown a smaller increase of 4 per cent in the short term, between 2008 and 2013; because of the high degree of variation from year to year this change is not considered significant and is assessed as showing little or no overall change.

The assessment of little or no overall change hides considerable variation in individual species trends, and surface-feeders (black-legged kittiwake and four tern species) have fared less well than sub-surface feeders (gannet, guillemot, shag and cormorant). The histogram provided alongside each habitat chart above shows the percentage of species within that indicator that have increased, decreased or shown no change.

The recent declines in some species such as Kittiwake is known to be linked with food shortages during the breeding season, and although is not clear what is ultimately driving this, fishing practice and climate change, or some combination of the two, are likely contributory factors.

Indicator Assessment

Assessment of change in abundance and diversity of species in the wider countryside			
	Long term	**Short term**	**Latest year**
Breeding farmland birds	❌ 1970-2012	❌ 2007-2012	Decreased (2013)
Butterflies of the wider countryside on farmland	❌ 1990-2013	❌ 2008-2013	Increased (2013)
Widespread bats	✅ 1999-2012	≈ 2007-2012	Increased (2013)
Breeding wetland birds	≈ 1975-2012	❌ 2007-2012	No change (2013)
Wintering water birds	✅ 1975-6-2011-12	≈ 2006/07–2011/12	No change (2012-13)
Woodland birds	❌ 1970-2012	≈ 2007-2012	Decreased (2013)
Butterflies of the wider countryside in woodland	❌ 1990-2013	≈ 2008-2013	Increased (2013)
Breeding seabirds	✅ 1986-2013	≈ 2008-2013	No change (2013)

Links

Organisation	Subject
Defra	England Biodiversity Indicators
Defra	Wild Bird Statistics: England
UK Butterfly Monitoring Scheme	Home Page
Bat Conservation Trust	National Bat Monitoring Programme
Forestry Commission	Indicators

2. Water Quality

This indicator relates to the ambition to improve all areas of the natural environment, including the water environment. This indicator has been amended to align with the equivalent indicator in the UK and England Biodiversity Indicator publication. Surface water status is a composite measure that looks at both the chemical status and the ecological (including biological and habitat condition) status of a water body. For a more detailed analysis and background information use the link to the England Biodiversity indicators at the bottom of this chapter.

Surface water status

The Water Framework Directive (WFD) is an important mechanism for assessing and managing the water environment in the EU, through a six yearly cycle of planning and implementing measures to protect and improve the water environment. The indicator shows the percentage of water bodies in each status class and the change in the percentage of water bodies in England awarded a good or high surface water status class under the WFD between 2009 and 2014. Over 4,500 water bodies were assessed in each year of the indicator; including rivers, canals, lakes, estuaries and coastal waters. A river water body may be assessed for more than one biological indicator, and the overall water body biological status class is determined by the individual indicator that is classed lowest.

Figure 2.1: Status classifications of surface water bodies in England under the Water Framework Directive, 2009-2014
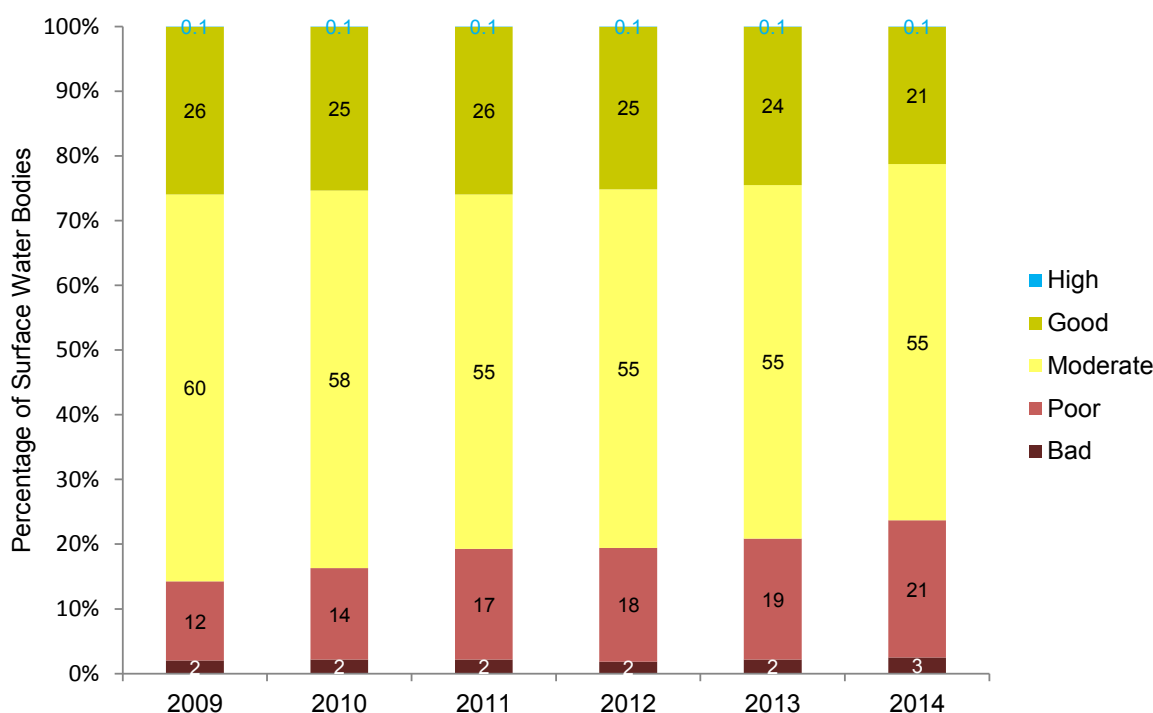
Notes:

1. Based on numbers of surface water bodies classified under the Water Framework Directive in England. Includes rivers, canals, lakes, estuaries and coastal water bodies, but excludes SSSI ditches and surface water transfers.
2. A water body is a management unit, as defined by the relevant authorities.
3. Percentage of water bodies in each status class has been calculated based on the total number of water bodies assessed in each year.
4. Number of water bodies assessed varies slightly from year to year: in 2008 5,651 water bodies were assessed, in 2009 5,587 water bodies, in 2010 5,607, in 2011 5,692, in 2012 5,735, in 2013 4,651 and in 2014 4,698.
5. Water bodies that are heavily modified or artificial (HMAWBs) are included in this indicator alongside natural water bodies. HMAWBs are classified as good, moderate, poor or bad 'ecological potential'. Results have been combined; for example, the number of water bodies with a good status class has been added to the number of HMAWBs with good ecological potential.
Source: Environment Agency.

There was a decrease in the overall number of water bodies awarded high or good surface water status between 2009 and 2014. In 2014, 21 per cent of surface water bodies assessed under the WFD in England were in high or good status this compares with 26 per cent in 2009.

One factor that may have contributed to this apparent decline is the roll out of a new more comprehensive ecological monitoring programme by the Environment Agency in 2013. The Environment Agency are now monitoring thousands more biological elements than in 2009. Because of the way that the classifications are derived (using the one-out-all-out methodology, see links at the bottom of the page for more information) the more monitoring done the more problems are likely to be found. Water bodies may not be deteriorating, the apparent decline may be a result of the improved sensitivity and sophistication of monitoring and therefore knowledge of the environment.

Of course, there may be some genuine environmental deterioration happening as well, and a lot of the investigative monitoring the Environment Agency carries out will provide more information about what is causing the decline in status.

Indicator Assessment

Assessment of change in Water Quality			
	Long term	**Short term**	**Latest year**
Proportion of surface water bodies with status classed as good or high	⊙	⊗ 2010 - 2014	Decreased (2014)

Web links

Organisation	Subject
gov.uk	Improving water quality
European Commission	Water Framework Directive
Environment Agency	Water Framework Directive – Surface Water Classification Status and Objectives
Environment Agency	River Basin Management Plans
Defra	England Biodiversity Indicators

1 The indicator assessment should be treated with caution as the Environment Agency has rolled out a new more comprehensive monitoring programme.

3.   Marine Ecosystem Integrity

An important part of the NEWP is to safeguard the multi-functional use of different ecosystems and habitats, and protecting and improving the marine environment is an essential aspect of this.

3 a) Size of fish in the North Sea

The indicator shows changes in the proportion, by weight, of large fish (equal to or over 40cm in length) in populations in the north-western part of the North Sea. Changes in the size structure of fish populations reflect changes in the health of the fish community, with a higher proportion of fish being larger than 40cm signifying a healthier marine environment.

Figure 3.1: Proportion of large fish (equal or larger than 40cm), by weight, in the North-western North Sea, 1983 to 2011
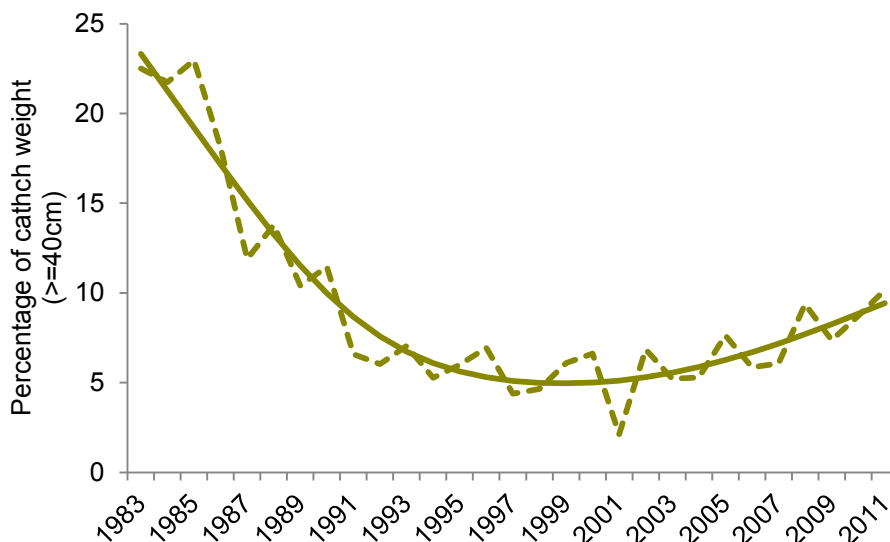
Notes: Graph shows unsmoothed trend (dashed line) and smoothed trend (solid line).

Source: Marine Scotland, Centre for Environment, Fisheries and Aquaculture Science.

The proportion of large fish declined since 1983, although there is considerable year-to-year variability in fish size in trawl catches. The proportion of large fish declined most rapidly from the mid-1980s to the mid-1990s but stopped declining in the late-1990s and increased between 2001 and 2011.

The indicator is assessed as deteriorating in the longer term but as increasing between 2006 and 2011.

The broad pattern of general decline, followed by a more recent period of stabilisation and possible increase is repeated in other seas around the UK (see the England biodiversity link at the end of this section). The North-western North Sea data are used in the indicator because they provide the most detailed, precise and long-running data set. During the 1980s, large fish in the North-western North Sea fish community included cod, haddock,

saithe, ling, anglerfish and rays. More recently, haddock, cod and saithe form the majority part of large fish catches.

3b) Marine Litter

This indicator shows the number of litter items per square kilometre on the sea floor around the UK. The government's Marine Strategy Framework Directive Descriptor 10 aims that "properties and quantities of marine litter do not cause harm to the coastal and marine environment". This MSFD descriptor will be measured by 3 indicators; beach litter, litter found on the sea floor and litter recorded in the stomachs of Northern fulmars.

The indicator presented below focuses on the changes in sea floor litter.

Figure 3.2: Average number of litter items per km² on the sea floor taken from sample sites around UK waters, 1992 to 2014
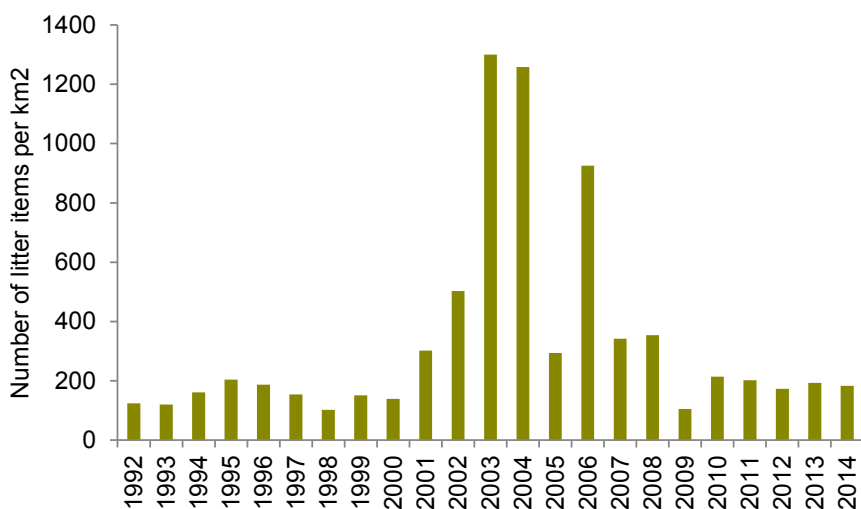
Source: CEFAS (© Crown copyright 2015: permission granted by Thomas Maes, CEFAS)

A breakdown of the composition of litter can be seen in figure 3.3.

Figure 3.3: Overall litter composition from the sea floor, 2014

The number of items of litter on the sea floor per km^2 has varied greatly between 1992 and 2014. The marked increases in 2003, 2004 and 2006 could be a delayed effect of improvements in the monitoring programme or actual effects of prevailing weather. Alternating dry conditions and extreme rainfall dominated from 2001 to 2007, which could have had an effect on litter transport to the sea.

Over the past ten years specific marine litter regulations and legislation came into force, which should have a positive impact on the level of litter in UK seas. These include UN General Assembly resolution, Water and Marine Strategy Framework Directive, the revised MARPOL Annex V and Port Waste Reception Facilities Regulations.

Sea floor litter is dominated by plastics, which make up 76 per cent of all sea floor litter as shown in figure 3.3.

Indicator Assessment

Assessment of change in Marine Ecosystem Integrity measures			
	Long term	**Short term**	**Latest year**
Marine ecosystem integrity (fish size class)	❌1983-2011	✅2006-2011	Increased (2011)
Marine Litter[1]	❌1992-2014	✅2009-2014	Decreased (2014)

Links

Organisation	Subject
Defra	Charting Progress: The State of UK Seas
Defra	Marine Strategy Framework Directive
Defra	England Biodiversity Indicators
Wageningenur UR	Fulmar Research
Marine Conservation Society	Big Beach Clean
CEFAS	Home page

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1 The indicator assessment for marine litter should be treated with caution as it is very difficult to establish trends for this measure.

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4. Priority Species and Habitats

The set of indicators displayed here have replaced the interim indicator presented in the 2013 publication. The indicators below are aligned with the England Biodiversity Indicators (see links at the end of this chapter for more information).

4a. Status of threatened species: priority species

4ai. Status of priority species– relative abundance

The first part of this indicator shows relative population changes of priority species in the UK for which population abundance data are available. Priority species are defined as those on one or more of the biodiversity lists of each UK country (Natural Environmental and Rural Communities Act 2006 - Section 41 (England) and Section 42 (Wales), Northern Ireland Priority Species List, Scottish Biodiversity List). The combined list contains 2,890 species in total.

Of these 2,890 species, the 213 for which robust quantitative time series of relative species abundance are available are included in the indicator. These 213 species include birds (101), butterflies (21), mammals (12) and moths (79). This selection is taxonomically limited at present, including no vascular or non-vascular plants, fungi, amphibians, reptiles, or fish. The only invertebrates included are butterflies and moths. Currently this indicator can only be presented at a UK scale.

Figure 4.1: Change in the relative abundance of priority species in the UK, 1970 to 2012
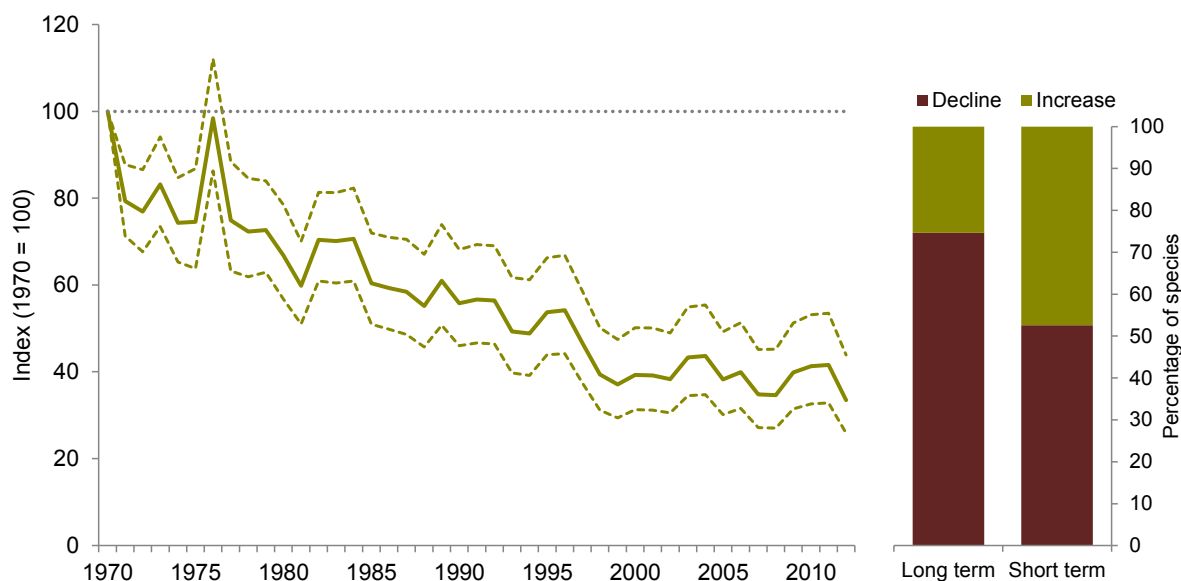
Notes:

1. Based on 213 species. Dotted lines show the 95 per cent confidence intervals relative to the 1970 reference year.

2. Bar chart shows the percentage of species increasing or declining over the long-term (1970 to 2012) and the short-term (2007 to 2012).

3. All species in the indicator are present on one or more of the country priority species lists (Natural Environmental and Rural Communities Act 2006 - Section 41 (England) and Section 42 (Wales), Northern Ireland Priority Species List, Scottish Biodiversity List).

Source: Bat Conservation Trust, British Trust for Ornithology, Butterfly Conservation, Centre for Ecology & Hydrology, Defra, Joint Nature Conservation Committee, People's Trust for Endangered Species, Rothamsted Research, Royal Society for the Protection of Birds.

By 2012, populations of priority species overall had declined to 33 per cent of the 1970 index value, a statistically significant decrease. Over this long-term period, 25 per cent of species showed an increase and 75 per cent showed a decline.

Between 2007 and 2012, populations of priority species declined by four per cent relative to their value in 2007. This decrease is not statistically significant. Within the index over this short-term period, 47 per cent of species showed an increase and 53 per cent showed a decline.

The measure is a composite indicator of trends in 213 species from the following taxonomic groups: birds; butterflies; mammals; and moths. These species have not been selected as a representative sample of priority species and they cover only a limited range of taxonomic groups. The measure is therefore not fully representative of species in the wider countryside. The time series that have been combined cover different time periods, were collected using different methods and were analysed using different statistical techniques. In some cases data have come from non-random survey samples. See the links at the end of this chapter for more detail.

4aii. Status of priority species; frequency of occurrence - insects

The second part of this indicator uses biological records to show changes in the frequency of occurrence of priority species in the UK.

Of the 2,890 species on the combined biodiversity lists of the four UK countries, the 179 for which robust quantitative time series of frequency of occurrence are available are included in the indicator. These 179 species include moths (110), bees (37), wasps (23), ants (2), hoverflies (2), dragonflies (2) and grasshoppers (3). Currently this indicator can only be presented at a UK scale.

Figure 4.2: Change in frequency of occurrence of priority species in the UK, 1970 to 2011
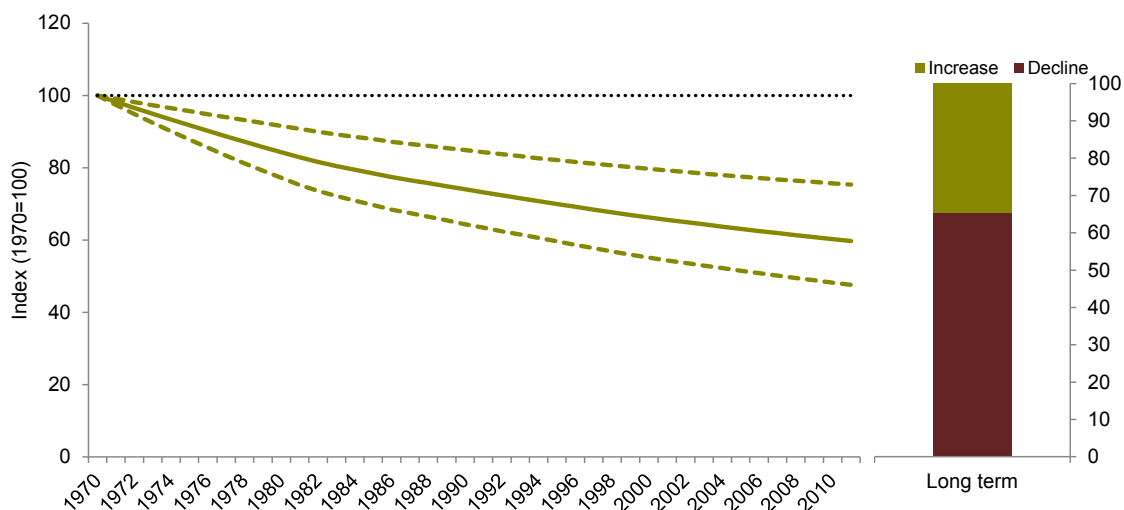
Notes:

1. Based on 179 species of insect.

2. Bar chart shows the percentage of species increasing or declining over the long-term (1970 to 2011).

3. All species in the indicator are present on one or more of the country priority species lists (Natural Environmental and Rural Communities Act 2006 – Section 41 (England) and Section 42 (Wales), Northern Ireland Priority Species List, Scottish Biodiversity List).

Source: Bees, Wasps and Ants Recording Society; British Dragonfly Society; Biological Records Centre[1] Butterfly Conservation; Hoverfly Recording Scheme; Orthoptera Recording Scheme.

This indicator uses biological records (observations of species in a known place in space and time) to model changes in the frequency of occurrence of a group of species. Between 1970 and 2011, the frequency of occurrence of those priority species included in this indicator has declined to 60 per cent of its value in 1970. Over this time period, 65 per cent of species experienced a decline and 35 per cent experienced an increase in their frequency of occurrence.

The measure is a composite indicator of 179 species from the following taxonomic groups for which there are sufficient data to create a time series: moths, bees, wasps, ants, dragonflies, hoverflies and grasshoppers. These species have not been selected as a representative sample of priority species and they cover only a limited range of taxonomic groups. The measure is therefore not representative of all species in the wider countryside. The time series have been combined cover different time periods and were collected using different methods.

1 The Biological Records Centre is co-funded by the Centre for Ecology and Hydrology and the Joint Natural Conservation Committee

4b. Status of threatened habitats

4bi. Extent and condition of priority habitats

There are 56 habitats recognised as being of 'principal importance' for the conservation of biological diversity in England under section 41 of the Natural Environment and Rural Communities Act 2006. Priority habitats are a focus for conservation action in England. The first part of this indicator shows the extent of priority terrestrial and coastal habitat types across England.

Figure 4.3: Distribution of terrestrial and coastal priority habitats in England, 2013

Source: Natural England

Crown copyright and database rights 2013. Ordnance Survey 100022021.

Legend: Wetland, Grassland, Coastal, Inland Rock, Woodland, Heathland, Orchards
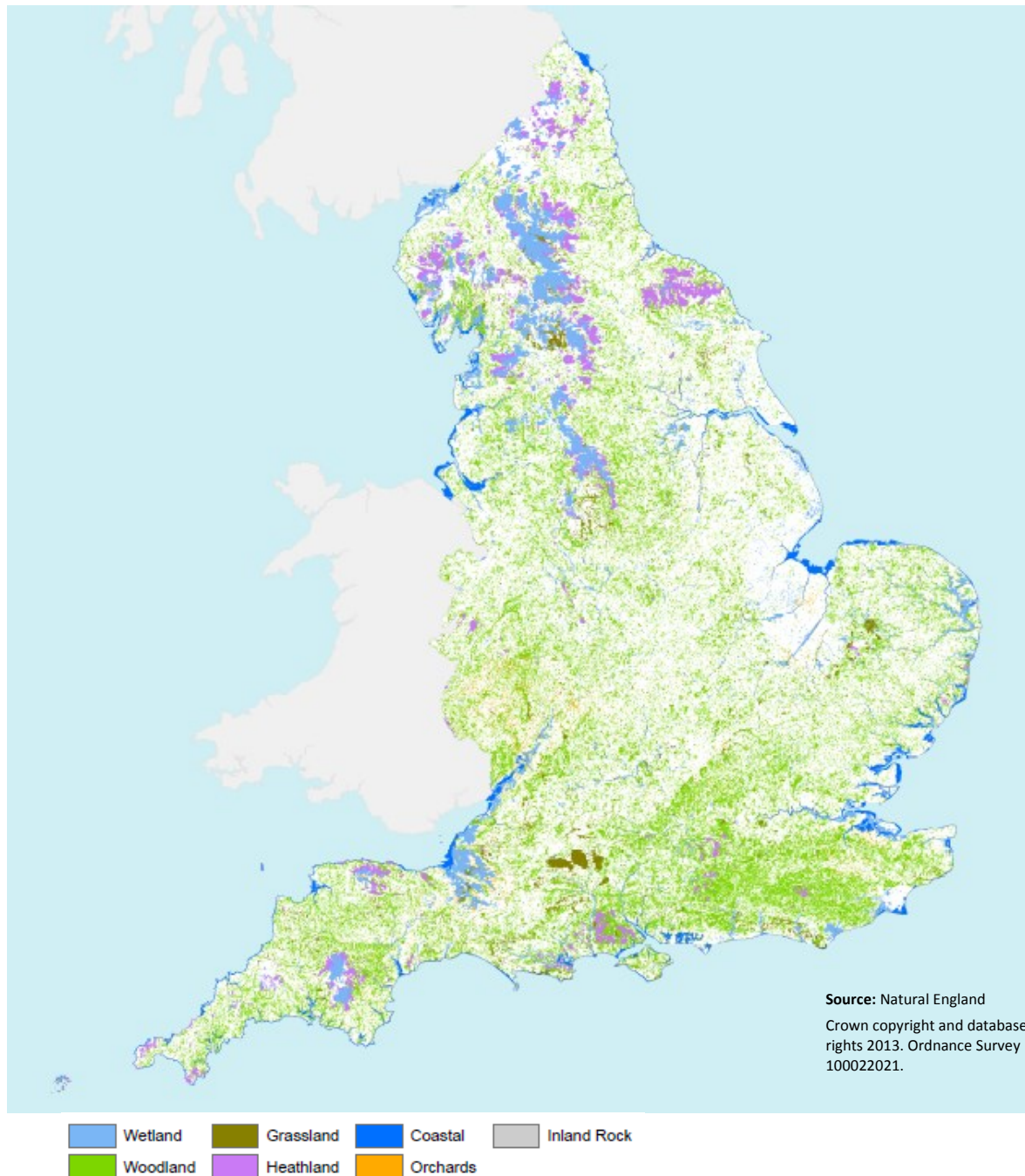
There are around 1.9 million hectares of terrestrial and coastal priority habitats across England, representing around 14 per cent of the land area. This indicator does not include freshwater and marine habitats.

Deciduous woodland accounts for around 39 per cent of total priority habitats resource in England. A further 29 per cent consists of wetland habitats; 16 per cent heathlands and seven per cent each for grasslands and coastal habitats. Rarer habitats such as traditional orchards and limestone pavements make up about one per cent of the total resource.

Forty per cent of the priority habitat resource is protected through the designated site network in England (see indicator number 1 for further details). For 18 priority habitats the majority (>50 per cent) of the resource occurs within protected areas, such as for coastal saltmarsh, limestone pavements and lowland heathland. However, for 6 priority habitats they largely fall outside of protected areas, such as traditional orchards (<1 per cent) and deciduous woodlands (12 per cent).

Biodiversity 2020 has a higher level outcome to achieve "90% of priority habitats in favourable or recovering condition". The second part of this indicator shows the percentage area of priority habitats in favourable, recovering and unfavourable condition (chart 4.4). The condition figures are broken down by area within protected areas (Sites of Species Scientific Interest (SSSIs)) and outside protected areas under Higher Level Stewardship agreements (used as a proxy for favourable management).

Figure 4.4: Condition of priority habitat by area (%) in England, 2011 to 2014
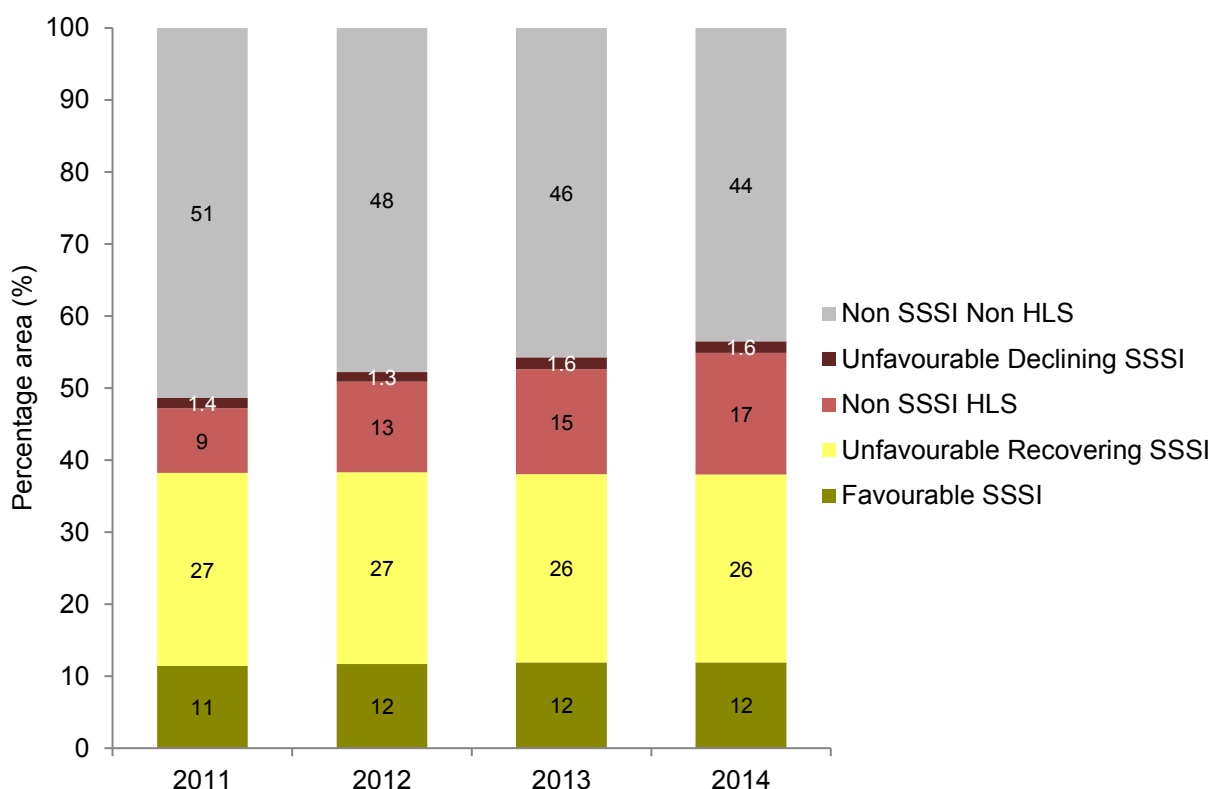
Source: Natural England.

As of April 2014 just over 1 million hectares of priority habitats were in target condition (55 per cent in favourable or recovering condition). Broken down to within and outside protected sites this amounts to 39 per cent of priority habitats in favourable or recovering condition in SSSIs and a further 17 per cent of priority habitats outside SSSIs in favourable management (under HLS management). Since 2011 there has

been a 7.7 per cent increase in the area of priority habitat in target condition. This has been largely due to the uptake of HLS management agreements outside of SSSIs.

We are unable to report of the condition of some 43 per cent of priority habitats that occur outside of SSSIs and that are not under HLS management (grey bar in chart 4.4). In the future, other mechanisms of achieving 'appropriate management' will be included. Some habitats also require further work to agree a monitoring methodology, notably woodlands and freshwater habitats. See the links at the end of this chapter for more detail.

Indicator assessment

Assessment of change in status of priority species and habitats			
	Long term	**Short term**	**Latest year**
Relative abundance of priority species	❌ 1970-2012	😐 2007-2012	Decreased (2012)
Status of priority species; frequency of occurrence – insects	❌ 1970-2011	N/A	N/A
Extent of priority habitats	⊙	⊙	Not assessed
Condition of priority habitats	⊙	⊙	Not assessed

Note: Short term and latest year assessments cannot be given for frequency of occurrence as the analytical technique currently used is not appropriate for the production of short term trends. A long term assessment is not made for priority habitats as the data do not go back more than 10 years.

Links

Organisation	Subject
Defra	England Biodiversity Indicators
UK BARS	UK Biodiversity Action Reporting System

5. Land Use

This indicator relates to the ambition in NEWP that increased pressure on land use needs to be taken into account in the management of land for all its uses, including crops, grazing, forests and built up urban areas.

5a) Land Use by Type

This measure is for context and will not be assessed.

Figure 5.1: Breakdown of land use in England (for context), 2012
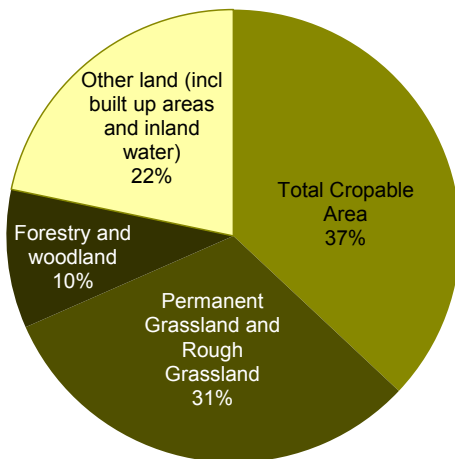
Source: Defra, Ordinance Survey, Forestry Commission, Forest Service (Northern Ireland)

Figure 5.2: Map of UK land cover, 2007
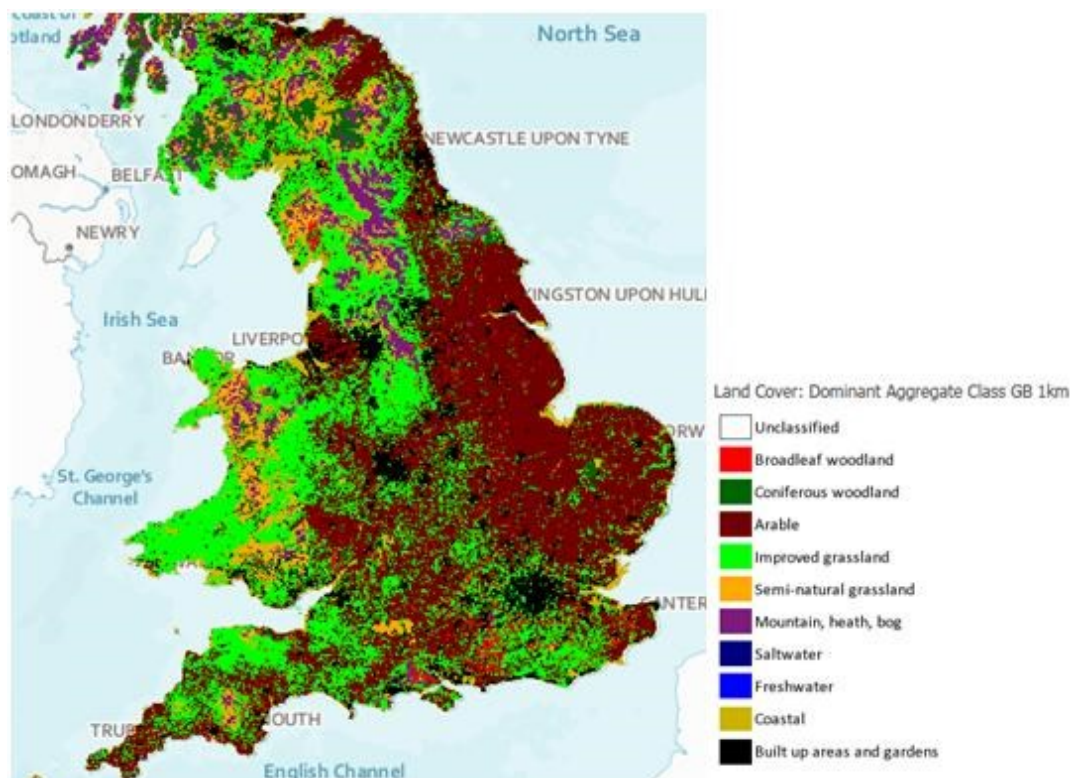
Source: Centre for Ecology and Hydrology

5b) Percentage of woodland in active management

This indicator relates to the NEWP ambition that concerted action will be taken to sustainably manage our woodland environments. This links with the ambition to increase the amount of actively managed woodland set out in the Government Forestry and Woodlands Policy Statement - January 2013. The indicator below is from the Forestry Commission England Corporate Plan Performance Indicators.

Figure 5.3: Percentage of woodland in active management in England (including the public forest estate), 2008 to 2015
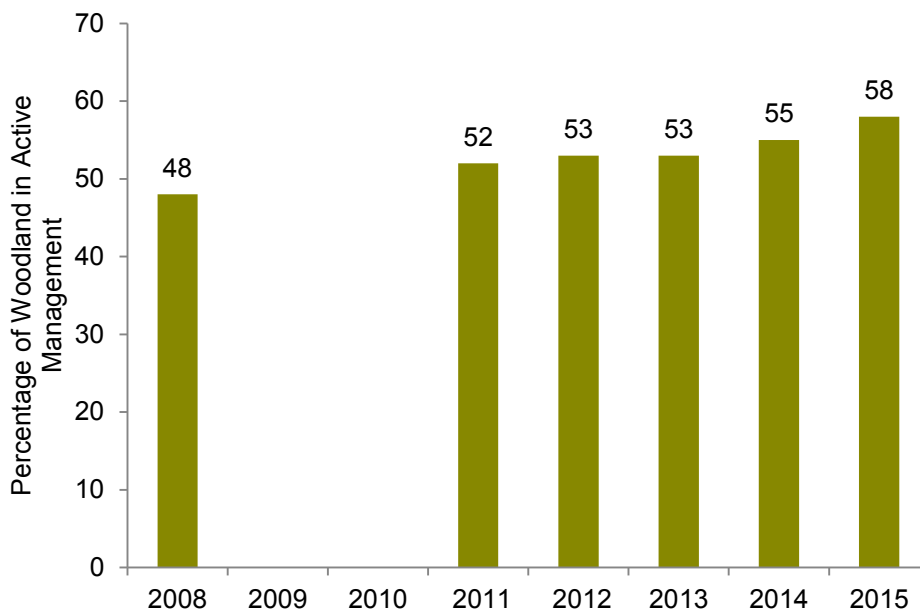
Notes:
1. This Indicator of woodland in management includes in brief, woodlands on the Public Forest Estate plus woodlands where there has been English Woodland Grant Scheme or with recent Felling Licence activity typically in the previous 15 years. The figure for 2015 includes enhancements to standardise the methodology, to include all woodland in management plans, and woodland on training areas managed by the Defence Infrastructure Organisation. It is recognised that other woodland might be considered as 'managed'.
2. Woodland is defined as that shown on the National Forest Inventory woodland map.
3. Figures are based on a snapshot at the end of March each year.
Source: Forestry Commission

The percentage of woodland in active management has gradually increased by 10 percentage points since 2008. The percentage of woodland in active management is currently 58 per cent.

The Forestry Commission has a Woodlands into Management Programme which, through working with the private sector, aims to bring around two-thirds of woodland into active management by 2018, with the aspiration, as set out in the Forestry and Woodlands Policy Statement that this will eventually rise to 80 per cent.

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Indicator Assessment

Assessment of change of land use			
	Long term	**Short term**	**Latest year**
Land Use	Not assessed		
Change in percentage of land in active management	⚫⚫⚫	✅ 2011-2015	Increased (2015)

Links

Organisation	Subject
DCLG	Planning System
DCLG	Land Use Change Statistics
Forestry Commission	Indicator Statistics
Forestry Commission	National Forest Inventory and Managed Woodland Indicator Map Data Download
Defra	Government Policy on Forestry
Centre for Ecology and Hydrology	Land cover map

6. Natural Stocks

An important part of the NEWP is to raise awareness of the importance of safeguarding natural stocks both to protect the natural environment and to grow a green economy.

6a) Fish stocks harvested within safe limits

This indicator shows the percentage of fish stocks in seas around the UK that are harvested sustainably and are at full reproductive capacity. This is based on a group of 6 species in 14 stocks for which there are reliable estimates of fishing mortality and spawning biomass and which together represent fish stocks of major importance to the UK fishing industry.

Figure 6.1: Percentage of fish stocks harvested sustainably and at full reproductive capacity in the UK, 1990 to 2012
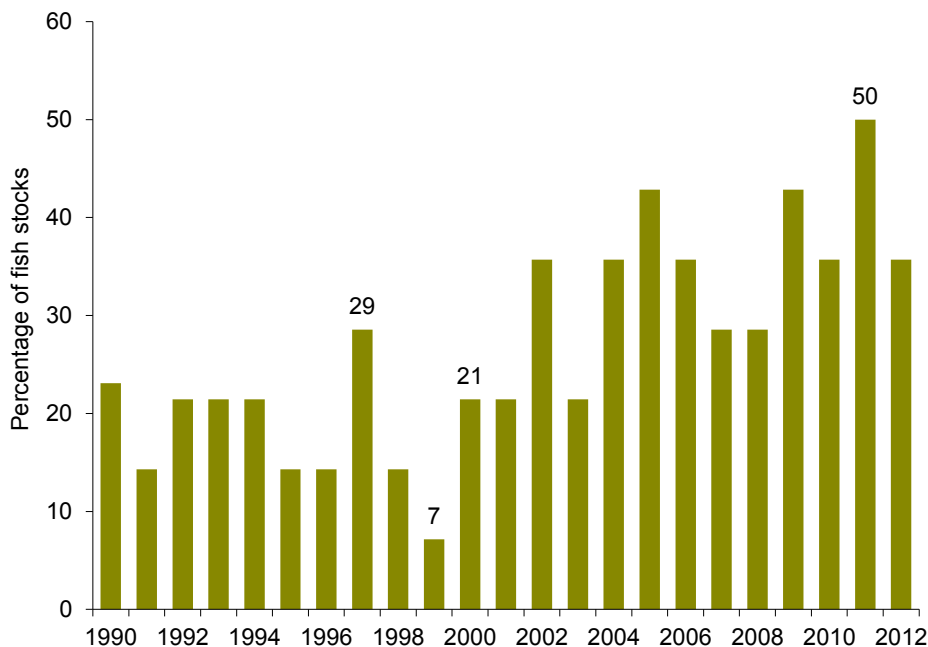
Notes: Based on 14 stocks for which accurate time series are available derived from stock assessment reports.

Source: International Council for the Exploration of the Sea, Centre for Environment Fisheries and Aquaculture Science

The proportion of assessed fish stocks harvested sustainably and at full reproductive capacity ranged from 7 per cent to 29 per cent in the period 1990 to 1999, and has been between 21 and 50 per cent since 2000.

The indicator series shows that there has been a progressive increase in the percentage of fish stocks harvested sustainably and at full reproductive capacity in the 2000s. The indicator is assessed as improving in both the long-term and the short-term.

6b) Water Abstraction

This indicator shows the estimated abstractions of water from non-tidal surface waters and groundwater by use. Water is a vital resource that needs to be managed carefully to ensure both that people have access to affordable and safe drinking water and sanitation and that industry needs are met, without depleting water resources or damaging ecosystems.

Figure 6.2: Estimated abstractions from non-tidal surface water and groundwater: England and Wales, 1991-2013
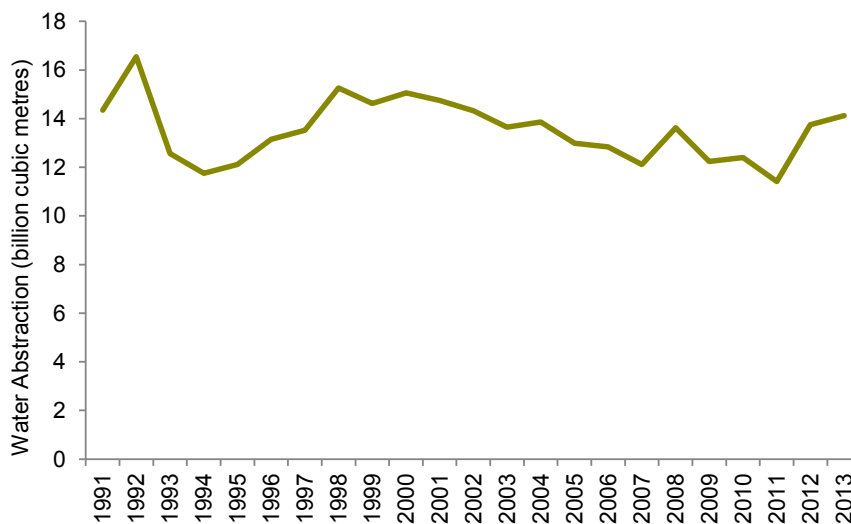
The estimated abstraction of water from non-tidal surface water and groundwater in England and Wales fell steadily from an estimated 15.1 billion cubic metres in 2000 to 11.4 billion cubic metres in 2011. Data for 2012 showed an increase to 13.7 billion cubic metres, data for estimated abstraction in 2013 shows a further increase to 14.1 billion cubic metres, an increase of 0.4 billion cubic metres.

Total estimated abstractions in 2013 are at the highest levels since 2002. The main reason for the overall increase in estimated abstraction between 2011 and 2013 is the rise in the level of estimated abstractions for electricity generation, probably due at least in part to an increase in estimated abstraction relating to hydropower generation.

Figure 6.3: Abstractions from non-tidal surface water and groundwater by use: England and Wales, 2000-2013
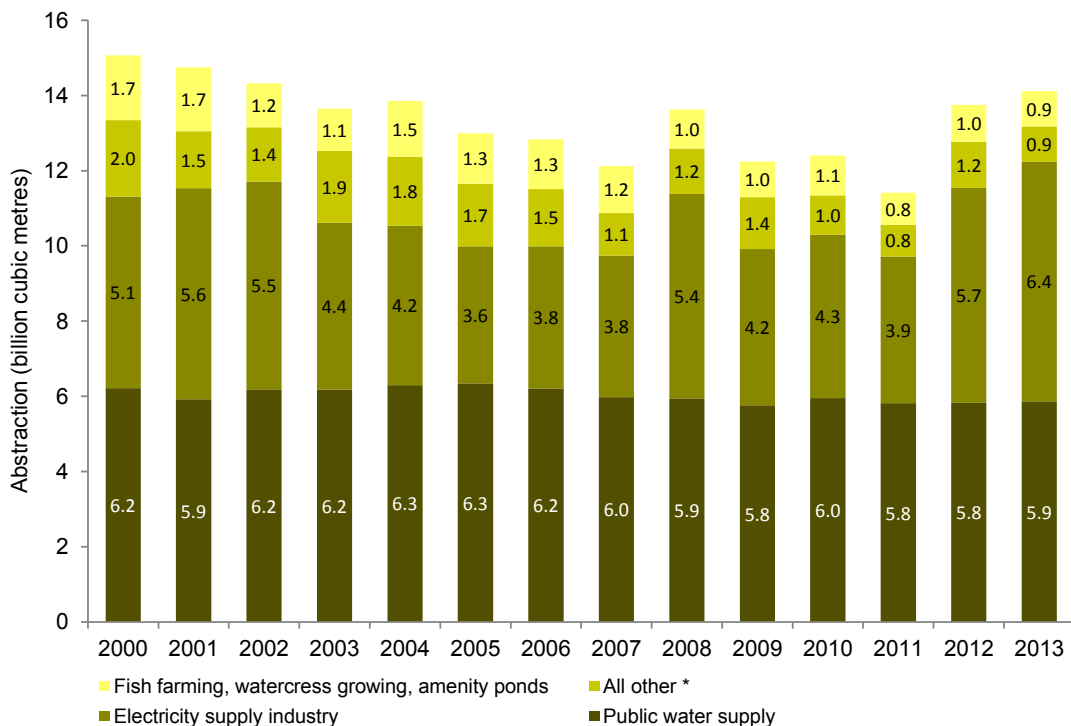
Notes: * Spray irrigation, Agriculture, Private water supply, Other
Source: Environment Agency ABSTAT 2013

6c) Forest Carbon Stock

Carbon capture is a regulating function of forests and is important in reducing the impacts of climate change. This indicator shows the tonnage of carbon expected to be in UK forests.

Figure 6.4: Total carbon in UK forests, 1990 to 2015
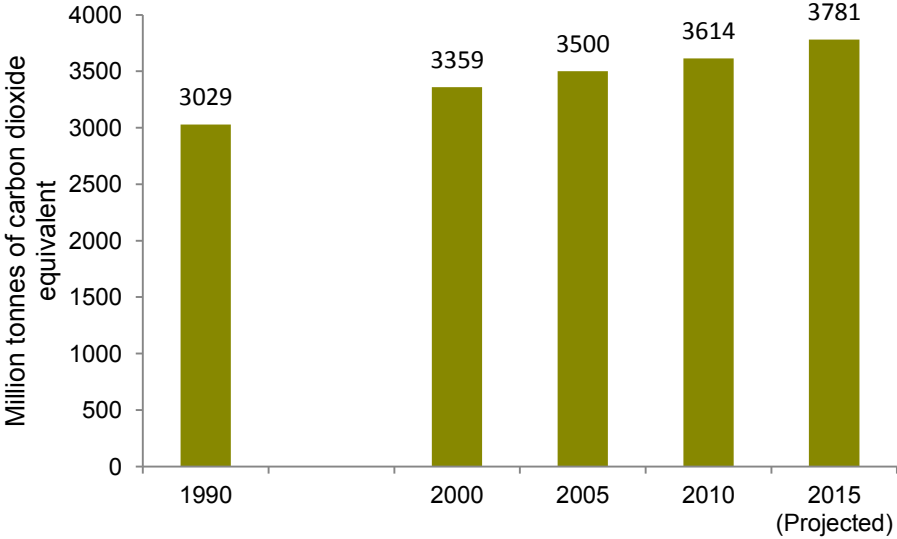
Notes: To convert to carbon multiply by 12/44.

Source: Forestry Commission

The total carbon in UK forests increased from 1990 to 2010 and by 2015 is projected to increase further.

The carbon in forest soils (depth up to 1 metre) accounts for approximately 75 per cent of total forest carbon. The remaining 25 per cent consists of carbon in dead wood, carbon in biomass and carbon in forest litter.

Evidence suggests that most of the increase in soil carbon is existing soil carbon in areas afforested between these dates, not additional carbon sequestered.

6d) Soil Carbon Concentrations

This indicator shows the concentration of carbon in soils (0-15cm) in Great Britain and is relevant because of the range of ecosystems provided by soil organic matter. Soil organic matter confers a large number of important benefits to soil (for example improved structure, nutrients, source of food for soil organisms) and its capacity to deliver ecosystem services.

When converted to a carbon stock this can be used together with the forest carbon stock measure to assess how much carbon is stored in the majority of British habitats.

Figure 6.5: Changes in the carbon concentration of soils (0-15cm) from sampling plots in all habitats in Great Britain, 1978 to 2007
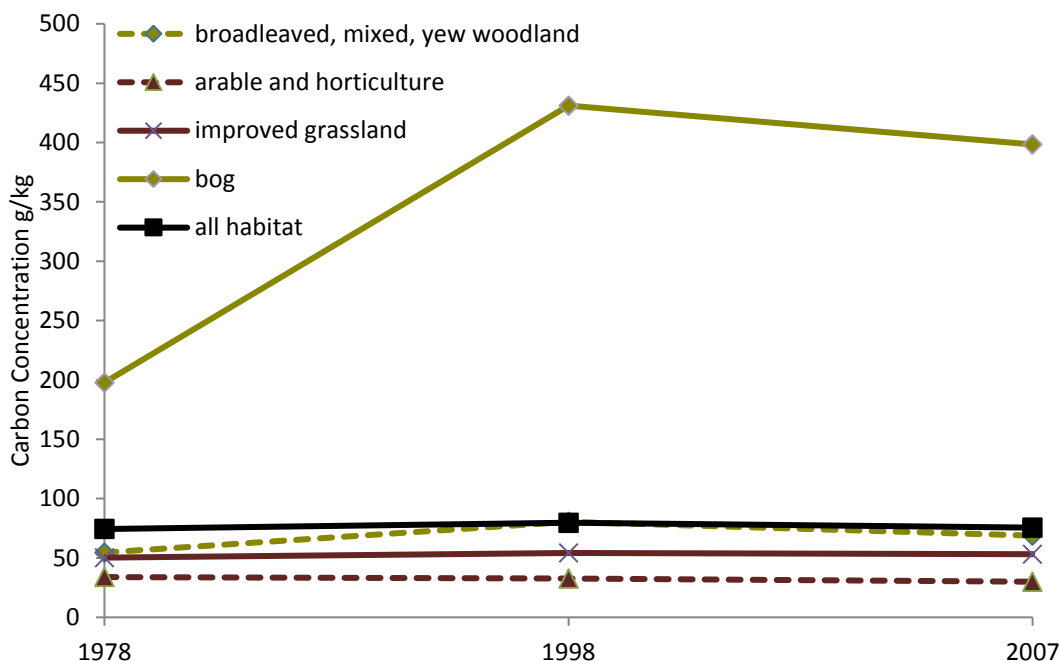
Source: Countryside Survey

Notes: Data from selected habitats are shown as examples

Carbon is fundamental to soil functioning as it is the primary energy source in soils and has a critical role in maintaining soil structural condition and resilience and water retention. As carbon levels decrease soils become more vulnerable to degradation and are less able to perform vital ecosystem services.

Soils are the largest terrestrial store of carbon; globally soils contain about twice as much carbon as the atmosphere and about three times the carbon stored in vegetation. Losses of soil carbon contribute to greenhouse gas emissions, in the form of carbon dioxide.

The assessment for this indicator is based on the 'all habitat' line in figure 6.5.

Indicator Assessment

Assessment of change in Natural Stocks			
	Long term	**Short term**	**Latest year**
Sustainable fisheries	✅ 1990-2012	✅ 2007-2012	Decreased (2012)
Forest Carbon Stock	✅ 1990-2015	✅ 2010-2015	Not assessed
Water Abstraction[1]	≈ 1991-2013	≈ 2008-2013	Increased (2013)
Soil Carbon Concentration (all habitats)	≈ 1978-2007	≈ 1978-2007	Not assessed

Links

Organisation	Subject
Defra	England Biodiversity Statistics
Cefas	Home Page
Forestry Statistics	Forestry Statistics
Defra	Government Policy on Forestry
Defra	Water Abstraction Statistics
Countryside Survey	Soils Survey Report 2007

1 The indicator assessment for water abstraction should be treated with caution as it is very difficult to establish trends for this measure.

7. Raw Material Consumption

This indicator focuses on the use of renewable materials in our consumption. Biomass is material derived from living or recently living organic matter and is a renewable source of energy and material. It is good to observe lower overall consumption alongside moving away from the consumption of finite materials to that of biomass, provided that biomass extraction is sustainable. Biomass consumption is measured in terms of its raw material equivalent (RME). Total UK consumption equals UK production plus imports minus exports. Net domestic consumption is UK production minus exports.

Figure 7.1: Biomass Consumption per year in million tonnes of raw material equivalent in the United Kingdom, 2000-2012
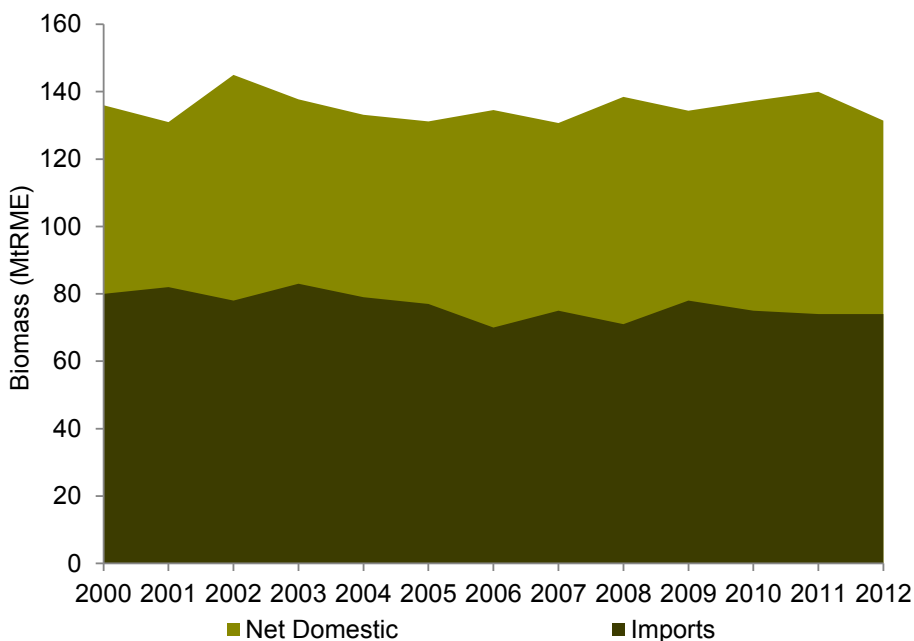
Notes:

1. Net Domestic consumption is the consumption in the UK plus imports and minus exports.
2. The raw material equivalent of a product indicates how much extraction of material was necessary for manufacturing the product, over the whole production period.

Source: Defra, ONS

Total biomass consumption dropped from 136 million tonnes (mt) of RME in 2000 to 131mt RME in 2012. This represents an eight per cent drop in consumption.

The proportion of biomass consumption from imports has slightly decreased from 59% to 56% between 2000 and 2012.

Figure 7.2 helps to contextualise the impact of changing consumption by showing a comparison of GDP, biomass and RMC. RMC includes the consumption of biomass, construction materials and minerals.

Figure 7.2: Comparative indices of GDP, biomass and total Raw Material Consumption (RMC) in the United Kingdom, 2000-2012
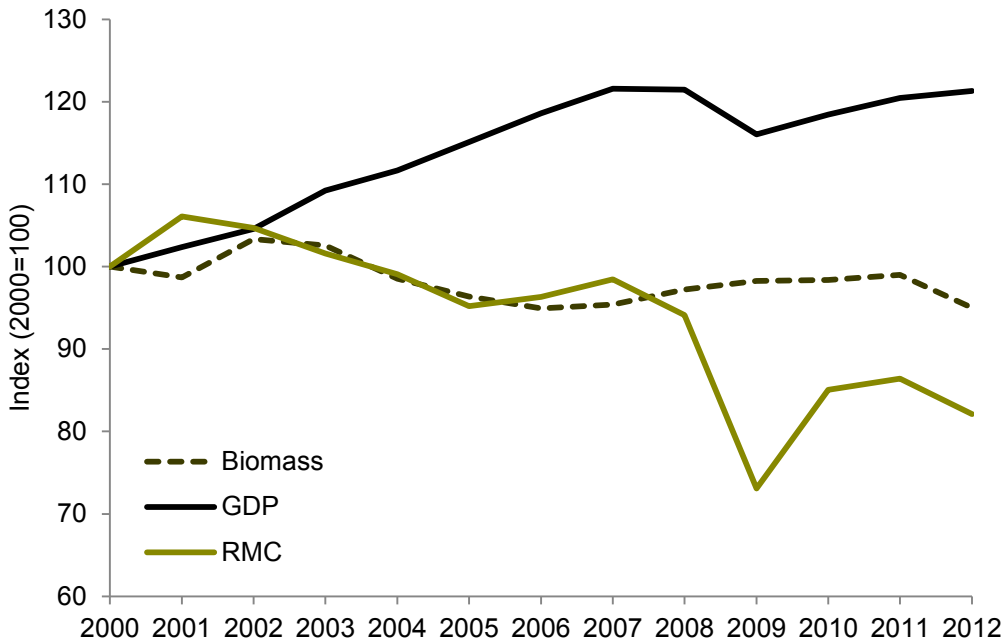
Notes: 'Money GDP' (cash) deflated using UK Gross Domestic Product deflators at market price, published December 2013 (ONS), before indexing

Source: Defra, ONS

The decline in biomass over the time period shown is slower than that of RMC implying a higher proportion of RMC is now due to biomass consumption.

The increase in GDP alongside a decrease in RMC over the last ten years suggests that the reduced consumption may be due to higher resource efficiency.

Indicator Assessment

Assessment of change in Raw Material Consumption			
	Long term	**Short term**	**Latest year**
Raw Material Consumption[1]	✓2000-2012	≈2007-2012	Decrease (2012)

Links

Organisation	Subject
ONS	Experimental estimates of resource use

1 The indicator assessment should be treated with caution due to the experimental nature of the statistic.

8. Value of Ecosystem Services

This is a newly developed indicator. This indicator begins to take account of the services that nature provides, some of which are not priced in the market place; over time we expect to measure more of these, in both physical and monetary terms, so that the value of our natural environment is fully accounted for.

In economic terms, nature can be thought of as an asset, or stock of capital, which has the capacity to generate goods and services that benefit, and are valued by, people. This indicator presents the value of the flow of three services (recreation, carbon sequestration and biomass for timber) that we obtain from UK woodland as a part of the natural capital of the country. Based on these values, it also provides an estimate of the asset value of UK woodland.

The value of woodland ecosystem services

Ecosystem services provide the link between extent and condition of natural assets on the one hand and the flow of benefits received by society on the other. People benefit from both the materials that ecosystems provide (such as the harvesting of timber from woodland) and from the outcomes of natural processes (such as the benefits from clean air that has been filtered by woodland).

Ecosystem services that contribute to human well-being are classified into:

- **Provisioning services** – these are generally the material products that ecosystems provide, for example, food (crops, fish), materials (timber), or water.

- **Regulating services** – these are the benefits provided by ecosystems in the regulation of various aspects of the planet, for example, climate regulation (carbon sequestration), noise and air pollution reduction, and flood hazard reduction.

- **Cultural services** – non-material benefits, for example, through cultural heritage, recreation or aesthetic experience.

- **Supporting services** – such as biodiversity, soil function.

Only one ecosystem (woodland) is currently assessed under this indicator and within this ecosystem only three services are analysed. These services are: timber production, carbon sequestration and recreation; for each of these, reasonably robust estimates can be generated on an annual basis. It is important to note that woodland ecosystem services also provide other services; for example, we are not yet in a position to make estimates for flood protection or air quality services.

8a. Value of three woodland ecosystem services

These three services[1] provided by woodland ecosystems in the UK can be valued in a variety of ways. For timber, the value can be approximated by the stumpage price – the price paid for the right to harvest timber from a given site - for coniferous wood, which is assumed to apply to all the timber that is harvested. For carbon sequestration, the value of carbon removed can be based upon the non-traded carbon price estimated by the Department of Energy and Climate Change (DECC) [2, 3]. For recreation, the average value of each visit can be taken from a meta-analysis carried out by Sen et al. (2014) [4].

Figure 8.1 shows that the total value of all three services in 2013 was £3,200 million, up from £2,800 million in 2009 (in 2013 prices).

The split of total value between the three services is:

- Timber removals were valued at just under £220 million in 2013, up from £110 million (in 2013 prices) in 2009. This increase is due mainly to an increase in the stumpage price over the period.
- Carbon removals were valued at just under £1,000 million in 2013, up from £980 million (in 2013 prices) in 2009. This increase is due to the increase in the value of carbon over the period.
- Recreation services were valued at £2,000 million in 2013, up from £1,700 million (in 2013 prices) in 2009. This increase is entirely due to the change in the number of visits made, as the value of each visit has been assumed to be constant over the period.
- The value of the woodland ecosystem services of recreation and carbon sequestration in 2013 is estimated to be 14 times the value of timber provisioning services

Figure 8.1 Value of 3 woodland ecosystem services in the UK, 2009 to 2013
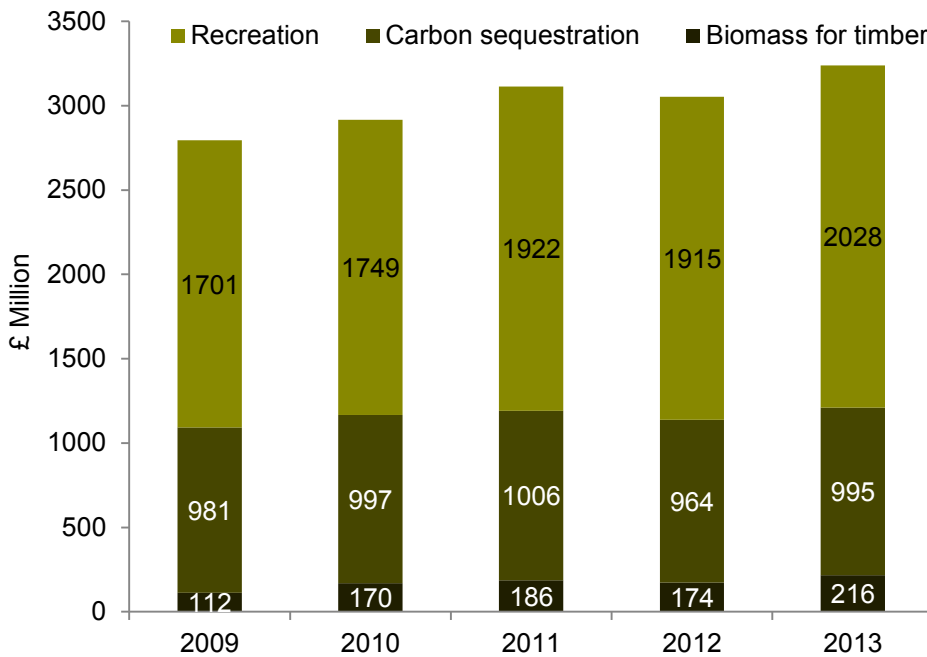
Notes: Values are in 2013 constant prices.

Source: Defra, ONS

8b. Asset value of UK woodland ecosystem services

This measure is for context and will not be assessed.

This section makes an estimate of the asset value of UK woodland based on the value of the three ecosystem services analysed in Section 8a above. Figure 8.2 shows that the total value of woodland ecosystems in the UK is estimated to be £92 billion in 2013, based on the Net Present Value of three key services (timber, carbon sequestration and recreation) over a prescribed period. It is a partial and experimental estimate, based on the assumed future flows of each service, discounted to present values over 50 years.

Figure 8.2: Asset value of UK woodland ecosystem services, 2009 to 2013
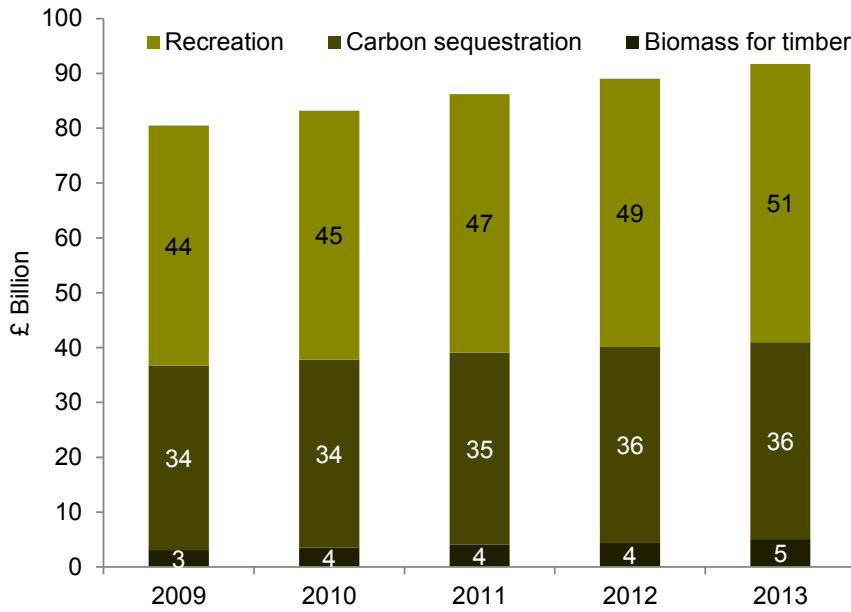
Notes:

1. Prices are in 2013 constant prices.
2. Valuation is based on the Net Present Value of the three key services over a 50 year period (discounted).

Source: Defra, ONS

Assessment

Assessment of the change in value of ecosystem services			
	Long term	**Short term**	**Latest year**
Value of UK woodland ecosystem services	⊙	⊙	Not assessed
Asset value of UK woodland ecosystem services	Not assessed		

Notes for the valuation of woodland ecosystem assets and services

1. The values for the three services of woodland ecosystems covered in the indicator (timber production, carbon sequestration and recreation) do not include the value of the services to the wood products or tourism sectors and other sectors further down the economic production chain.

2. National Atmospheric Emissions Inventory (2014): Projections of emissions and removals from Forest Land.

3. Department of Energy and Climate Change (2014). Carbon Data tables 1-20: supporting the toolkit and guidance.

4. Sen, A., Harwood, A. R., Bateman, I. J., Munday, P., Crowe, A., Brander, L., Raychaudhuri, J., Lovett, A.A. Foden J. and Provins, A. (2014). Economic assessment of the recreational value of ecosystems: Methodological development and national and local application. Environmental and Resource Economics, 57(2), 233-249.

Links

Organisation	Subject
ONS	[Environmental Accounts](#)

9. Integrating biodiversity and natural environment considerations into business activity

This indicator relates to the NEWP aim of encouraging businesses to use natural capital sustainably and protecting it through day to day operations. The indicator has been developed for the UK Biodiversity Indicators and is currently only available on a UK level.

Type: Response indicator

9 Integration of biodiversity considerations into business activity

9a) Environmental Management Systems

Figure 9.1: Percentage of large companies surveyed in the Environmental Protection Expenditure survey that use an Environmental Management System in the UK, 2011-2012
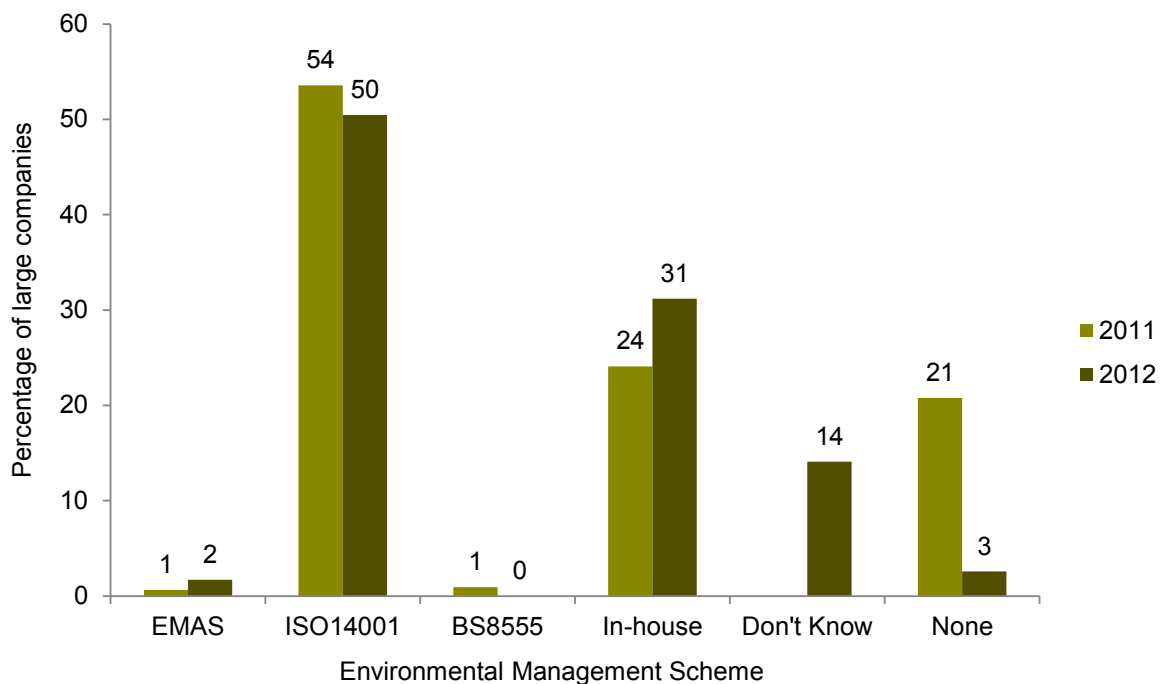
Notes:

1. As companies can have multiple systems in place, a hierarchy (EMAS > ISO 14001 > BS 8555 > In-house) has been applied to avoid double counting.
2. Weighted percentages based on responses from 121 large companies in 2011 and 127 large companies in 2012.
3. 'Large companies' are those that employ more than 250 staff.
4. 'Don't know' was not given as a response option in the 2011 survey.

Source: Defra.

9b) Environmental consideration in supply chains

Figure 9.2: Percentage of large companies surveyed in the Environmental Protection Expenditure survey that consider environmental issues in their supply chain in the UK, 2012
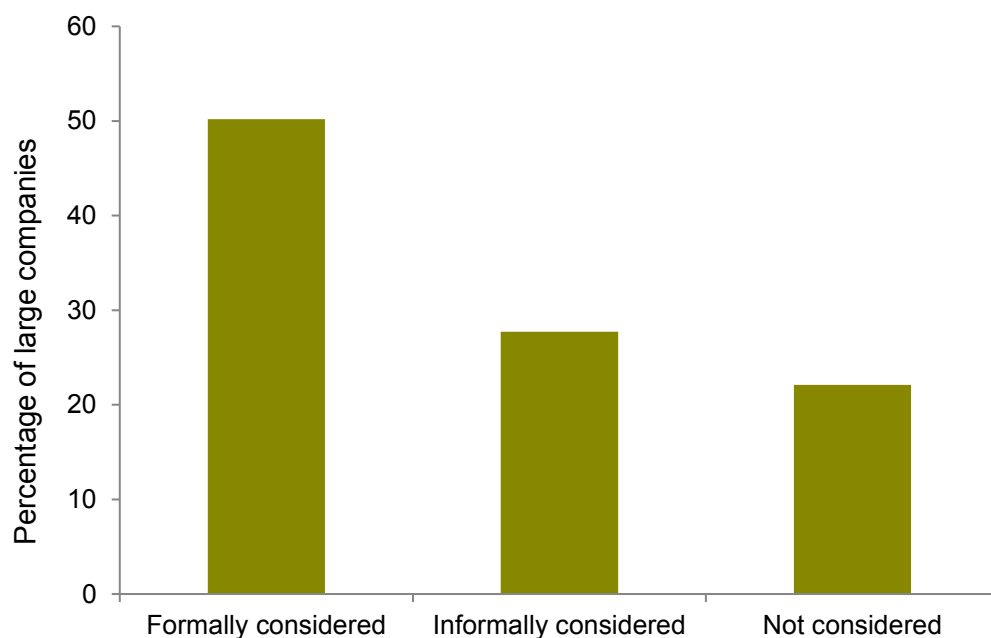
Notes:

1. Weighted percentages based on responses from 120 large companies.
2. 'Large companies' are those that employ more than 250 staff.

Source: Defra.

83 per cent of responding large companies (companies with more than 250 employees) had an Environmental Management System (EMS) in place in 2012, compared to 79 per cent in 2011.

In 2012, just over half of responding large companies had an EMS certified to ISO 14001 (51 per cent), and a small number were certified to Eco-Management and Auditing Scheme (EMAS) (two per cent).

Overall, 31 per cent of respondents in 2012 had an EMS in place which was not externally certified (i.e. it was developed and implemented to meet "in-house" needs). 19 per cent were written, while 12 per cent were informal. A comparison of written and informal in-house EMS is not possible for 2011.

Overall, 78 per cent of large companies considered environmental issues within their supply chain in 2012 (50 per cent formally, 28 per cent informally); 22 per cent did not consider environmental issues at all.

Indicator Assessment

Assessment of Integrating biodiversity and natural environment considerations into business activity			
	Long term	**Short term**	**Latest year**
Percentage of large companies (>250 employees) that use an Environmental Management Scheme (EMS)	⬤	⬤	Not Assessed (2012)
Percentage of companies where the environment is formally considered in the supply chain	⬤	⬤	Not Assessed (2012)

Links

Organisation	Subject
Defra	UK Biodiversity Indicators
JNCC	Business considerations

10. Public Engagement with the Natural Environment

This indicator mainly relates to the ambition in NEWP to reconnect people and the environment. It has been shown that nature has a positive impact on a person's well-being and that green spaces enhance communities[1].

10a) Proportion of population visiting the natural environment several times a week

This indicator provides an estimate of the frequency of visits and access to the natural environment by the adult population in England. It is intended to measure how much people engage directly with the natural environment by visiting it regularly. Figure 10.1 shows the proportion of the population reporting that, on average, they visited the outdoors several times a week or more over the previous year.

Figure 10.1: Proportion of the population visiting the outdoors several times or more a week in the last 12 months in England, 2009-10 to 2013-14
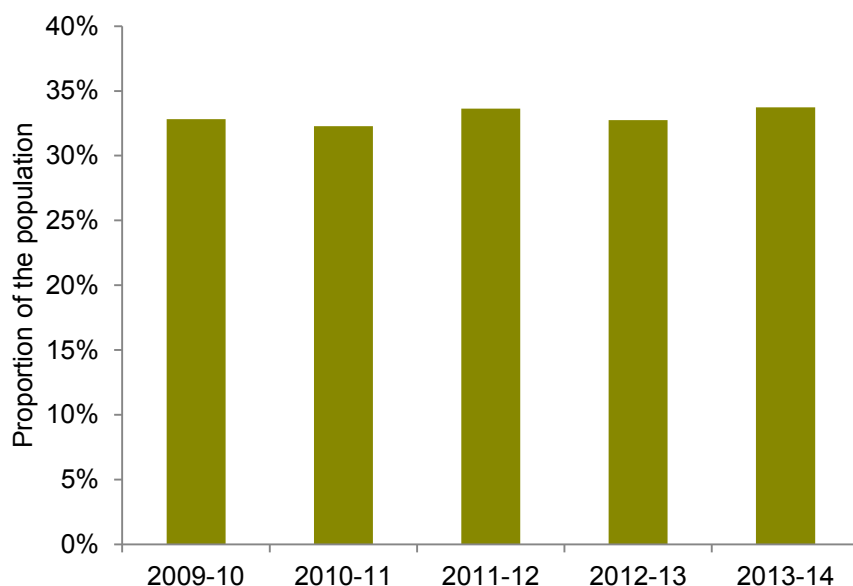
Source: MENE

The indicator provides an estimate of the frequency of visits and access to the natural environment by the adult population in England.

Between March 2013 and February 2014 just over a third (34 per cent) of the adult population stated that on average, they had visited the natural environment several times a week or more over the previous year. There has been very little change in the frequency of visits to the outdoors over the five year period.

1 National Ecosystem Assessment, 2011

Figure 10.2: Proportion of the population visiting the outdoors several times or more a week in the last 12 months, England, 2013-14

Visits several times a week

- 26.0%
- 26.1% - 33.0%
- 33.1% - 36.0%
- 36.1% - 38.0%
- 38.1% - 44.0%
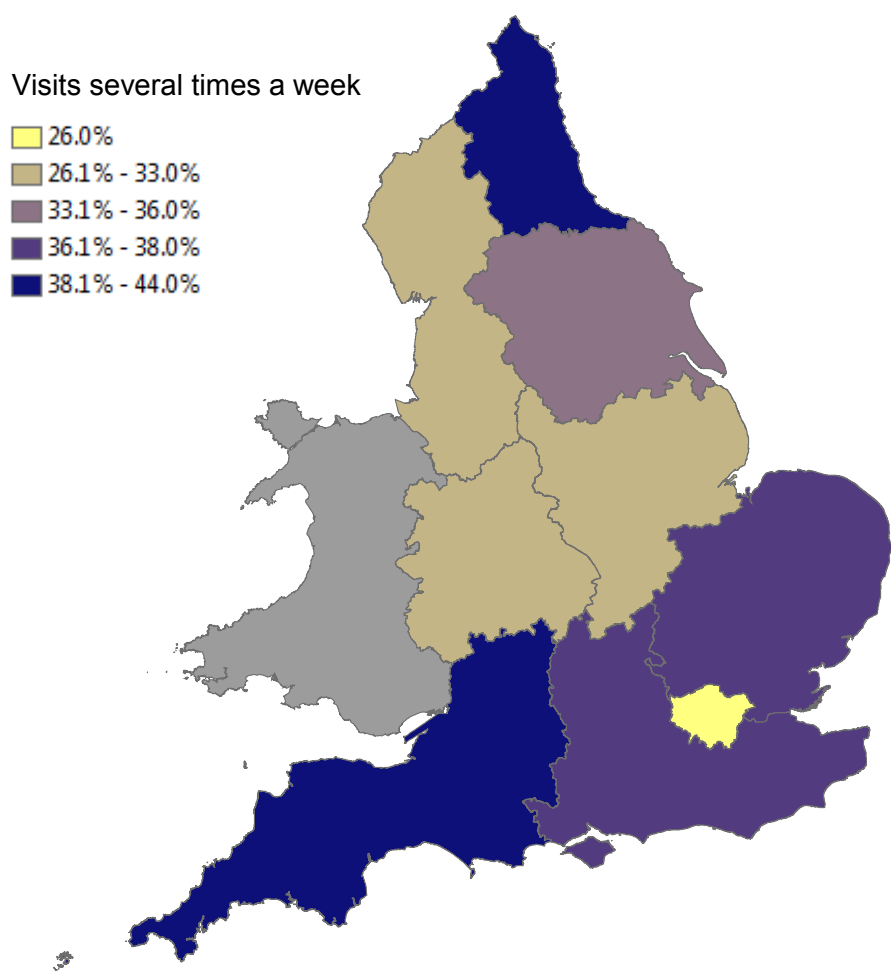
Source: MENE

The proportion of people who visit the natural environment several times or more a week varies across England.

In 2013-14 a lower proportion of people living in London (26%) visited the natural environment several times a week than the rest of England. In the North East of England and the South West of England a higher proportion of people living in these areas reported visiting the natural environment several times a week or more at 44% and 42% respectively.

10b) Children's Engagement with the Natural Environment

This indicator shows how many visits to the natural environment were taken by children accompanied by an adult. The NEWP encourages more frequent visits to the natural environment by children as evidence suggests they may then learn to value it from a young age. This indicator may change in future depending on the availability of information regarding visits taken by children to the natural environment unaccompanied by an adult.

Figure 10.3: Estimated number of visits with more than 1 child in the party, England, 2009/10 to 2013/14

■ Visits with no children   ■ Visits with one or more child in party
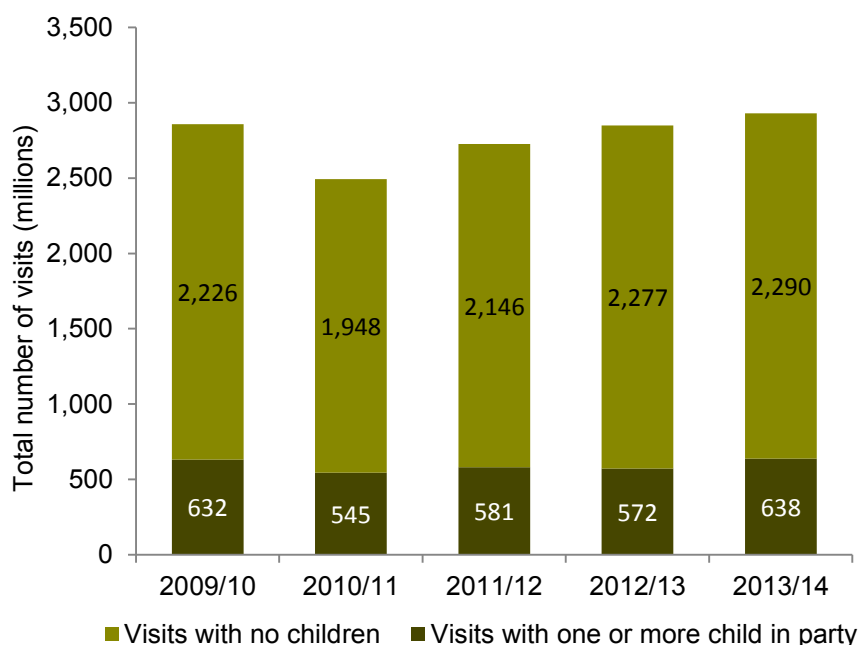
Source: MENE

In 2013/14, an estimated 638 million visits with one child or more in the party were taken. The proportion of visits including children has remained steady at around 20 per cent in the five years since 2009-10. Based on an average of 2.3 children per visit in 2013/14 this equates to an estimated 1.47 billion children visiting the natural environment in this year.

These figures only include visits were the child was accompanied by an adult. As such this excludes visits taken with friends, school groups or clubs. The estimated number of visits taken by children to the natural environment is therefore likely to be greater than that shown in figure 10.3.

10c) Conservation Volunteering

This indicator shows the amount of volunteer time spent undertaking conservation activities for twelve organisations across the environmental sector in England. The work undertaken by conservation volunteers includes assisting with countryside management, carrying out surveys and inputting data, assisting with administrative tasks, and fundraising. Figure 10.4 shows the relative change in the number of volunteer hours worked from 2000 to 2013 (rather than actual totals).

Figure 10.4: Index of volunteer time spent on the natural environment for selected organisations in England, 2000 to 2013
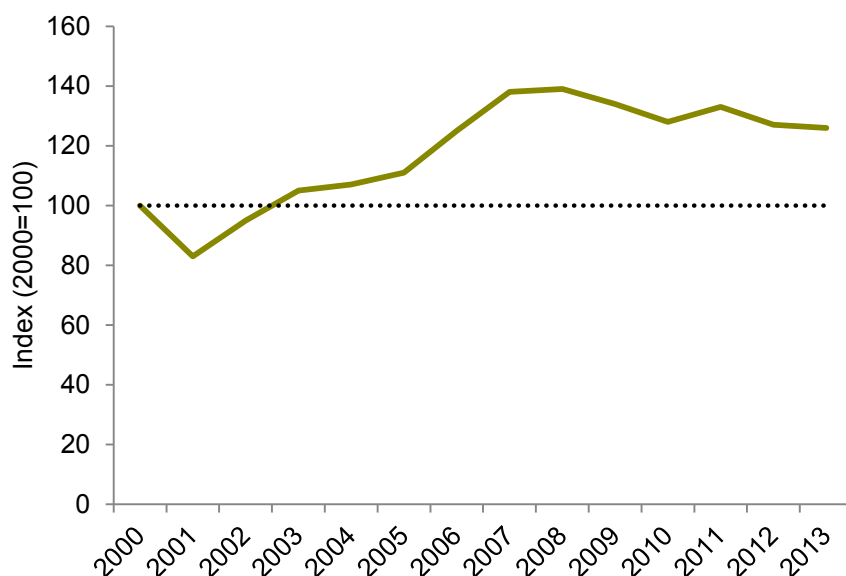
Notes:
1. The index is calculated using a non-weighted aggregation across organisations. It is therefore strongly dependent on which organisations are included and on the trends reported by the organisations recording large amounts for total volunteer hours.
2. Data were not available for all organisations in all years. To make best use of available data and to allow a combined index to be compiled, data interpolation has been used to fill gaps (based on assuming trends reported by other organisations can be applied). For more information see the links at the bottom of this page. Data for British Waterways includes volunteering carried out in Wales.
3. As data provided by The Conservation Volunteers, Canal and River Trust and National Parks England were for financial years as opposed to calendar years, 2012-13 data were allocated to 2012.
Source: Bat Conservation Trust, The Conservation Volunteers, Canal and River Trust, National Parks England, Plantlife, Natural England, RSPB, The Wildlife Trusts, Botanical Society of Britain and Ireland, British Trust for Ornithology.

Between 2000 and 2013 the amount of time contributed by volunteers increased by 28 per cent but in the five years to 2013 it decreased by 16 per cent. It has remained unchanged between 2012 and 2013 with index values of 128. In some NGOs improvements to data recording and the better management of volunteers time has led to a reported decrease in hours, which may partially explain the observed decrease between 2008 and 2010.

The observed fall in volunteer time in 2001 can be attributed to the outbreak of Foot and Mouth disease and restrictions imposed on access to the countryside at the time. The large peak in volunteer time in 2007 was strongly influenced by a 48 per cent increase in volunteer numbers at The Conservation Volunteers (TCV), partly attributed to a number of large youth programmes that were initiated in this year.

Indicator Assessment

Assessment of change in Engagement with the Natural Environment			
	Long term	**Short term**	**Latest year**
Proportion of people visiting the natural environment several times a week or more	⊙	⊙	Increased (2013-14)
Number of visits made by children	⊙	⊙	Increased (2013-14)
Conservation volunteering	✔2000-2013	✖2008-2013	No change (2013)

Links

Organisation	Subject
Natural England	MENE Survey
National Ecosystems Assessment	Home Page
Defra	England Biodiversity Statistics

11. Ease of access to local woodland, green space and countryside

11a) Ease of access to all green space

Whilst this indicator is being developed the source data can be viewed [here](#).

This indicator relates to the ambition in NEWP that everyone should have the opportunity to access a good quality natural environment. The indicator is in development. It is anticipated that the underlying data will be collected via Natural England's Monitoring Engagement with the Natural Environment (MENE) survey which will assess people's views on the availability of the natural environment.

11b) Access to woodland (for context)

This analysis is based on the Woods for People database which provides a new baseline for the Woodland Access Standard. This sets out the area of both small and large accessible woodlands, which fulfils the Woodland Trusts measures of levels of access that should ideally be available within a certain distance from people's homes. This measure is presented for context and will contribute to the assessment of indicator 11a when data becomes available.

The baseline is set on the 2012 data.

Figure 11.1: Per cent of population with access to 2ha of woodland within 500m

Legend
GOR_Eng_2004
Access within 500m

- 10.40
- 12.90 - 15.00
- 16.60 - 17.90
- 19.20 - 19.80
- 25.40

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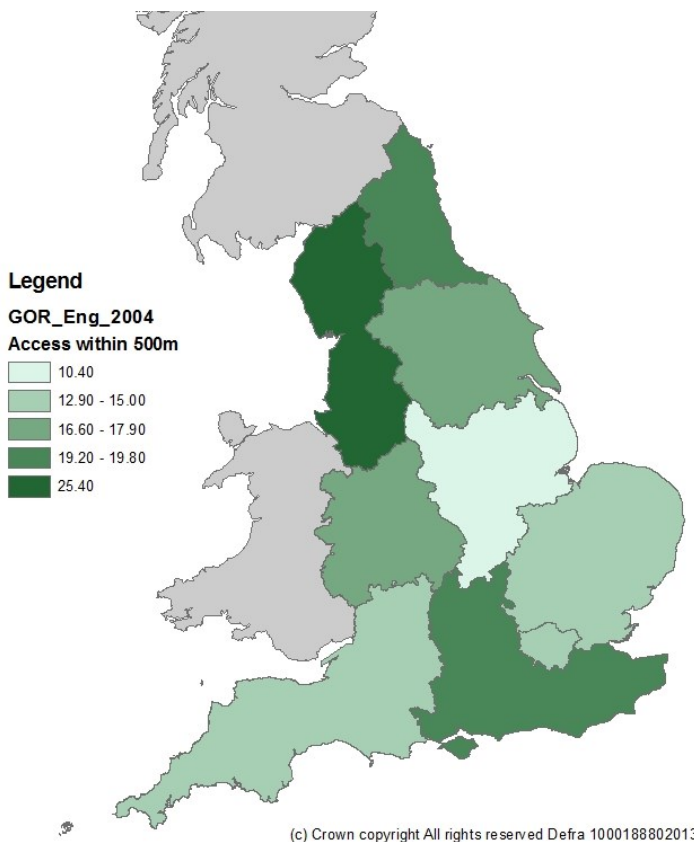
Source: Woodland Trust

Figure 11.2: Per cent of population with access to 20ha of woodland within 4km

Legend

GOR_Eng_2004
Access within 4km
- 51.90
- 51.91 - 61.60
- 61.61 - 68.80
- 68.81 - 71.00
- 71.01 - 74.60
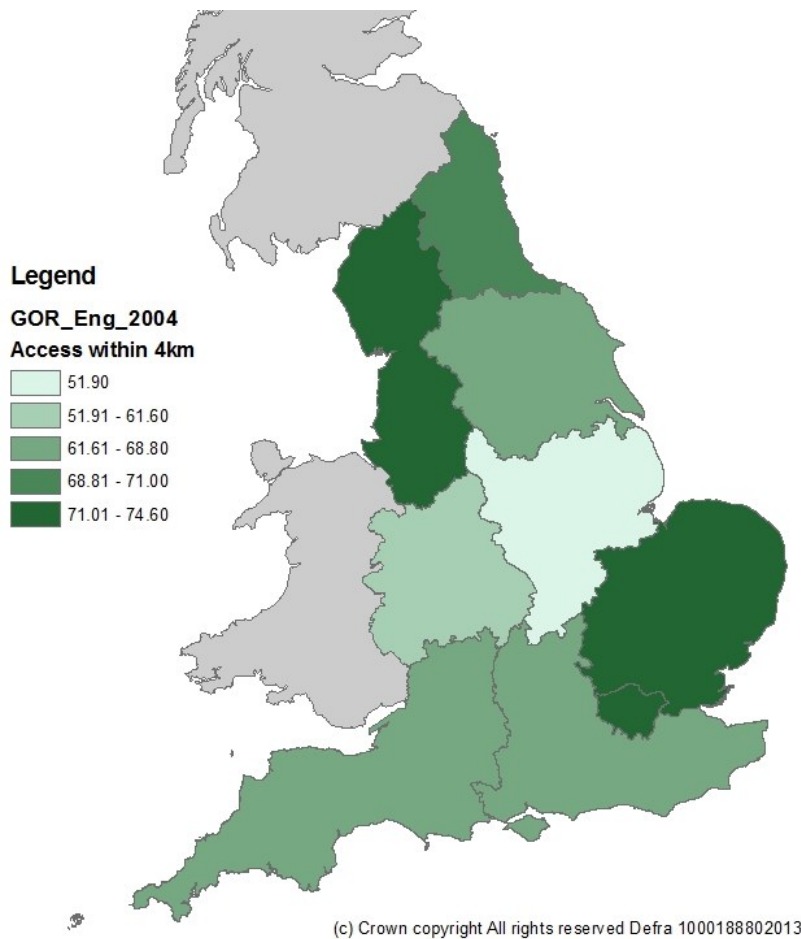
Source: Woodland Trust

In 2012, 16.8 per cent of the population of England lived within 500m of 2 hectares of accessible woodland and 65.8 per cent lived within 4km accessible woodland covering more than 20 hectares.

The regional breakdown for both of these measures is shown in figure 11.1 and 11.2. For smaller areas of accessible woodland (2 hectares or more) the North West had the highest proportion and the East Midlands the lowest proportion of the population living within 500m.

For larger areas of accessible woodland (20 hectares or more) a higher proportion of people living in the North West and East of England lived within 4km. The East Midlands again has the lowest proportion of people living within 4km of large areas of accessible woodland.

Indicator Assessment

Assessment of change in Access to the Natural Environment			
	Long term	**Short term**	**Latest year**
Ease of access to all green space	To be developed		

Links

Organisation	Subject
Natural England	[MENE Survey](#)
Woodland Trust	[Space for People](#)

12. Environmental Quality and Health

This indicator mainly relates to the ambition to reconnect people and the environment. It has been shown that improvements in the environmental quality of an area can improve health and well-being [1].

12a) Number of pollution days

Poor air quality can have effects on health and wellbeing due to both short term and long term exposure. Individuals with existing heart or respiratory conditions are at greater risk of experiencing effects when levels of air pollutants rise. The number of days when air quality is "moderate or higher" is an indicator of how often air pollution is raised to levels when there is an increased risk of health effects from short term exposure.

Monitoring data from Defra's UK network [2] form the basis of this indicator and pollution days are defined using the Daily Air Quality Index (DAQI) banding system [3], [4] recommended by the [Committee on Medical Effects of Air Pollutants (COMEAP)](#)[5]. The system uses an index numbered 1-10, divided into four bands (1-3=low, 4-6=moderate, 7-9=high and 10=very high) to provide more detail about air pollution levels in a simple way. The DAQI is determined by the highest concentration of five pollutants – particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide, sulphur dioxide and ozone.

Through improving air quality people will be at less risk from the effects of poor air quality and may be more likely to spend more time in the natural environment. An improvement in air quality would be reflected by a lower number of pollution days in this indicator.

Figure 12.1: Days when air pollution is moderate or higher in the UK, 2010 to 2014
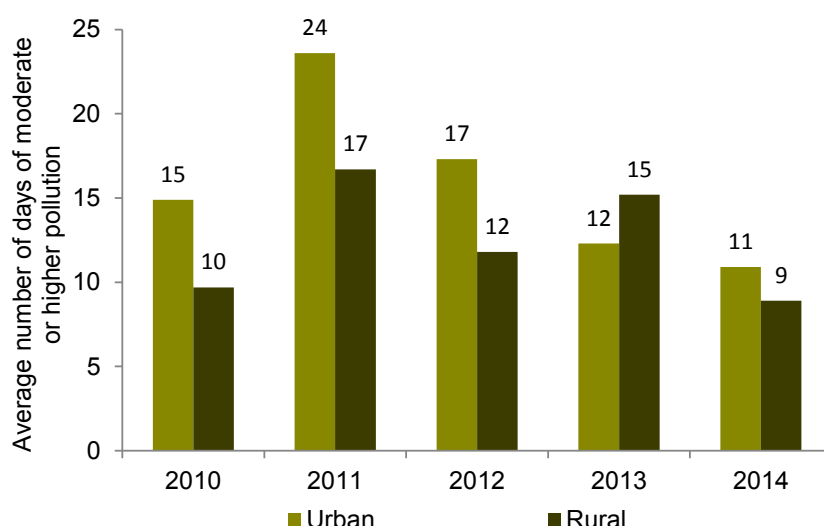
Source: R- AEA Energy & Environment, Defra

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[1] National Ecosystem Assessment 2011
[2] [UK-Air Defra](#)
[3] [UK- Air, Daily Air Quality Index](#)
[4] [Implementation of the Daily Air Quality Index](#)
[5] [Health Protection Agency, Review of the UK Air Quality Index 2011](#)

The average number of pollution days in urban sites in 2014 was 11 days. This compares with 12 days in 2013 and 15 days in 2010. The average number of pollution days in rural sites in 2014 was 9 days, compared with 15 days in 2013 and 10 days in 2010.

These data recently underwent a methodological review and the previous time series, which ran from 1987, is no longer comparable. For details of the changes to the method please see the latest statistics release.

12b) Mortality caused by anthropogenic air pollution

Long term exposure to air pollution can have adverse effects on health. In 2008 anthropogenic (human made) particulate matter ($PM_{2.5}$) alone was estimated to have an effect on mortality in the UK equivalent to nearly 29,000 deaths. The Public Health Outcomes Framework Indicator for England [6] , a publication of the Department of Health, estimates this long term health burden for different parts of England. Improving air quality can help to reduce this health burden and result in fewer lives lost.

Data for this indicator is only available since 2010; this will be the baseline year of assessment for this indicator. Data are based on Defra's Pollution Climate Mapping modeling[7] of population weighted mean $PM_{2.5}$ concentrations. In 2012, 5.1 per cent of all deaths for over 30-year-olds in England were attributable to long term exposure to current levels of anthropogenic $PM_{2.5}$.

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[6] Public Health Outcomes Framework- Air
[7] UK- Air, Defra, Air Quality Modelling

Figure 12.2: Comparison of regional mortality due to anthropogenic air pollution against the England national average in 2012 of 5.1 per cent
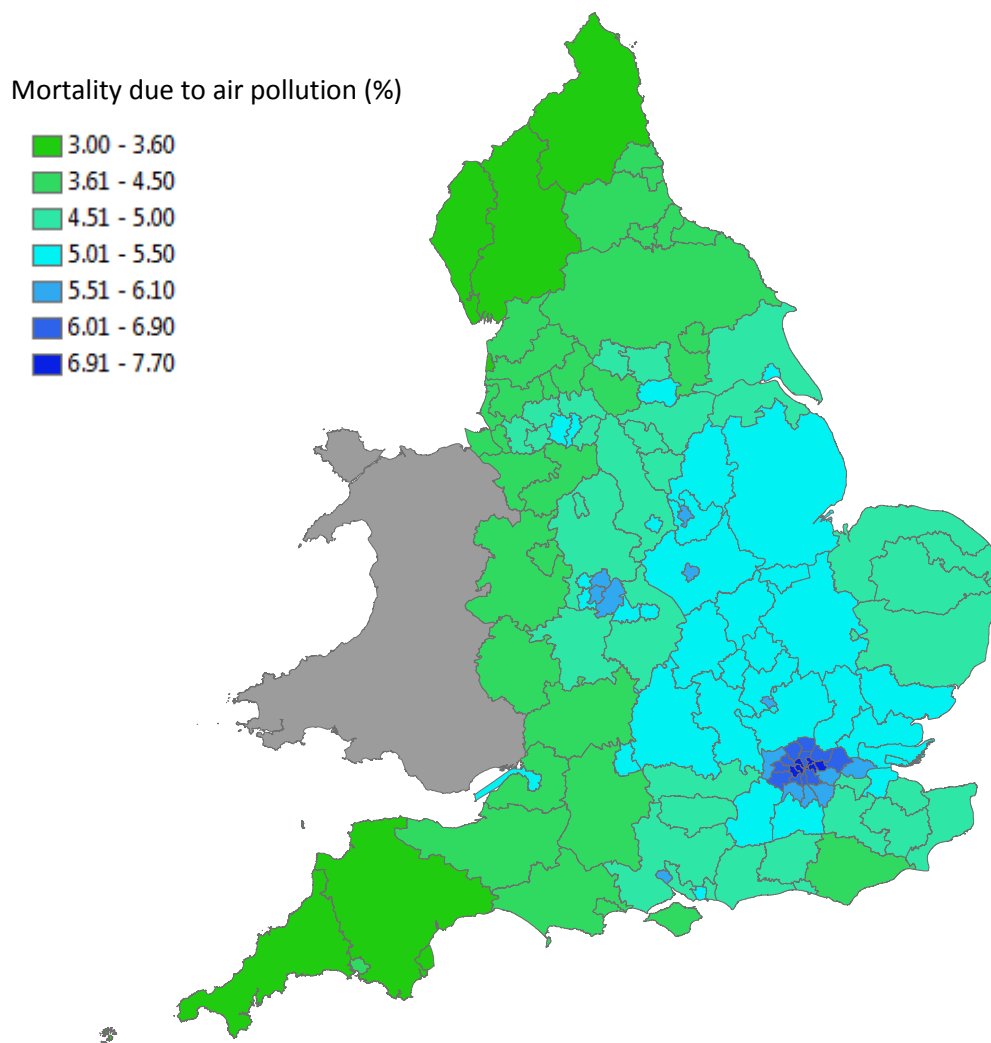
Mortality due to air pollution (%)

- 3.00 - 3.60
- 3.61 - 4.50
- 4.51 - 5.00
- 5.01 - 5.50
- 5.51 - 6.10
- 6.01 - 6.90
- 6.91 - 7.70

Source: Public Health Outcomes Framework

12c) Percentage of the population affected by noise

This indicator features in the Public Health Outcomes Framework for England. It comprises information about noise complaints and exposure to transport noise.

There are a number of direct and indirect links between exposure to noise and health outcomes such as stress, heart attacks, and other health and wellbeing issues. Complaints about noise are the largest single cause of complaint to most local authorities and there is evidence that exposure to noise is a key determinant of health and wellbeing.

Figure 12.3: Noise complaints per 1000 population in England, 2006-07 to 2012-13
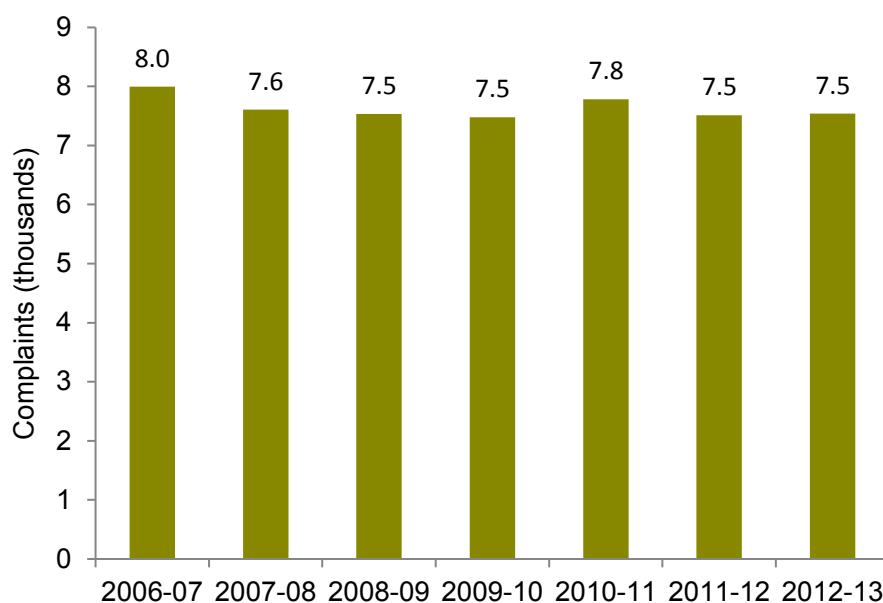
Source: Defra, Chartered institute for Environmental Health

In 2012-13 there was an average of 7.5 complaints about noise per 1,000 people in England.

While there have been only small fluctuations in the year-on-year number of complaints per 1000 population between 2006-07 and 2012-13, there is considerable regional variation.

Figure 12.4: Comparison of regional noise complaints against the England national average in 2012-13 of 7.5 per 1000 people

Number of complaints per 1000 people

- 2.46 – 3.20
- 3.21 – 4.00
- 4.01 – 4.67
- 4.68 – 5.29
- 5.30 – 6.57
- 6.58 – 8.85
- 8.86 – 13.18
- 13.19 – 21.54
- 21.55 – 32.22
- 32.23 – 80.37
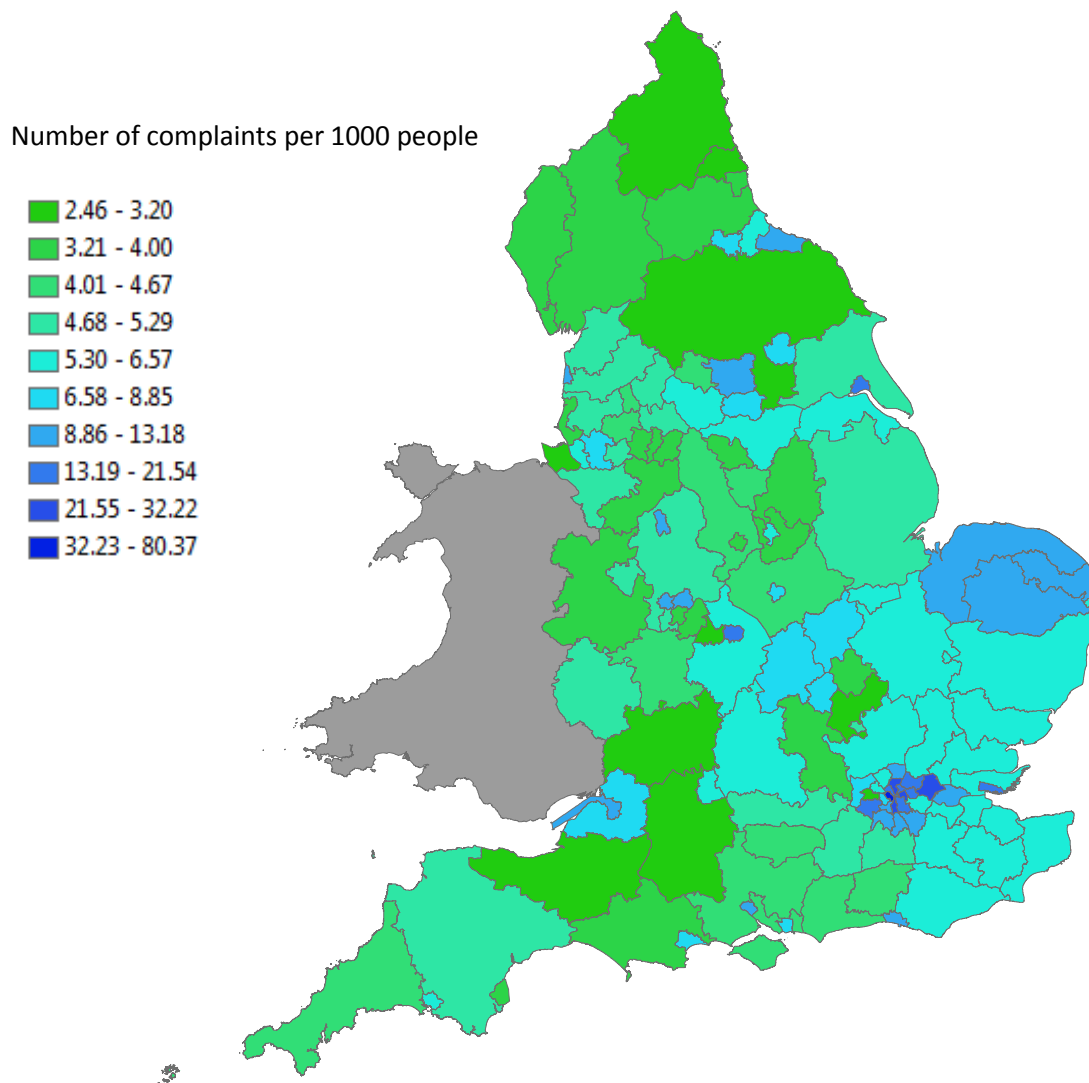
Source: Chartered Institute of Environmental Health, Public Health Outcomes Framework

Indicator Assessment

Assessment of change in Environmental Quality and Health			
	Long term	**Short term**	**Latest year**
Number of air pollution days classed as moderate or higher-Urban	⊙	⊙	Not yet assessed
Number of air pollution days classed as moderate or higher - Rural	⊙	⊙	Not yet assessed
Mortality caused by anthropogenic air pollution	⊙	⊙	Not yet assessed
Percentage of the population affected by noise	⊙	≈ 2007-08 – 2012-13	No change (2012-13)

Links

Organisation	Subject
Department of Health	Public Health Framework Outcomes
Defra	Air Quality Statistics
World Health Organisation	Guidelines for community noise

13. International and EU Leadership

There are no suitable outcome-based indicators to monitor progress against the 'International and EU Leadership' ambition. This is because the commitments under this ambition, such as pressing for international implementation of the Nagoya commitments and influencing reform of the Common Agricultural Policy, are not able to be measured through the type of quantitative statistics used for the other indicators in the ENEI set.

For information, this table gives links to existing indicators in this and other publications which have an international element but which are not considered to be closely enough linked to the ambitions of the White Paper to be included as measures of its progress on its international ambition.

Indicator Set	Indicator
England Natural Environment Indicators	Fish stocks harvested sustainably
	Marine Litter
	Raw Material Consumption
Sustainable Development Indicators	Green house gases generated within the UK
	Green house gases generated from UK consumption
	UK CO$_2$ emissions by sector
	Energy consumed in the UK from renewable sources
	Origins of food consumed in the UK
Biodiversity Indicators	UK Biodiversity Impacts Overseas
	Climate change adaptation

On the following page are links to information about various activities being carried out in this area.

Policy Area	Link
Implementation of the Nagoya biodiversity commitments at home and abroad	https://www.gov.uk/government/policies/protecting-biodiversity-and-ecosystems-at-home-and-abroad
Intergovernmental platform for biodiversity and ecosystem services (IPBES)	http://www.ipbes.net/
Helping developing countries to value their ecosystems, for example, through funding for the Darwin Initiative, WAVES partnership and TEEB	http://darwin.defra.gov.uk/; http://www.wavespartnership.org/waves/about-us http://www.teebweb.org/
Influencing reform of the Common Agricultural Policy	https://www.gov.uk/government/policies/reforming-the-common-agricultural-policy-to-ensure-a-fair-deal-for-farmers-consumers-and-taxpayers
Influencing reform of the Common Fisheries Policy	https://www.gov.uk/government/policies/reforming-and-managing-marine-fisheries-for-a-prosperous-fishing-industry-and-a-healthy-marine-environment

Annex A. Acronyms

BCT	Bat Conservation Trust
BC	Butterfly Conservation
BTCV	British Trust for Conservation Volunteers
BTO	British Trust for Ornithology
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CEH	Centre for Ecology and Hydrology
CIEH	Chartered Institute for Environmental Health
DAQI	Daily Air Quality Index
DCLG	Department for Communities and Local Government
Defra	Department for the Environment, Food and Rural Affairs
EA	Environment Agency
ENEI	England Natural Environment Indicators
EU	European Union
FC	Forestry Commission
GDP	Gross Domestic Product
ICES	International Council for the Exploration of the Sea
JNCC	Joint Nature Conservation Committee
MENE	Monitor of Engagement with the Natural Environment
MSFD	Marine Strategy Framework Directive
NE	Natural England
NEWP	Natural Environment White Paper
ONS	Office for National Statistics
OS	Ordinance Survey
PHOF	Public Health Framework
RMC	Raw Material Consumption
RSPB	Royal Society for the Protection of Birds
SDI	Sustainable Development Indicators
UK BAP	United Kingdom Biodiversity Action Plan
WWT	Wildfowl and Wetlands Trust

Annex B. National Statistics

The following statistics presented in this 2015 update of ENEI are sourced from publications which have been designated as National Statistics:

- Species in the wider countryside: breeding farmland birds

- Species in the wider countryside: breeding woodland birds

- Species in the wider countryside: breeding wetland birds

- Species in the wider countryside: wintering water birds

- Species in the wider countryside: breeding seabirds

- Public engagement with the natural environment: proportion of people visiting the natural environment several times a week or more

- Public engagement with the natural environment: number of visits made by children

- Environmental quality and health: number of air pollution days classed as moderate or higher – urban, and

- Environmental quality and health: number of air pollution days classed as moderate or higher – rural

This means that the UK Statistics Authority, which was given a statutory power to assess statistics against the Code of Practice for Official Statistics in the Statistics and Registration Service Act 2007, has assessed the aforementioned indicators as complying with this code of practice. The code is wide-ranging, but designation can broadly be interpreted as meaning that the statistics meet identified user needs, are well explained and readily accessible, are produced according to sound methods and are managed impartially and objectively in the public interest.

The UK Statistics Authority's assessment of these indicators, alongside other environmental statistics, can be found in its reports on Statistics on Sustainability and the Environment in England and the UK (Department for Environment, Food and Rural Affairs) and Statistics on Engagement with the Natural Environment (Natural England), and in the accompanying letters confirming their status as National Statistics.

Designation does not mean that all the individual statistics presented in this publication are National Statistics in their own right; it only relates to the statistics listed above.