



Department
for Environment
Food & Rural Affairs

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Strategic Environmental Assessment of the Rural Development Programme Scoping Report

October 2013

URS

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Introduction

URS has been commissioned to undertake an independent Strategic Environmental Assessment (SEA) in support of Defra's emerging Rural Development Programme for England (Rural Development Programme).

Developing a new Rural Development Programme in England

The new Rural Development Programme for England provides a major opportunity to invest in the rural economy and the environment. We plan to begin new programme on 1 January 2015. Leading up to this Defra will be working with delivery partners and customers to develop the programme Defra will submit to the European Commission in early 2014, and the delivery arrangements to support its implementation.

The Government's objectives for the next Rural Development Programme in England are to:

- promote strong rural economic growth;
- improve the environment: this includes helping to ensure that by 2021 the natural environment is improved as set out in the Natural Environment White Paper; and
- increase the productivity and efficiency of farming and forestry businesses, in order to improve their competitiveness and reduce the reliance of farmers and land managers on subsidies.

Meeting these objectives will allow Defra to contribute to achieving a broad range of inter-connecting policy ambitions, commitments and legal obligations. These include:

- meeting significant legal obligations such as the Birds and Habitats Directives and Water Framework Directives;
- commitments we have made such as in the Natural Environment White Paper and the Forestry and Woodlands Policy Statement of January 2013; and
- UK government policy ambitions such as encouraging economic growth and devolving decision-making on issues to support the local economy.

These objectives, and other key international, EU and national policy objectives have been taken into account in developing the initial scope of the Strategic Environment Assessment.

Strategic Environmental Assessment explained

SEA Requirements

The SEA Regulations (2004) require certain things to be carried out and procedures to be followed. Where these are present, they are highlighted and explained in *red parentheses*.

Strategic Environmental Assessment (SEA) is a mechanism for considering and communicating the impacts of a draft plan or programme, and the reasonable alternatives considered as part of its development, on the environment, with a view to avoiding and mitigating adverse impacts and maximising the positives. A SEA of the Rural Development Programme is a legal requirement under Article 48 of the Common Provisions regulation.¹

A SEA must be undertaken in-line with the procedures prescribed by the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations), which transposed the EU Strategic Environmental Assessment (SEA) Directive² into national law.

The two main key procedural requirements of the SEA Regulations are that:

- a consultation on ‘the scope and level of detail of the information’ that is likely to be required to assess the relevant plan or programme must be carried out with relevant ‘consultation bodies’ who, by reason of their specific environmental responsibilities, are likely to be concerned by the environmental effects of the plan or programme being implemented. In this case, English Heritage, the Environment Agency and Natural England should specifically be consulted; and
- a report, called an Environmental Report, should be published for consultation alongside the draft plan or programme. This report will present an assessment of the draft plan or programme and assess any reasonable alternatives. This will discuss the ‘likely significant effects’ that would result from implementation of the Rural Development Programme.

¹ From 2014 Rural Development will also form part of a suite of European Strategic and Investment Funds (ESIF), alongside the European Social Fund, European Regional Development Fund and the European Maritime and Fisheries Fund. A “Common Provisions” regulation will set out common rules for these funds.

² European Commission (2001) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment

What is 'scoping'

SEA scoping is the first stage in the SEA process for the Rural Development Programme (see **Figure 1**).

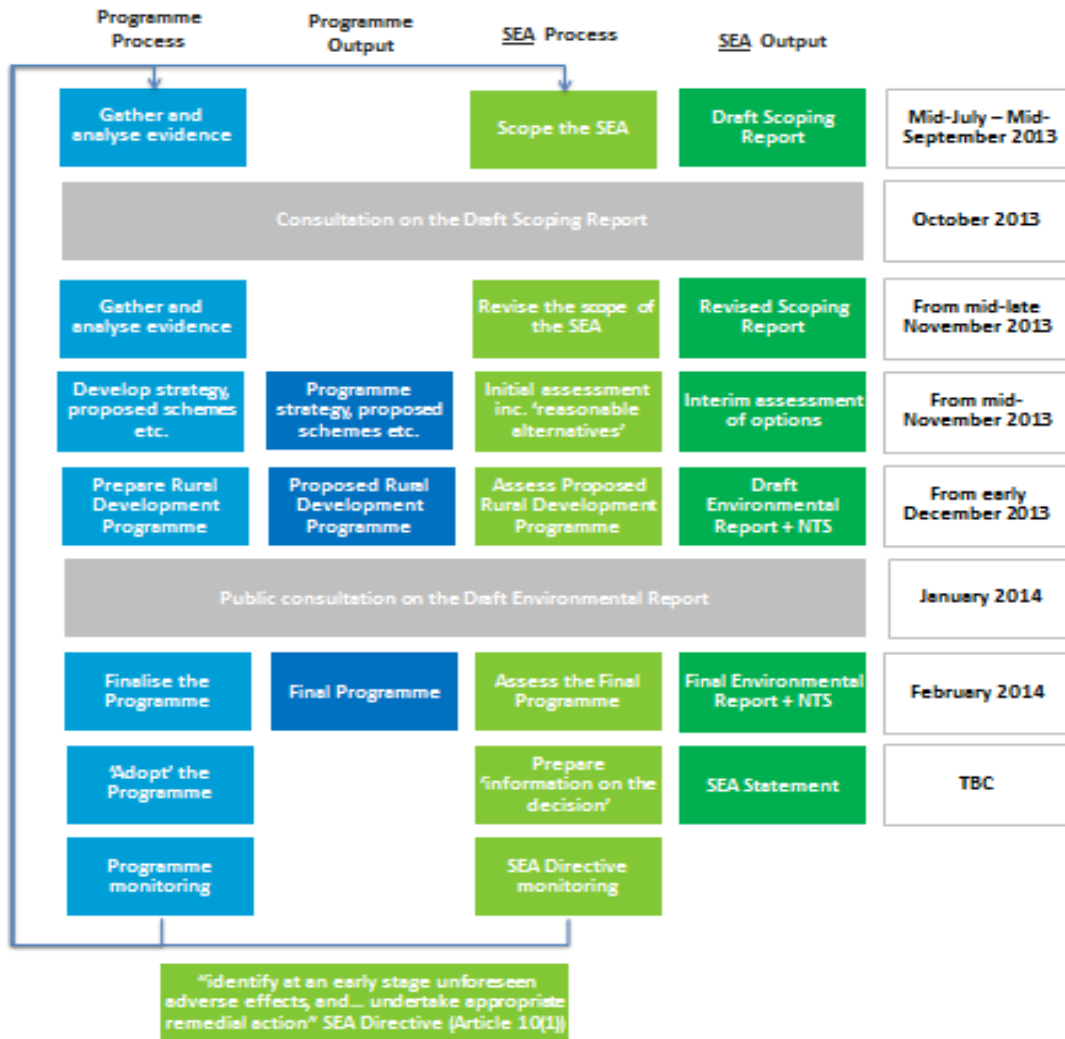


Figure 1: The SEA process for the Rural Development Programme.

Developing the draft scope presented in this report has involved the following steps:

1. exploring the policy context, i.e. reviewing policies, plans, programmes, strategies and initiatives, particularly those at international and national levels that are relevant to the Rural Development Programme and identifying their implications for the Rural Development Programme and vice-versa;
2. establishing the relevant aspects of the environmental baseline with a view to identifying benchmarks for assessing the Rural Development Programme's likely significant effects on the environment; and
3. identifying environmental issues that should be a particular focus of the SEA and expressing these in the form of topics which, in turn, provide a methodological framework for identifying and evaluating the Rural Development Programme's likely significant effects on the environment.

SEA Requirements

The SEA Regulations (2004) require that:

“When deciding on the scope and level of detail of the information that must be included in the report, the responsible authority [Defra] shall consult the consultation bodies.” [Environment Agency, Natural England and English Heritage]

When defining the scope, the following information specified in the Regulations should be included:

- *“An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.*
- *The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.*
- *The environmental characteristics of areas likely to be significantly affected.*
- *Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds (a) and the Habitats Directive.*
- *The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.”*

Structure of this Report

A short Background section briefly sets out more detail on the Common Agricultural Policy, and the current Rural Development Programme in England, and current schemes delivered under the programme.

The proposed outcomes of the scoping stage are presented under a series of 12 topic headings. Headings 1-9 reflect the specific topics set out in the SEA Regulations.³ Headings 10-12 focus on additional topics relevant to assessing the Rural Development Programme's environmental impacts:

1. Air quality;
2. Biodiversity and nature conservation;
3. Climate change adaptation;
4. Climate change mitigation;
5. Landscape and cultural heritage;
6. Population and human health;
7. Soil management;
8. Waste;
9. Water management;
10. Rural economy;
11. Rural tourism and countryside access; and
12. Woodlands.

Individual chapters of this report set out each topic in more detail.

Each topic chapter is structured according to the following headings:

- What's the policy 'context'? This sets out the international and national objectives relating to this topic.
- What's the environmental 'baseline'? This sets out the current and future baseline for this specific topic.
- What are the key issues that should be the focus of the SEA? This sets out the key issues for consideration, based on analysis of the previous two headings.

Each chapter concludes by setting out the assessment criteria that will be used for the assessment. These are highlighted in *blue parentheses*.

A further three chapters set out:

- The SEA Framework: the draft assessment criteria that we propose to use to assess the environmental impact of the draft Rural Development Programme and any reasonable alternatives.

³ The SEA Directive is 'of a procedural nature' (para 9 of the Directive preamble) and does not set out to prescribe particular issues that should and should not be a focus, beyond requiring a focus on *'the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors'* [our emphasis]

- The Approach to alternatives: the approach we propose to use to identifying reasonable alternatives including a brief outline of the likely alternatives to be assessed through the SEA.
- Next steps: the next steps in the SEA process and indicative dates.

Ecosystem services

Ecosystems services

The UK National Ecosystem Assessment (NEA) was a major study co-funded by Defra and published in 2011. It provided the first systematic analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity.

The NEA assessed the status and trend of ecosystem services across eight broad habitats (e.g., coastal margins, enclosed farmland, woodlands). It summarised the relative importance of these habitats in delivering ecosystem services and the overall direction of change in the flow of services over recent decades.

The status and trends of ecosystem services and of the underlying broad habitats are likely to be a major influence on several of the environmental characteristics that are relevant to the baseline that this SEA is seeking to establish. Rural Development Programme measures in turn can have significant impacts on relevant broad habitats and of their services. Throughout this Scoping Report we have therefore highlighted key messages from the NEA on how trends in ecosystem service provision may affect relevant environmental characteristics. These messages can be found in *green parentheses*.

An ecosystem approach to decision-making is seen as increasingly important. According to the Ecosystems Knowledge Network, *“An ecosystems approach helps to ensure that the range of services provided by nature is considered more fully in decisions made at all levels and by all sectors and professional groups”*.⁴ One of the means to assist in implementing the ecosystem approach is to use the ‘ecosystems cascade’ to consider the links between ecosystem functions, ecosystem services, the benefits people derive from these services and the values they attach to them – see **Figure 2**. As such, we have endeavoured to consider these linkages and take account of ecosystem services in establishing the scope of the assessment (see below).

⁴ See Ecosystems Knowledge Network (2013) *Applying the Approach* [online] available at: <http://ekn.defra.gov.uk/apply/> (accessed 23/08/2013)

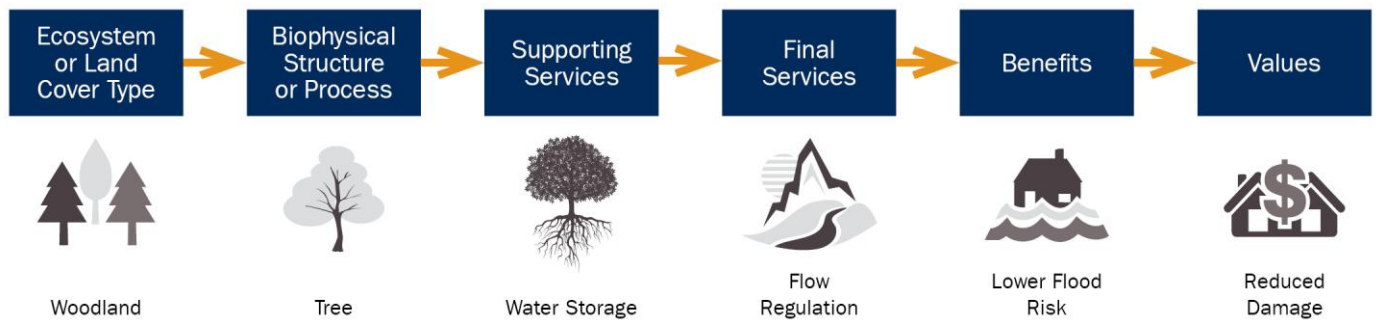


Figure 2: The ecosystems cascade⁵

⁵ Adapted from Potschin, M.B. and Haines-Young, R.H. (2011). Ecosystem services: Exploring a geographical perspective. *Progress in Physical Geography* 2011 35: 575.

Background

Introduction

This section provides background on the current Rural Development Programme and the Common Agricultural Policy (CAP). It briefly explains changes to the CAP that affect new Rural Development Programmes.

The Common Agricultural Policy

The **European Union's Common Agricultural Policy (CAP)** is the framework under which European farmers operate. It sets out a range of farming, environmental and rural development activities as well as controlling EU agricultural markets. It is the single largest common policy across the EU.

The CAP is split into two "pillars":

- Pillar 1 provides income support for farmers through direct payments and market control measures.
- Pillar 2 promotes rural development through Rural Development Programmes in each Member State or region.

The CAP is delivered through seven year programming periods, with a new period due to begin in 2014. Negotiations on reform of the CAP are at an advanced stage but have not yet concluded. We expect most parts of the new CAP to be implemented in 2015, including Rural Development Programmes.

Key elements of the reform have been agreed.

A new **Basic Payment Scheme** will replace the current **Single Farm Payment** as the main element of direct payments under Pillar 1 although requirements for payment will still be based upon the holding of eligible land and entitlements and meeting cross-compliance requirements.

However, there will be a number of changes to Pillar 1. These include:

- 'Greening' of Direct Payments: this requires farmers to deliver basic annual environmental measures that go beyond cross compliance, in order to secure more tangible environmental outputs from direct payment subsidies;
- the introduction of an 'active farmer test';
- rules requiring the largest payments to be reduced (so called 'digressive' payments); and
- the introduction of a scheme to support young farmers who have recently started farming.

There will remain a requirement to develop seven-year Rural Development Programmes.

Key aspects of Pillar 2 include:

- a menu of ‘measures’ that EU Member States can use in the design of Rural Development Programmes. The “Axes” of support in the current programme have been removed;
- member States must spend at least 30% of their funding on measures to protect and enhance the environment; and
- they must also spend at least 5% through the local delivery mechanism known as the LEADER approach.⁶

EU Rural Development funds (known as EAFRD⁷) are now also part of a wider set of **European Structural and Investment Funds** (ESIF), alongside the **European Regional Development Fund** (ERDF), the **European Social Fund** (ESF) and the **European Maritime and Fisheries Fund** (EMFF).

The CAP reform proposals allow Member States to transfer up to 15% of Pillar 1 funds to Pillar 2, or to transfer funds from Pillar 2 to Pillar 1.

Defra is consulting on a number of aspects of CAP Implementation. This Scoping Report for the Rural Development Programme will be consulted on at the same time as the consultation on CAP Implementation.

The Rural Development Programme for England, 2007-2013

The current **Rural Development Programme for England** (RDPE) implements the existing **Rural Development Regulation** (Council Regulation EC No 1698/2005). This Programme has a total budget of £3.8bn. Of this budget, around £800m is derived from EU Rural Development funds and a further £1.8bn through deductions from farmers’ single payment scheme receipts. National co-financing from the UK Exchequer accounts for a further £1.2bn of funds. It is the main source of discretionary funding for a wide range of Defra’s objectives.

The programme is built around four axes (objectives):

- **Axis 1** – Improving the competitiveness of the agricultural and forestry sector (circa £370m);
- **Axis 2** – Improving the environment and countryside (circa £3.2bn). This is primarily spent on agri-environment schemes. It also includes delivery of the English Woodland Grant Scheme and Uplands Transition Payments. Agri-environment schemes form the main focus of the Rural Development Programme accounting for about £2.9bn of the overall budget.
- **Axis 3** – Quality of life in rural areas and diversification of the rural economy (circa £290m); and
- **Axis 4** – the LEADER approach, a ‘bottom-up’ community-led delivery approach funded by the other 3 Axes (particularly Axes 1&3).

⁶ LEADER ("Liaison Entre Actions de Développement de l'Économie Rurale"),

⁷ EAFRD stands for the European Agricultural Fund for Rural Development.

Current Rural Development Programme schemes

The programme is delivered through a number of schemes.

The largest aspect of the Rural Development Programme for England is Environmental Stewardship. This consists of four main elements:

- **Entry Level Scheme (ELS)**. This provides for management of features of the environment, including for example hedgerows, ditches and stone walls in addition to land management options such as low input grassland, wild bird seed mixtures and buffer strips.
- **Organic Entry Level Scheme (OELS)**. This is the organic strand of ELS. It is geared to organic and organic/conventional mixed farming systems and is open to all farmers not receiving Organic Farming Scheme aid.
- **Uplands Entry Level Scheme (Uplands ELS)**. This supports hill farmers with payments for environmental management and is open to all farmers with land in Severely Disadvantaged Areas, regardless of the size of the holding.
- **Higher Level Scheme (HLS)** is more targeted and involves complex types of management and agreements tailored to local circumstances. This includes for example, the restoration and recreation of important habitats through a set of more targeted options.

Environmental Stewardship also provides funding for capital items that support land management options. This is principally offered through HLS. **Historic and Traditional Buildings** funding and support to deliver better **access to the countryside** is available to support capital works.

An **Entry Level Scheme Training and Information Programme (ETIP)** encourages increased uptake of ELS. It is designed to improve option choices in new or renewed agreements with a view to improving the environmental benefits delivered by farmers.

More detailed information on Environmental Stewardship schemes delivered by Natural England is provided at **Annex A**.

The **English Woodland Grant Scheme (EWGS)**, delivered by the Forestry Commission, provides agreements that support woodland creation, and woodland management and improvement. It also aids delivery of the **Woodfuel Strategy for England** by providing support for the creation of woodland access to facilitate timber extraction and support for some of the additional costs associated with bringing timber to the market for the first time.

The Rural Payments Agency administers **Uplands Transitional Payments (UTP)** to farmers who are unable to enter **Uplands Entry Level Stewardship (UELS)**, until the expiry of an agri-environment agreement that carried forward from the previous Rural Development Programme, 2000-2006 (i.e. **Countryside Stewardship Scheme** or **Environmentally Sensitive Area** agreements) into the 2007-2013 period. UTP also helps

to ensure that agriculture continues to make its contribution to rural society and the managed environment of the English uplands. It recognises the specific difficulties faced in these regions and the role that hill farmers play in delivering landscape and other benefits.

Two main small and large grant schemes are delivered by Defra's Rural Development Programme Delivery Team.

The **Rural Economy Grant (REG)** scheme provides grants of up to £1 million for micro and small to medium sized enterprises (SME) to boost farming competitiveness, and support significant growth particularly in the agri-food, rural tourism, forestry, renewable energy, and other high-potential sectors (e.g. ICT and the creative industries). This includes a specific **Dairy Fund** to help the dairy sector to increase its competitiveness and to access new markets by strengthening the sector's position in the supply chain through co-operation.

The **Farming and Forestry Improvement Scheme**, provides small grants to help farmers, foresters and horticultural businesses improve their competitiveness.

A **Skills and Knowledge Transfer Framework** is designed to deliver flexible and locally available skills training to enable rural business growth.

The **Rural Community Broadband Fund (RCBF)** is jointly funded through the Rural Development Programme and Broadband Delivery UK. It provides grant to community broadband projects located in hard to reach areas that would not otherwise receive superfast broadband under the Government's wider £530m rural broadband programme.

The Rural Development Programme also includes a **Paths for Communities** scheme, delivered by Natural England.

A **Catchment Sensitive Farming** scheme, delivered by Natural England, provides one-to-one and group advice, practical demonstrations and capital grants to the farming community in targeted priority areas to help farmers change their practices and reduce diffuse pollution.

An **Energy Crops Scheme**, also delivered by Natural England, provides establishment grants for approved Energy Crops.

Assessment methodology

SEA Requirements

The SEA Regulations¹ stipulate that the Environmental Report must set out the “*relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme*” (Schedule 2 (2)).

Establishing the ‘baseline’

This involves providing a ‘snapshot’ of both the current state of the environment and a description of how it might change in future in the absence of the plan or programme, in this case the Rural Development Programme. While the former is reasonably straightforward to establish using existing information sources, determining the latter is more challenging as, in reality, in the absence of the Rural Development Programme there are a number of competing and complementary plans and programmes in place. Furthermore, in the case of the Rural Development Programme, this is a rather theoretical exercise given that the Rural Development Programme is prepared under Pillar II of the Common Agricultural Policy (CAP), and is subject to its own regulations i.e. it is not something the Government cannot do.

In light of this, establishing the ‘likely evolution’ of the environment without the Rural Development Programme involves anticipating changes to the environment associated with the absolute minimum that might be programmed. This includes the multi-annual contractual commitments from the current Rural Development Programme on agri-environment and forestry schemes, which amounts to £2.16bn. This meets the legal obligation to have a Rural Development Programme and for 30% of the funds drawn from the EU to be spent on environment and land management measures. In addition, this absolute minimum must incorporate the legal obligation for 5% of EU funds to be spent through LEADER. The absolute minimum represents running down the Rural Development Programme over the life of the new round of CAP, as the contractual hangover from the current Programme diminishes each year.

The likely evolution of the current state of the environment on the basis of the absolute minimum that might be programmed is set out for each of the topics discussed in this report.

Assessment

A range of environmental objectives have been identified for each of the 12 topics being assessed. Taken together, the objectives provide a methodological ‘framework’ for

assessing the likely significant effects of the Rural Development Programme on the environment.

Every effort will be made to predict effects accurately. However, this is inherently challenging given the high level nature of the programme. The ability to predict effects accurately is also limited by our understanding of the baseline, particularly how this may evolve under the absolute minimum that might be programmed (see above). In light of the uncertainties involved, there is a need to exercise caution when identifying effects and evaluating their significance and ensure that all assumptions are fully explained. In many instances it is not possible to predict significant effects, but it is possible to comment on the Rural Development Programme's merits (or otherwise) in more general terms.

It is important to note that effects would be predicted taking into account the criteria presented within Schedule 2 of the SEA Regulations. So, for example, account would be taken of the probability, duration, frequency and reversibility of effects as far as possible. Cumulative effects would also be considered (i.e. where the effects of the programme may combine with the effects of other planned or on-going activity that is beyond the remit of the Rural Development Programme). These effect 'characteristics' will be described within the appraisal as appropriate.

How the assessment might be presented

It is anticipated that the assessment would document findings using a table or matrix approach, supported by an assessment narrative. At this level of assessment, defining the significance of likely effects in detail is challenging. We will therefore present an assessment of significant effects in terms of their presence or not and provide commentary on the degree of significance where possible.

Figure 3 illustrates the impacts of the programme that the assessment will identify. This shows a number of things.

Firstly, the likely evolution of the environment for each indicator without the implementation of the programme is shown by the **purple dashed line**. This trajectory could be improving or deteriorating.

Secondly, the targets / objectives for particular indicators would be shown through the **black, horizontal line** – this is horizontal for illustration. However, some targets may go up.

Thirdly, **Area 'A'** would show the *positive effect* of an intervention, in this case if the programme exceeds the desired targets over the plan period. However this improvement may be incremental and in some cases it may not meet the targets / objectives set.

Area 'B' illustrates the opposite, the *negative effects* of an intervention.

This diagram shows that the assessment / appraisal may identify positive effects of a policy or interventions and therefore a significant effect in terms of the Directive, but that

this may not be enough to result in an overall positive effect on the indicator as it would fail to reach the desired target.

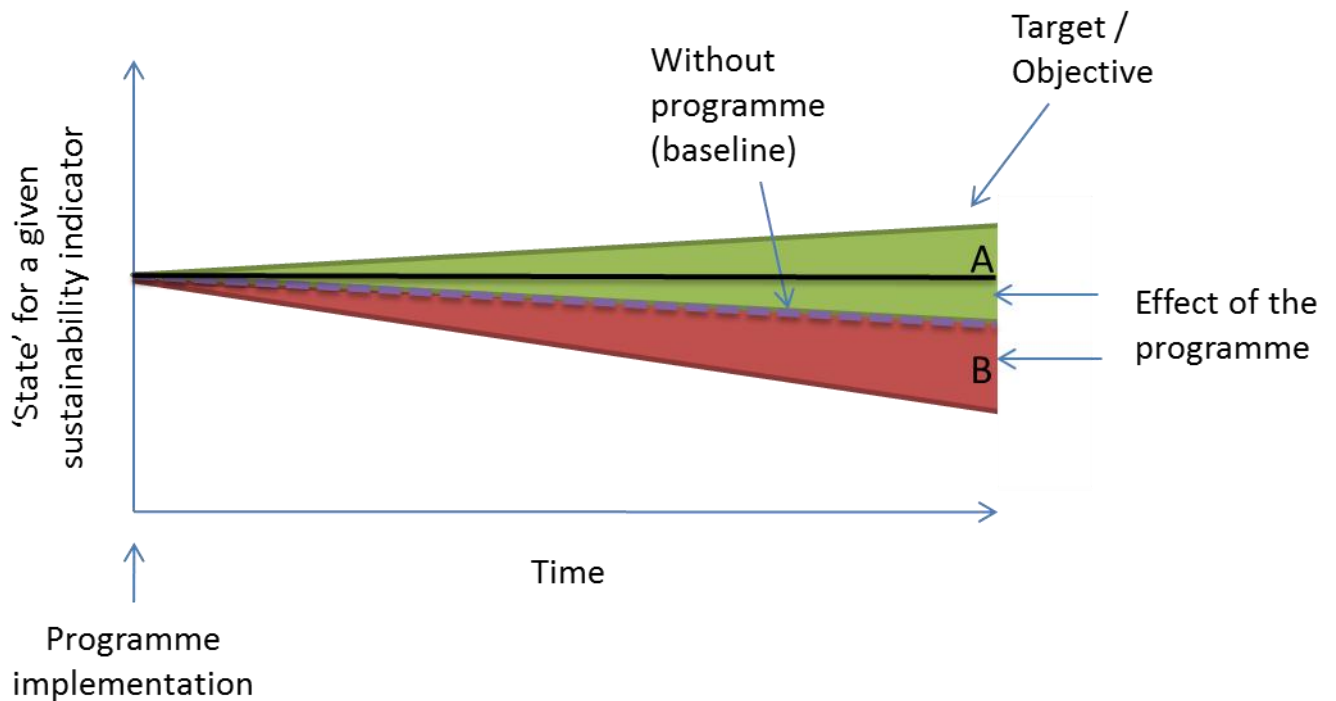


Figure 3: What effects is the SEA identifying?

Rural Proofing

Rural proofing requires policy makers to ensure that the needs and interests of rural people, communities and businesses in England are properly considered in the development and implementation of all policies and programmes. For central government, rural proofing means assessing policy options to ensure this provides the fairest solutions in rural areas.⁸ The rural proofing guidance⁹ sets out eight ‘What?’ questions which have been addressed implicitly in this SEA.

⁸ <https://www.gov.uk/rural-proofing-guidance>

⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200093/rural-proofing-pamphlet.pdf

Air quality

This section sets out the policy context and the environmental baseline with respect to air quality. It is important to note that air quality has significant inter-relationships with other topics, in particular human health, biodiversity and nature conservation and climate change mitigation. Critically, the purification and detoxification of air is a key ecosystem service which, for example, woodlands can contribute to.

Air pollution also causes damage to plants (through nitrogen deposition for example), affecting biodiversity and crop yields. Air quality can affect human health in a number of ways, for examples see **Table 1**.

Table 1: Types of health effects experienced by the most common pollutants at elevated levels.¹⁰

Pollutant	Health effects at very high levels
Nitrogen Dioxide, Sulphur Dioxide, Ozone	These gases irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases
Particles	Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases
Carbon Monoxide	This gas prevents the uptake of oxygen by the blood. This can lead to a reduction in the supply of oxygen to the heart, particularly in people suffering from heart disease

What's the policy 'context'?

Internationally established objectives

The **UNECE Convention on Long Range Transboundary Air Pollution**¹¹ is one of the central means for protecting the environment. The Convention was the first international legally binding instrument to deal with problems of air pollution on a broad regional basis. The Convention lays down the general principles of international cooperation for air pollution abatement and sets up an institutional framework bringing together research and policy.

The Convention has been extended through a number of protocols. Those relevant to this SEA are the:

¹⁰ Defra (2013) *Effects of Air Pollution* [online] available at: <http://uk-air.defra.gov.uk/air-pollution/effects> (accessed 09/09/2013)

¹¹ <http://www.unece.org/fileadmin/DAM/env/lrtap/full%20text/1979.CLRTAP.e.pdf>

- **1988 Sofia Protocol** concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes requires signatories to freeze NO_x emissions and reduce emissions of nitrogen compounds, including ammonia;
- **1991 Geneva Protocol** concerning the Control of Emissions of Volatile Organic Compounds (VOC) or their Transboundary Fluxes provided three options for reduction of VOC emissions;
- **1998 Aarhus Protocol** on Persistent Organic Pollutants (POPs) which aimed to eliminate any discharges emissions and losses of POPs (including 11 pesticides); and
- **1999 Gothenburg Protocol** to Abate Acidification, Eutrophication and Ground-level Ozone which sets emission ceilings to be achieved from 2010 onwards for sulphur dioxide (SO₂), nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), and ammonia (NH₃). This has recently been revised and will include fine particles (PM_{2.5}) when the revised protocol enters into force.

The **European Commission's Thematic Strategy on Air Pollution**¹² aims to cut the annual number of premature deaths from air pollution-related diseases by almost 40% by 2020 (using 2000 as the base year), as well as substantially reducing the area of forests and other ecosystems suffering damage from airborne pollutants.

The **Clean Air for Europe (CAFE)** programme revisited the management of Air Quality within the EU¹³ and replaced the **EU Framework Directive 1996/62/EC**¹⁴, its associated **Daughter Directives 1999/30/EC**¹⁵, **2000/69/EC**¹⁶, **2002/3/EC**¹⁷, and the **Council Decision 1997/101/EC**¹⁸ with a single legal act, the **Ambient Air Quality and Cleaner Air for Europe Directive 2008/50/EC**¹⁹.

The **EU National Emissions Ceilings Directive (2001/81/EC)**²⁰ sets upper limits for each Member State for the total emissions in 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (sulphur dioxide, nitrogen

¹² Commission of the European Communities (2005) *Thematic Strategy on air pollution* [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0446:FIN:EN:PDF> (accessed 11/2012)

¹³ Existing Air Quality Legislation available at:

http://ec.europa.eu/environment/air/quality/legislation/existing_leg.htm (accessed 09/09/2013)

¹⁴ Council of European Communities (1996), *Framework Directive on ambient air quality assessment and management*, European Council, 96/62/EC.

¹⁵ Council of European Communities (1999), *First Daughter Directive on limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air*, 1999/30/EC.

¹⁶ Council of European Communities (2000), *Second Daughter Directive on limit values for benzene and carbon monoxide in ambient air*, 2000/69/EC.

¹⁷ Council of European Communities (2002), *Third Daughter Directive on ozone in ambient air*, 2002/3/EC.

¹⁸ Council of European Communities (1997) *Council Decision 97/101/EC on exchange of information and data from as amended by Commission Decision 2001/752/EC*.

¹⁹ Council of European Communities (2008) *Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe*.

²⁰ Council of European Communities (2001) *Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants*

oxides, volatile organic compounds and ammonia).²¹ The Directive also requires annual reporting on air quality data.

The UK is required to report air quality data on an annual basis under the following European Directives:

- Council Directive on **Ambient Air Quality and Cleaner Air for Europe** (2008/50/EC), the Air Quality Directive; and
- **Fourth Daughter Directive** 2004/107/EC²² under the **Air Quality Framework Directive** (1996/62/EC).

The provisions of these EU directives were transposed by the **Air Quality Standards Regulations** 2010 in England.²³ The limit values are binding on the UK and have been set with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment as a whole.

The **National Emission Ceilings Regulations**²⁴ 2002 transposes the requirements of the **National Emission Ceilings Directive** (2001/81/EC) into UK legislation. The four pollutants for which national emission ceilings are set are sulphur dioxide (SO₂), oxides of nitrogen (nitric oxide (NO) and nitrogen dioxide (NO₂), collectively known as NO_x), volatile organic compounds (VOCs) and ammonia (NH₃).

Nationally established objectives

The **Air Quality Strategy for England, Scotland, Wales and Northern Ireland**²⁵ sets health-based objectives for nine main air pollutants²⁶. Performance against these objectives is monitored where people are regularly present and might be exposed to air pollution.

The recent Defra report **Action for air quality in a changing climate**²⁷ focuses on the synergies between the two issues of air quality and climate change. In particular, it notes the potential for additional health benefits through the closer integration of climate and air pollution policy. It is suggested that co-benefits can be realised through a variety of means, including promoting low-carbon vehicles and renewable energy.

The **National Planning Policy Framework** (NPPF) includes the following key messages:

²¹ European Commission (2012) *National Emission Ceilings* [online] available at:

<http://ec.europa.eu/environment/air/pollutants/ceilings.htm> (accessed 09/09/2013)

²² Council of European Communities (2004) *Fourth Daughter Directive on arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air*, 2004/107/EC.

²³ *The Air Quality Standards Regulations 2010* <http://www.legislation.gov.uk/ukxi/2010/1001/contents/made>

²⁴ *The National Emissions Ceilings Regulations 2002*

http://www.legislation.gov.uk/ukxi/2002/3118/pdfs/ukxi_20023118_en.pdf

²⁵ Defra (2007) *Air Quality Strategy for England, Scotland, Wales and Northern Ireland* [online] available at: <http://www.defra.gov.uk/environment/quality/air/air-quality/approach/> (accessed 08/2012)

²⁶ Benzene; 1,3-butadiene; carbon monoxide (CO); lead; nitrogen dioxide (NO₂); ozone; particles (PM₁₀); sulphur dioxide (SO₂); and polycyclic aromatic hydrocarbons.

²⁷ Defra (2010) *Air Pollution: Action in a Changing Climate* [online] available at:

<http://www.defra.gov.uk/publications/files/pb13378-air-pollution.pdf> (accessed 08/2012)

- *“Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan.”*
- New and existing developments should be prevented from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of air pollution.

What’s the environmental ‘baseline’?

Ecosystems services

The UK NEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. Purification and detoxification of air is classified as a ‘regulating’ service, delivering final goods and services in terms of pollution control.

This service, across the broad habitats assessed in the UK NEA has not experienced any deterioration since 1990. Enclosed farmland habitats, of a medium-high importance, have experienced some improvement. Woodlands, of high importance, have also experienced some improvement.

Current baseline

The pollutants of greatest concern in the UK are ammonia, nitrogen oxides (NO_x) ozone, and particulate matter, specifically PM_{2.5} and PM₁₀ (the mass concentration (expressed in µg m⁻³) of particulate matter that is less than 2.5µm and 10 µm in diameter respectively).

There is a growing body of evidence available to show that atmospheric nitrogen deposition is leading to changes in the natural environment, both locally on nature conservation sites and on a large scale in the wider countryside across the UK. These impacts are separate to the effects ammonia emissions have on human health, which are estimated to lead to an annual social cost of £630 million.²⁸

The (total) UK deposition of nitrogen is currently equally derived from emissions of oxides of nitrogen (NO_x) and ammonia (NH₃). Measures are in place that will reduce emissions of

²⁸ Air Quality Expert Group (2012) *Fine Particulate Matter (PM_{2.5}) in the United Kingdom* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69635/pb13837-aqeg-fine-particle-matter-20121220.pdf (accessed 09/09/2013)

oxides of nitrogen by 55% between 2005 and 2020.²⁹ Ammonia emissions in contrast have increased slightly in recent years and are projected to fall by only 8% between 2005 and 2020. Agriculture accounts for 89% of ammonia emissions the primary source being livestock and in particular cattle.³⁰ The ammonia arises mainly from the decomposition of animal wastes. Many of the potentially cost-beneficial measures that could reduce nitrogen deposition occur in agriculture. Growing use of urea as a mineral fertiliser is a threat to future ammonia emissions as more of the applied nitrogen is lost as ammonia rather than ammonium nitrate.

Critical loads for ecosystem protection are exceeded over large parts of the UK.³¹ In addition, evidence from a range of sources (nitrogen addition experiments, targeted studies across pollution gradients, broad scale surveillance etc.) demonstrates that the consequences for UK semi-natural habitats have been significant and widespread, reinforcing the conclusion that atmospheric reactive nitrogen is a major pressure on biodiversity.³² This issue is not unique to the UK; it is recognised as a serious pressure on biodiversity across Europe.^{33 34}

The negative impacts include: loss of sensitive species, changes to habitat structure, the homogenisation of vegetation types, changes in soil chemistry, a change in flowering behaviour and an increased sensitivity to abiotic and biotic stresses (such as disease and climate change).

NO_x is emitted as a by-product of combustion and comprises predominantly of nitric oxide (NO) which is rapidly oxidised in the atmosphere to nitrogen dioxide (NO₂). Particulate matter is a mixture of organic and inorganic substances that can be emitted directly into the atmosphere (primary) or formed via chemical reactions with other pollutants (secondary). Sources can be naturally occurring or man-made. Health based objectives exist for both NO₂ and PM₁₀ in England (see **Table 1** above). High levels of NO₂ can cause inflammation of the airways and worsen existing respiratory symptoms. Particulate matter can travel deep into the lungs and is associated with respiratory and cardiovascular illness.

²⁹ National Atmospheric Emissions Inventory (2012) *UK Emission Projections of Air Quality Pollutants to 2030* [online] available at: [http://uk-air.defra.gov.uk/reports/cat07/1211071420_UEP43_\(2009\)_Projections_Final.pdf](http://uk-air.defra.gov.uk/reports/cat07/1211071420_UEP43_(2009)_Projections_Final.pdf) (accessed 09/09/2013)

³⁰ National Atmospheric Emissions Inventory (2011) *Pollutant Information: Ammonia* [online] available at: http://naei.defra.gov.uk/overview/pollutants?pollutant_id=21 (accessed 09/09/2013)

³¹ Hall et al (2011) *UK Status Report July 2011: Update to empirical critical loads of nitrogen* [online] available at: http://cldm.defra.gov.uk/PDFs/UK_status_report_2011_finalversion_July2011_v2.pdf (accessed 09/09/2013), Defra (2010) *UK National Focal Centre* [online] available at: http://cldm.defra.gov.uk/UK_NFC.htm (accessed 09/09/2013)

³² Defra (2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services* [online] available at: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services> (accessed 09/09/2013)

³³ W.K. Hicks, C.P. Whitfield, W.J. Bealey and M.A. Sutton (Eds) (2011) *Nitrogen Deposition and Natura 2000: Science & Practice in determining environmental impacts* [online] available at: <http://www.cost.eu/media/publications/11-48-Nitrogen-Deposition-and-Natura-2000-Science-Practice-in-determining-environmental-impacts> (accessed 09/09/2013)

³⁴ Nitrogen in Europe (2011) *European Nitrogen Assessment* [online] available at: <http://www.nine-esf.org/ENA-Book> (accessed 09/09/2013)

Figure 4 shows emissions of NO_x in England from 1990 to 2010.³⁵ It can be seen that the dominant source of the pollutant since 1990 has been, and remains transport sources. However emissions continue to decline due to emissions abatement technology and the use of cleaner fuels. The distribution of total emissions of NO_x in England in 2010 is shown in **Figure 5**. The greatest emissions are seen in large urban areas and close to busy roads, with lower emissions in more rural areas.

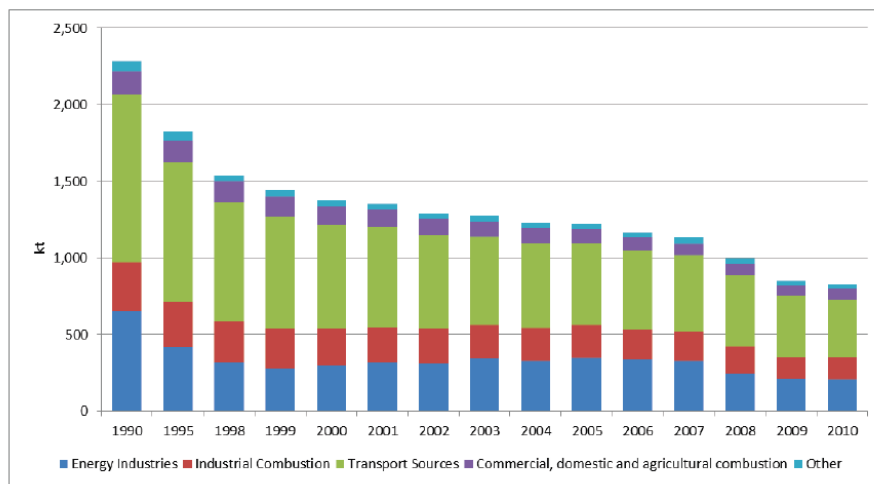


Figure 4: England NO_x emissions by sector, 1990-2010 (NAEI, 2012)

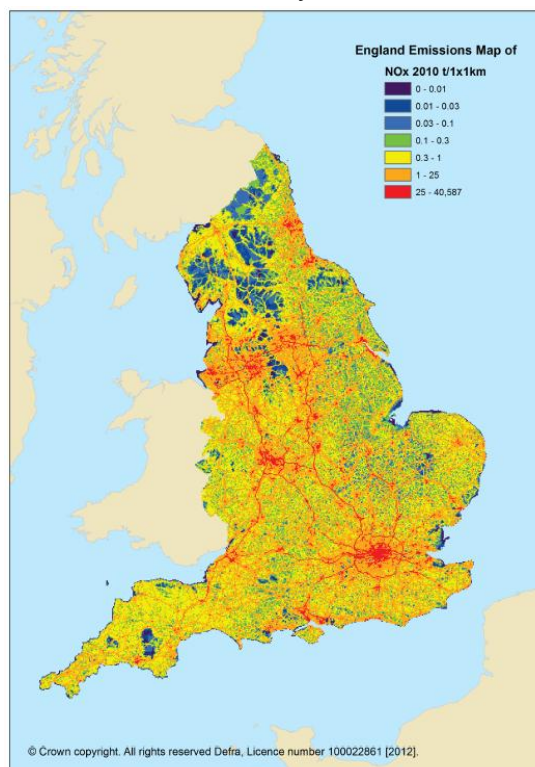


Figure 5: Map of NO_x emissions in England, 2010 (NAEI, 2012)

³⁵ National Atmospheric Emissions Inventory, J MacCarthy, G Thistlethwaite, Y Pang, E Salisbury and T Misselbrook (2012), *Air Quality Pollutant Inventories for England, Scotland, Wales and Northern Ireland: 1990-2010*; [online] available at: http://uk-air.defra.gov.uk/reports/cat07/1209130947_DA_AQPI_2010_MainBody_v1.pdf (accessed 09/09/2013)

Figure 6 shows emissions of PM₁₀ in England from 1990 to 2010.³⁶ The greatest source of PM₁₀ emissions in 2010 in England was from transport sources whereas the principal source in 1990 was from power generation. Total emissions have fallen by more than 50% since 1990 levels.

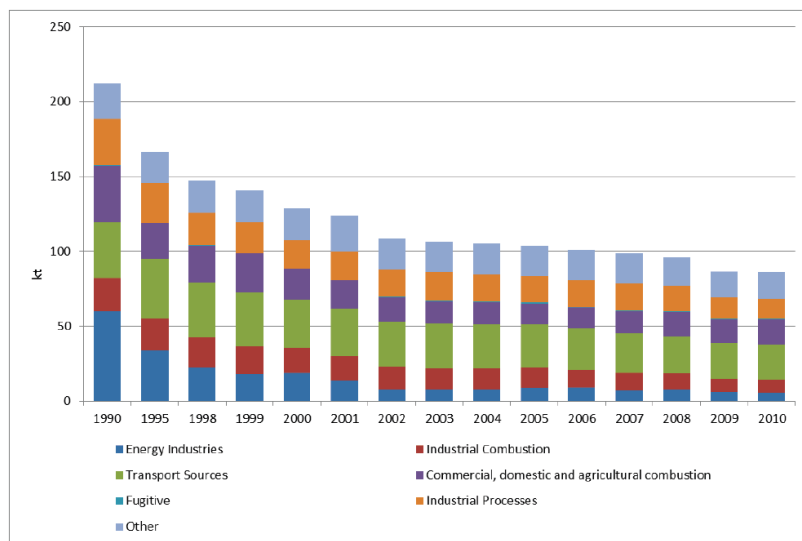


Figure 6: Emissions of PM₁₀ in England from 1990 to 2010

The distribution of total emissions of PM₁₀ in England in 2010 is shown in **Figure 7**. Once again, the highest levels of emissions are seen in more urban areas and close to busy roads, with lower emissions in more rural areas.

³⁶ National Atmospheric Emissions Inventory, J MacCarthy, G Thistlethwaite, Y Pang, E Salisbury and T Misselbrook (2012), *Air Quality Pollutant Inventories for England, Scotland, Wales and Northern Ireland: 1990-2010*; [online] available at: http://uk-air.defra.gov.uk/reports/cat07/1209130947_DA_AQPI_2010_MainBody_v1.pdf (accessed 09/09/2013)

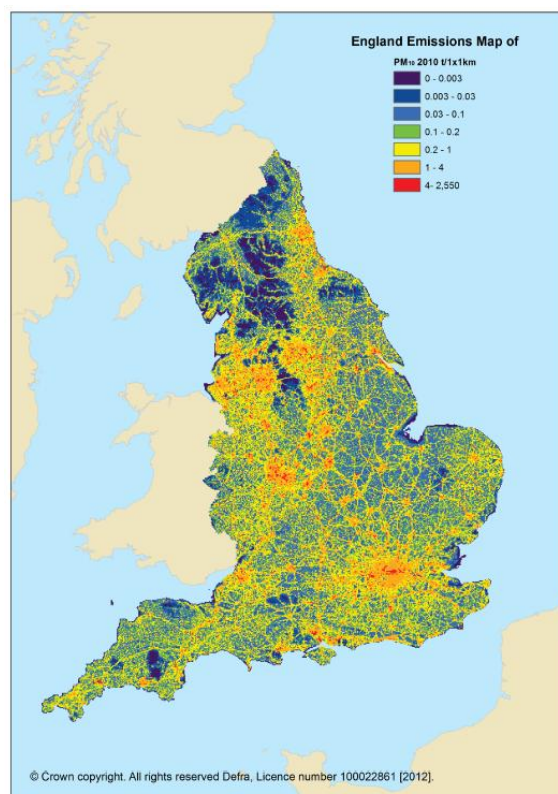


Figure 7: Map of PM₁₀ emissions in England, 2010 (NAEI, 2012)

Most of the UK's Air Quality Management Areas (AQMA) are in urban areas and are as a result of emissions of NO₂ or PM10 from road traffic sources. As of June 2012, 219 of 325 Local Authorities in England (including London) had declared AQMAs,³⁷ the majority of which were for NO₂, as shown in **Table 2**. **Figure 8** illustrates the locations of the UK's AQMAs, showing that the majority are located within urban areas.

³⁷ Defra, T Bush, S Choudrie, B Conlan, S Eaton, A Griffin, Andrew Kent, R King, J Lingard, A Loader, C Martinez, A Misra, N Passant, J Stedman, J Targa, K Vincent, P Willis, E Connolly (2012); *Air pollution in the UK (2011)*. [online] available at: http://uk-air.defra.gov.uk/library/annualreport/air_pollution_uk_2011_issue_2.pdf (accessed 09/09/2013)

Table 2: UK-wide status of Air Quality Management Areas (AQMAs) and appraised Action Plans

	LAs	LAs with AQMA	NO ₂	PM ₁₀	SO ₂	Benzene	With Aps Submitted	Awaiting Aps
England (excluding London)	292	190	464	40	6	0	161	81
London	33	33	33	29	0	0	33	1
Scotland	32	13	21	21	1	0	9	8
Wales	22	10	33	1	0	0	5	6
N. Ireland	26	12	23	6	0	0	13	4

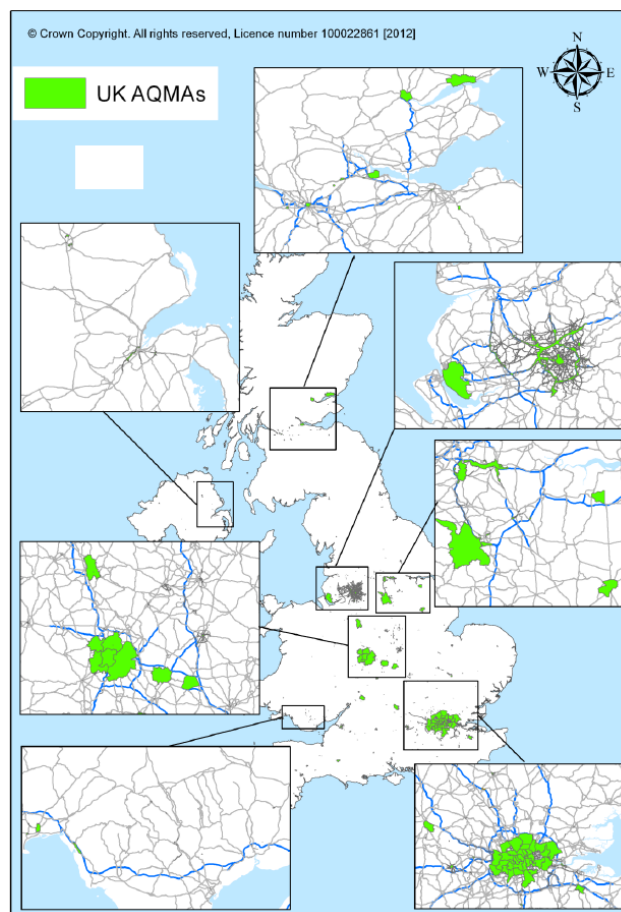


Figure 8: Air Quality Management Areas in the UK, as at end of 2011 (Defra, 2012)

In the UK in 2011, urban background (urban locations away from busy roads) concentrations of NO₂ were typically of the order of 15-40 µg/m³, although concentrations in excess of the annual mean objective (40 µg/m³) were recorded in some locations (e.g.

London, Manchester). Closer to busy, urban roads, $40 \mu\text{g}/\text{m}^3$ is frequently exceeded. Concentrations in rural areas are much lower, for example the 2011 annual mean concentration recorded³⁸ at the Harwell, Oxfordshire (a rural monitoring site) was $10 \mu\text{g}/\text{m}^3$ ³⁹.

The UK annual mean PM_{10} concentration for 2011 across all site types was $21 \mu\text{g}/\text{m}^3$.⁴⁰ The 2011 annual mean concentration recorded at the Harwell, Oxfordshire continuous monitoring site was $18 \mu\text{g}/\text{m}^3$.

Ozone is a secondary pollutant and is formed in the troposphere through reaction of VOCs and NO_x in the presence of sunlight. The chemical reactions are such that high levels of NO_x emitted in urban areas and near busy roads result in a decrease in ozone in the atmosphere. It is therefore normal to record higher concentrations of ozone in more rural areas of the country. In addition to this, it is frequently emissions from outside the UK that contribute to elevated concentrations of ozone, which occur on warm, sunny days with low wind speeds; meteorological conditions that favour the build-up of relatively polluted, or photochemically aged air.

In 2011, the annual mean daily maximum 8-hour running mean was in the range $40\text{-}60 \mu\text{g}/\text{m}^3$ at urban sites in the UK, and in the range $65\text{-}78 \mu\text{g}/\text{m}^3$ at rural sites where ozone concentrations are typically higher.⁴¹ The 2011 annual mean daily maximum 8-hour running mean concentration recorded at the Harwell, Oxfordshire continuous monitoring site was $69 \mu\text{g}/\text{m}^3$.

Concentrations of NO_x and PM_{10} decrease rapidly away from the source of the emission, and as such, concentrations of these pollutants generally tend to be lower in rural areas. However, that is not to say that sources emitting large amounts of these pollutants do not occur in rural areas; sources such as permitted processes or mineral extraction are often located in rural environments in England, and can result in elevated levels of dust. Similarly, areas of intensive livestock rearing would be found in rural areas, and result in odour issues. High levels of NO_2 and PM_{10} can often occur due to congestion on the roads of small market towns, or where the road infrastructure was not designed for the volume of traffic or type of vehicles currently on the roads, for example in Saffron Walden in Essex.

³⁸ Defra (2013) *Data from UK-AIR Data Archive* [online] available at: <http://uk-air.defra.gov.uk/data/> (accessed 09/08/2013)

³⁹ Defra (2013) *Data from UK-AIR Data Archive* [online] available at: <http://uk-air.defra.gov.uk/data/> (accessed 09/08/2013)

⁴⁰ Defra, T Bush, S Choudrie, B Conlan, S Eaton, A Griffin, Andrew Kent, R King, J Lingard, A Loader, C Martinez, A Misra, N Passant, J Stedman, J Targa, K Vincent, P Willis, E Connolly (2012); *Air pollution in the UK 2011*. [online] available at: http://uk-air.defra.gov.uk/library/annualreport/air_pollution_uk_2011_issue_2.pdf (accessed 09/09/2013)

⁴¹ Defra, T Bush, S Choudrie, B Conlan, S Eaton, A Griffin, Andrew Kent, R King, J Lingard, A Loader, C Martinez, A Misra, N Passant, J Stedman, J Targa, K Vincent, P Willis, E Connolly (2012); *Air pollution in the UK 2011*. [online] available at: http://uk-air.defra.gov.uk/library/annualreport/air_pollution_uk_2011_issue_2.pdf (accessed 09/09/2013)

Future baseline under the business as usual scenario

In the absence of the programme to continue to fund schemes and projects, air quality is likely to continue in its current trajectory as it is not considered that the existing programme has a significant effect on air pollution. However, some pollutants, notably ammonia, that are not decreasing at a slower rate, may not decrease faster. In fact, emissions may increase if good farming practice and appropriate incentives are not provided.

What are the key issues that should be the focus of the SEA?

1. Whilst PM₁₀, PM_{2.5} and NO₂ levels are higher in urban areas, pinch points in market towns may be susceptible to higher levels of pollution and smaller settlements may still have pollution issues from being away from the natural gas grid or being close to busy roads.
2. Areas of high intensity livestock rearing can result in odour issues.
3. The risk of introducing receptors into places where there are existing sources of odour or dust, or where additional strain could be put on a local road network that is already operating under stress should be avoided.
4. Ammonia emissions are projected to fall by only 8% between 2005 and 2020 and are projected to continue to lead to excessive nitrogen deposition at protected ecological sites if more measures are not introduced to help reduce emissions

SEA Framework questions - will the Rural Development Programme?

- Improve air quality?
 - Increase / decrease levels of air pollutants (PM₁₀ and PM_{2.5}, ozone, ammonia and NO_x levels (both concentration and deposition))?
 - Increase / decrease car journeys?
 - Expose new receptors to potential air pollution including odour?

Biodiversity and nature conservation

This section sets out the policy context and the environmental baseline with respect to biodiversity and nature conservation. It is important to note that biodiversity has significant inter-relationships with other topics, in particular landscape and cultural heritage, soil management and woodland. Critically, biodiversity underpins ecosystem functioning and the delivery of ecosystem services.

What's the policy 'context'?

Internationally established objectives

The tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, in Nagoya, Japan in October 2010, saw the adoption of a Strategic Plan for Biodiversity 2011-2020 and the 'Aichi Biodiversity Targets'. The Strategic Plan's vision is of a world of "*Living in harmony with nature*" where "*By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people*".⁴²

The Strategic Plan includes the 20 Aichi Biodiversity Targets for 2011-2020.⁴³ Examples of relevant targets include:

- **Target 3:** By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.
- **Target 5:** By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.
- **Target 7:** By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
- **Target 8:** By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
- **Target 15:** By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

⁴² See COP 10 Decision X/2. *Strategic Plan for Biodiversity 2011-2020* [online] available at: www.cbd.int/decision/cop/?id=12268 (accessed 23/08/2013)

⁴³ See the *Aichi Biodiversity Targets* [online] available at: www.cbd.int/sp/targets/ (accessed 23/08/2013).

The international community has also established the 'Intergovernmental Platform on Biodiversity and Ecosystem Services' (IPBES). IPBES was established in 2012 as an independent intergovernmental body open to all UN member countries. Members are committed to building IPBES as the leading intergovernmental body for assessing the state of the planet's biodiversity, its ecosystems and the essential services they provide to society.⁴⁴

At the European level, a new EU Biodiversity Strategy was adopted in 2011.⁴⁵ This includes a headline target of “*Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss*”. In particular, the Strategy includes specific targets in relation to agriculture and forestry:

- **Agriculture:** By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement⁴⁶ in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline.
- **Forests:** By 2020, Forest Management Plans or equivalent instruments, in line with Sustainable Forest Management (SFM)²¹, are in place for all forests that are publicly owned and for forest holdings above a certain size⁴⁷ (to be defined by the Member States or regions and communicated in their Rural Development Programmes) to help bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 Baseline.

Nationally established objectives

The Natural Environment White Paper (NEWP)⁴⁸ sets out the importance of a healthy, functioning natural environment in England to sustained economic growth, prospering communities and personal well-being. It was in part a response to the UK's failure to halt and reverse the decline in biodiversity by 2010 and it signalled a move away from the traditional approach of protecting biodiversity in nature reserves to adopting a landscape approach to protecting and enhancing biodiversity. It was also a response to the Lawton Review which identified the need for greater connectivity between wildlife sites for the

⁴⁴ See <http://www.ipbes.net/about-ipbes.html> (accessed 23/08/2013).

⁴⁵ European Commission (2011) *Our life insurance, our natural capital: an EU biodiversity strategy to 2020* [online] available at: http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7%5b1%5d.pdf (accessed 09/09/2013)

⁴⁶ For both targets, improvement is to be measured against the quantified enhancement targets for the conservation status of species and habitats of EU interest in Target 1 and the restoration of degraded ecosystems under target 2.

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⁴⁸ Defra (2012) *The Natural Choice: securing the value of nature* (Natural Environment White Paper) [online] available at: <http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf> (accessed 11/2012)

benefit of nature and wildlife. The NEWP also aims to create a green economy in which economic growth and the health of our natural resources sustain each other and markets, business and Government better reflect the value of nature. It includes commitments to:

- halt overall biodiversity loss, support functioning ecosystems and establish coherent ecological networks by 2020;
- establish a new voluntary approach to biodiversity offsetting to be tested in pilot areas;
- enable partnerships of local authorities, local communities and landowners, the private sector and conservation organisations to establish new Nature Improvement Areas; and
- address barriers to using green infrastructure to promote sustainable growth.

The NEWP recognises that green infrastructure is ‘one of the most effective tools available’ to manage ‘environmental risks such as flooding and heat waves’. With respect to trees and woodlands, an ambition is to create more opportunities for planting woodlands; for more trees in our towns, cities and villages; and a greater proportion of existing woodlands to be in active management in order to ‘enhance the wide range of benefits that woodlands provide’ including ‘new wildlife habitats and green space for people to use and enjoy’ and to help ‘mitigate and adapt to the future changing climate.’

Building on the Natural Environment White Paper, the Government published **Biodiversity 2020: A strategy for England’s wildlife and ecosystem services**.⁴⁹ The Strategy’s mission for the next decade is: *“to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people”*. The Strategy emphasises that *“Effectively establishing coherent and resilient ecological networks on land and at sea requires a shift in emphasis, away from piecemeal conservation actions and towards a more effective, more integrated, landscape scale approach”*. The key actions in the Strategy include:

- Agriculture
 - *“We will improve the delivery of environmental outcomes from agricultural land management practices, whilst increasing food production by, for example, reviewing how we use advice and incentives, and how we use agri-environment schemes.”*
 - *“We will work with our delivery partners and stakeholders to develop and test an approach to Environmental Stewardship that increases its focus on outcomes, including encouraging more collaborative working to achieve landscape-scale action and the possibility of allowing greater flexibility within agreements in how outcomes are achieved.”*
 - *“We will seek to maximise the contribution which Environmental Stewardship and the Woodland Grant Scheme make towards our overarching objective to*

⁴⁹ Defra (2011). *Biodiversity 2020: A strategy for England’s wildlife and ecosystem services* [online] available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf (accessed 23/08/2013)

promote multiple benefits from ecological restoration at a landscape scale, including through Nature Improvement Areas.”

- Forestry
 - *“We will bring a greater proportion of our existing woodlands into sustainable management and expand the area of woodland in England.”*
 - *“The Forestry Commission and Natural England will consider the role that Environmental Stewardship can provide to support farmers in conserving other ‘woody habitats’, such as field trees, parkland, hedges and patches of scrub scattered through the landscape, which are vital habitat for woodland wildlife.”*

The strategy describes a series of outcomes to be achieved by 2020. For terrestrial habitats and ecosystems these are:

1A. Better wildlife habitats with 90% of priority habitats in favourable or recovering condition and at least 50% of SSSIs in favourable condition, while maintaining at least 95% in favourable or recovering condition.

1B. More, bigger and less fragmented areas for wildlife, with no net loss of priority habitat and an increase in the overall extent of priority habitats by at least 200,000 ha.

1C. By 2020, at least 17% of land and inland water, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective, integrated and joined up approaches to safeguard biodiversity and ecosystem services including through management of our existing systems of protected areas and the establishment of nature improvement areas.

1D. Restoring at least 15% of degraded ecosystems as a contribution to climate change mitigation and adaptation.

The proposals set out in the NEWP are directly linked to the ground breaking research in the National Ecosystem Assessment (NEA)⁵⁰, a major project that was able to draw conclusions on the ‘substantial’ benefits that ecosystems provide to society directly and through supporting economic prosperity. The NEA identified development as a key driver of loss and biodiversity offsets as a possible means of increasing ‘private sector involvement in conservation and habitat creation’. The NEA also identified biodiversity as underpinning delivery of all ecosystem services.

The NPPF, in regard to rural development sets out that ‘planning’ should:

- contribute to the Government’s commitment to halt the overall decline in biodiversity by minimising impacts and achieving net gains in biodiversity wherever possible;

⁵⁰ UNEP-WCMC (2011) *UK National Ecosystem Assessment* [online] available at: <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx> (accessed 09/09/2013)

- promote the ‘preservation, restoration and recreation of priority habitats, ecological networks’ and the ‘protection and recovery of priority species’;
- plan for biodiversity at a landscape-scale across local authority boundaries; and
- take account of the effects of climate change in the long term.

What’s the environmental ‘baseline’?

Ecosystems services

The UK NEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. Biodiversity is not an ecosystem service, but rather a feature of ecosystems that underpins ecosystem functioning and hence the delivery of all ecosystem services. The NEA looked at wild species diversity for an indication of the importance and direction of change of this topic. At the same time, UK wild species also directly provide both provisioning and cultural services given their economic and cultural significance.

Wild species diversity, across the broad habitats assessed in the UK NEA has experienced deterioration across a multitude of habitats since 1990. Semi-natural grassland, of high importance for wild species diversity, has experienced deterioration. Enclosed farmland, of medium-low importance, has experienced deterioration. Freshwaters open waters, wetlands & floodplains, coastal margins and marine, all of high importance, have experienced some deterioration

Woodlands, of high importance, have, contrary to the habitats above, experienced some improvement in wild species diversity.

Current baseline

A complex relationship exists between farming and nature conservation in the countryside. While farmland provides habitat for wildlife, there is evidence that intensification of farming has resulted in long term declines (particularly since about the 1970s) in both specific habitats and the flora and fauna which are associated with them – these changes also impact on the distinctiveness of landscape. In addition, issues of diffuse pollution from agriculture impact on conservation objectives.

The Countryside Survey 2007 provides a summary of the changes in land use and habitat type in England.⁵¹ The survey indicated that most *“Broad Habitats remained fairly constant in England between 1998 and 2007, apart from an increase in Standing Open Water and Canals, an increase in Neutral Grassland, at the expense of Arable and Horticulture, an increase in Broadleaved Woodland at the expense of Arable and Horticulture and Improved Grassland, and an increase in Dwarf Shrub Heath converted mainly from Acid Grassland. The area of all other Broad Habitats showed no change.”*

Birds

The Joint Nature Conservation Committee describes why bird populations are a good indicator for wider biodiversity: *“Bird populations are considered to be a good indicator of the broad state of wildlife and countryside because they occupy a wide range of habitats and they tend to be near or at the top of the food chain. Moreover, considerable long-term data on bird populations have been collected”*.⁵²

When viewed together, the status of common native breeding bird species in England appear to have changed little compared with 40 years ago. However, there has been considerable variation between individual bird species and groups of species that share the same broad habitats, and there have been some large losses in once abundant species, particularly House Sparrow and Starling. The all-species index showed a small but significant decline of 1 per cent from 2005 to 2010.

Although the largest decreases in farmland bird populations occurred between the late seventies and the early nineties, there has been a pronounced recent decline of 11 per cent since 2003. Historically, the decrease has been driven mainly by species that are restricted to, or highly dependent, on farmland habitats (the ‘specialists’). However, there has also been a decline in species that are associated with a wider range of habitats (the ‘generalists’) following a peak in 2006.

There has been little recent change in woodland bird populations, with the greatest decline occurring from the late eighties until the mid-nineties. In the late nineties populations of generalist species started to increase but the populations of specialist species continued to decline. The understanding of the causes of these declines is much less well understood than for farmland birds.

In 2011 breeding water and wetland bird populations in England were at about the same level as they were in 1975, although there has been a decline of 13 per cent since 2003. There is no clear trend in the populations of breeding seabird populations in England, but in 2011 levels were 5 per cent higher than in 1986 when data collection began.

⁵¹ Countryside Survey (2007) *England Results from 2007: Chapter 2 – The National Picture* [online] available at: <http://www.countrysidesurvey.org.uk/sites/default/files/pdfs/reports2007/england2007/CS-England-Results2007-Chapter02.pdf> (accessed 09/09/2013)

⁵² Joint Nature Conservation Committee (2012) *Birds of the wider countryside and at sea* [online] available at: <http://jncc.defra.gov.uk/page-4235> (accessed 09/09/2013)

In the winter of 2010-11 populations of wintering waterbirds in England were 105 per cent higher than in the winter of 1975-6; however, there has been an 11 per cent decline in numbers since their peak in 1996-7.

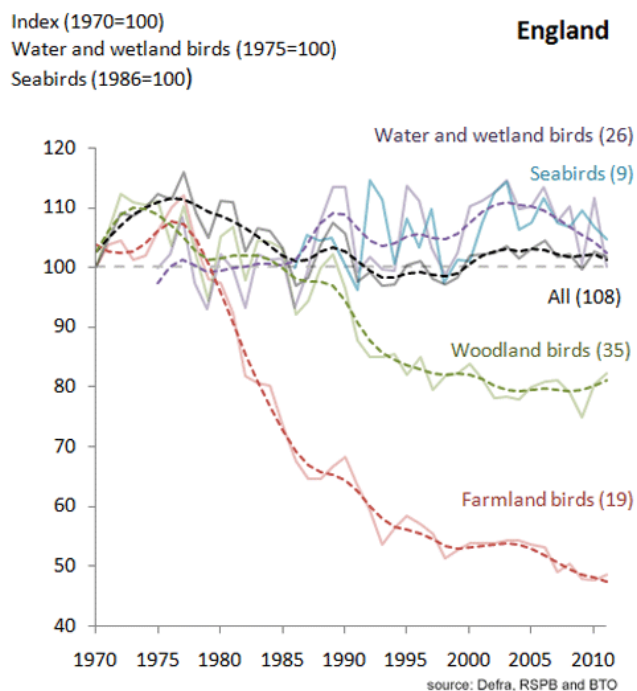


Figure 9: Trends in Bird Numbers 1970 – 2011 for England.

Higher Level Stewardship (HLS) has been the main mechanism for delivering sympathetic farm management for a suite of range-restricted and declining birds associated with arable/mixed farmland in England – lapwing, grey partridge, turtle dove, yellow wagtail, tree sparrow and corn bunting. **Figure 10** shows the priority areas within England for farmland birds.

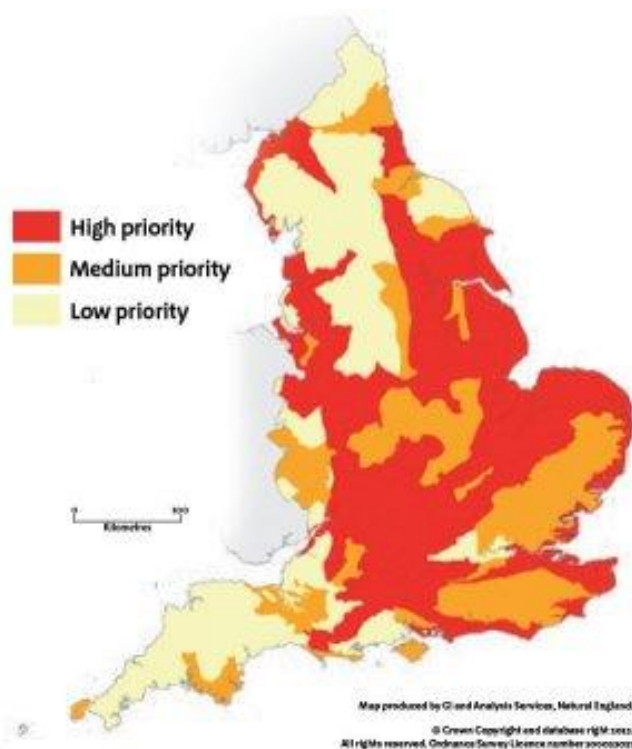


Figure 10: **Priority areas within England for farmland birds**⁵³

Habitats

There are 4,121 SSSIs in England, covering around 8 per cent of the country, many of which cover the most loved, and often visited, parts of England.⁵⁴ The majority of all SSSIs are either in favourable condition or unfavourable recovering. When a site is assessed as unfavourable recovering it means that under current management conditions the notified features are likely to become favourable over the course of time. The time period is not specified and will vary considerably depending on the type of features or habitats.

By 2020, the Government's objective is to see that 50 per cent of the total area of SSSIs is in a favourable condition, while at least 45 per cent of the remaining area of SSSIs are in a stage of recovery and can be expected to reach favourable condition, once management plans have taken effect. **Figure 11** illustrates progress as of 2011.

⁵³ Defra (2013) *Entry Level Stewardship (ELS) Handbook 2013 (NE349)* [online] available at: <http://adlib.everysite.co.uk/adlib/defra/content.aspx?doc=277274&id=277285> (accessed 09/09/2013)

⁵⁴ Natural England (2013) *Spotlight on SSSIs June 2013* [online] available at: <http://www.naturalengland.org.uk/ourwork/conservation/designations/sssi/spotlightonsssiissue2feature.aspx> (accessed 09/09/2013)

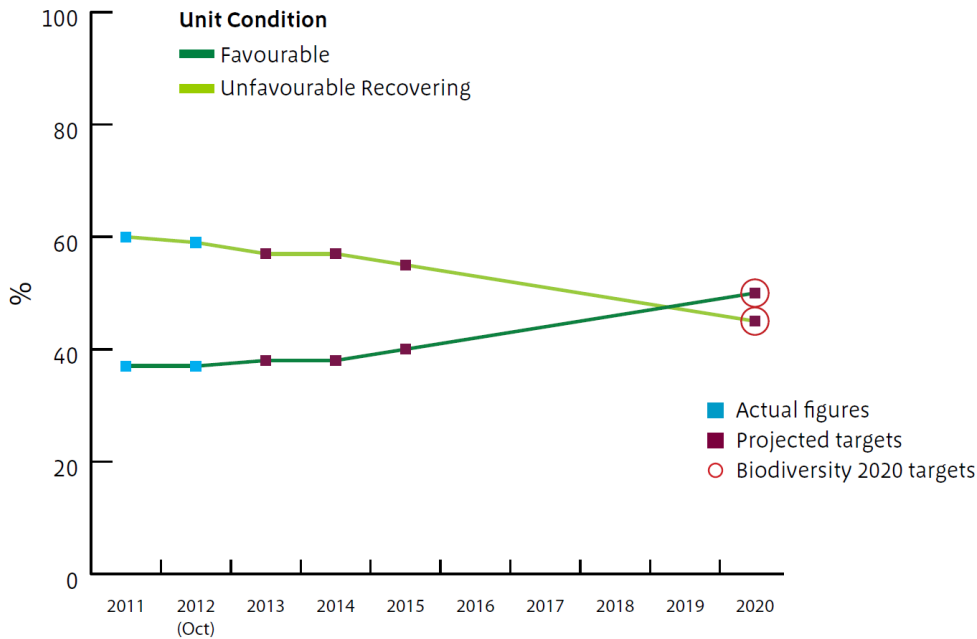


Figure 11: SSSI improvement and decline from 2011 to now and where we need to be by 2020⁵⁵

For the last operating year, (April 2011-March 2012), good progress has been made across the SSSI network. The proportion of sites in favourable condition has steadily moved forward to 37.59%⁵⁶ (see **Table 3**), an increase since April 2013 (see **Table 4**). This amounts to more than 7,000 hectares (equivalent to 1/5 of the Norfolk Broads) of the most important conservation land.

Table 3: SSSI condition summary⁵⁷

Area meeting PSA target	Area favourable	Area unfavourable recovering	Area unfavourable no change	Area unfavourable declining	Area destroyed / part destroyed
96.21%	37.59%	58.62%	2.19%	1.57%	0.03%

⁵⁵ Natural England (2012) *Spotlight on SSSIs - Working towards the goals of Biodiversity 2020: Issue 1 – October 2012* [online] available at:

<http://publications.naturalengland.org.uk/publication/3004475?category=20003> (accessed 09/09/2013)

⁵⁶ As of 1st August 2013 – see Natural England (2013) *SSSI Condition Summary* [online] available at: <http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdrt15&Category=N&Reference=0> (accessed 09/09/2013)

⁵⁷ As of 1st August 2013 – see Natural England (2013) *SSSI Condition Summary* [online] available at: <http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdrt15&Category=N&Reference=0> (accessed 09/09/2013)

Table 4: Summary of shift in each condition category, April 2011-present⁵⁸

Condition category	1 April 2011 %	1 April 2012 %	1 April 2013 %	2020 Target %
Favourable	36.6	37.24	37.55	50
Unfavourable recovering	59.9	59.40	58.55	45
Unfavourable no change	2.3	2.20	2.20	(No target)
Unfavourable declining	1.1	1.20	1.67	(No target)
Destroyed/part destroyed	0.1	0.01	0.03	(No target)

Since 2003, the proportion of agricultural sites in favourable or recovering condition has increased from 45% to 97%, whilst that for all SSSIs has increased from 57% to just under 97%.⁵⁹ **Figure 12** shows the areas, in thousand hectares, of agriculturally managed SSSIs in favourable and unfavourable condition, by habitat. Sites on bogs and upland heaths account for around two thirds of agriculturally managed SSSIs. Around 2% of the area of these sites is in an unfavourable condition; 99.8% of arable and horticulture sites are in a favourable condition, though they account for only 2.5% (by area) of agriculturally managed SSSIs.

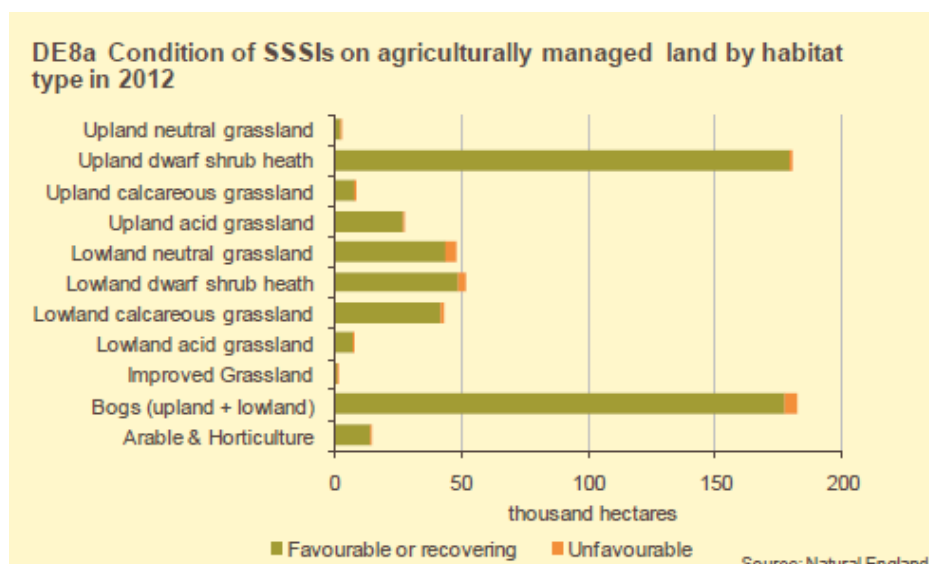


Figure 12: Condition of SSSIs on agriculturally managed land in 2012.⁶⁰

Figure 13 shows the main agricultural reasons for the unfavourable condition of all SSSIs in England.

- 14% (by area) are in unfavourable condition due to undergrazing;
- 11% (by area) are in unfavourable condition due to overgrazing;

⁵⁸ Natural England (2013) *Spotlight on SSSIs June 2013*. [online] available at: <http://publications.naturalengland.org.uk/file/11136129> (accessed 09/09/2013)

⁵⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181317/defra-stats-foodfarm-enviro-obs-indicators-de8-121019.pdf

⁶⁰ Defra (2012) *Indicator DE8: SSSI condition* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181317/defra-stats-foodfarm-enviro-obs-indicators-de8-121019.pdf (accessed 09/09/2013)

- 10% (by area) are in unfavourable condition due to water pollution from agriculture / run off.

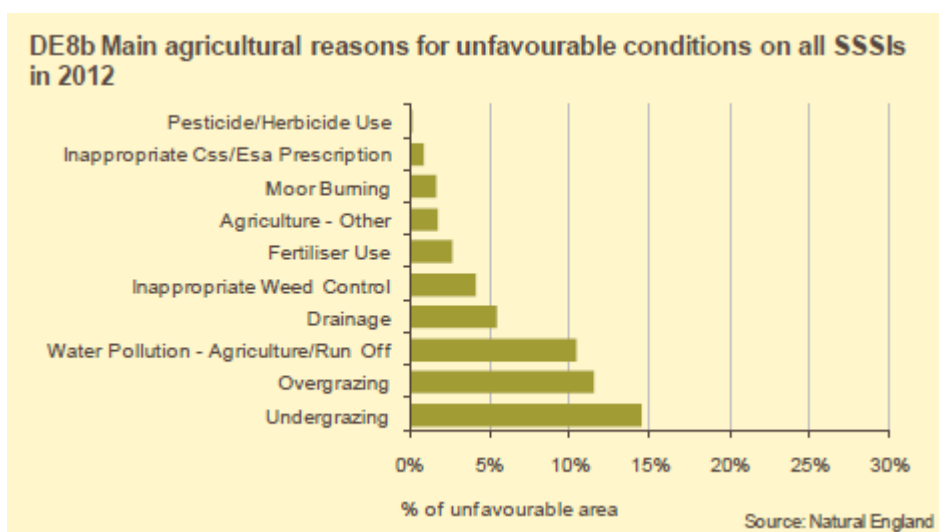


Figure 13: Main agricultural reasons for unfavourable condition on all SSSIs in 2012⁶¹

Wider Changes in Habitats

There have been significant losses in the extent of some semi-natural habitats as a result of agricultural improvements and urban and industrial development. Surviving habitat patches are often isolated and fragmented within otherwise intensive agricultural landscapes. Rates of direct habitat loss have slowed in the UK during the 1990s as grazing issues and eutrophication became more important. Reporting information from the BAP process suggests that the loss of semi-natural habitats, particularly priority habitats, is still occurring.⁶²

Future baseline under the business as usual scenario

Without the implementation of the programme, sites of biodiversity importance are likely to come under increasing pressure and long term declines in loss of habitat are likely to continue. Farmland bird populations may stay depressed and SSSIs on agricultural land may be likely to remain in poorer condition than those on other land use types. It could also be argued that without the support from the Rural Development Programme, declines in habitats and farmland birds may accelerate.

Rising population and associated development may result in the further loss of habitat. A failure to further 'connect' habitats through green corridors may lead to further losses as

⁶¹ Defra (2012) *Indicator DE8: SSSI condition* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181317/defra-stats-foodfarm-environ-obs-indicators-de8-121019.pdf (accessed 09/09/2013)

⁶² JNCC (Date unknown) UK habitat surveillance results summary [online] available at: <http://jncc.defra.gov.uk/page-4432> accessed 11/08/13

species are lost due to the effects of isolation (i.e. loss of genetic diversity) and are exacerbated by the effects of climate change.

The UK Climate Change Risk Assessment (2011) also notes that risks to biodiversity will result from low water levels and reduced river flows presenting a risk to freshwater habitats due to increased concentration of pollutants from agriculture, sewage and air pollution.

What are the key issues that should be the focus of the SEA?

1. There is emerging evidence of relatively recent, positive, changes of improvements in habitat and biodiversity as evidenced by the stabilisation of bird numbers, but populations of farmland specialist birds in particular remain at levels well below those recorded historically.
2. SSSI's on farmed land are in poorer condition than those in England as a whole.
3. Land management and water pollution are significant issues in SSSI management.
4. Long term declines in loss of habitat, including woodland, and associated biodiversity are evident, and are associated with intensification of farming practice.
5. Although a significant stock of habitats remain, these are somewhat fragmented, and represent a barrier to species migration.

SEA Framework questions - will the Rural Development Programme?

- Protect and enhance biodiversity?
 - Increase levels of farmland birds?
 - Improve SSSI condition on agricultural land?
 - Reverse long term declines in loss of habitats?
 - Help create a connected biodiversity resource i.e. address the historic fragmentation of habitats?

Climate change mitigation

This section sets out the policy context and the environmental baseline with respect to climate change mitigation. It is important to note that climate change mitigation has significant inter-relationships with other topics, in particular, the rural economy, human health, biodiversity and nature conservation, woodlands (through carbon stores) and waste (through anaerobic digestion of agricultural wastes).

What's the policy 'context'?

Internationally established objectives

The **Copenhagen Accord** – recognised by the 193 nations including the UK at the 15th session of the Conference of Parties to the United Nations Framework Convention on Climate Change – recognised *"the scientific view that the increase in global temperature should be below 2 degrees Celsius"*. According to the European Commission, that means a temperature increase of no more than 1.2°C above today's level.⁶³ The Accord is not legally binding and does not commit countries to agree a binding successor to the Kyoto Protocol. Furthermore, the Accord recognises *that "deep cuts in global emissions are required" and that "a low-emission development strategy is indispensable to sustainable development"*.⁶⁴

The **Europe 2020 growth strategy** includes several climate change and energy sustainability targets. The EU aims at lowering greenhouse gas emissions by 20% (or even 30%, if the conditions are right) compared to 1990, to generate 20% of energy from renewable sources; and to increase energy efficiency by 20%.^{65 66}

For 2050, EU leaders have endorsed the objective to reduce Europe's greenhouse gas emissions by 80-95% compared to 1990 levels as part of efforts by developed countries as a group to reduce their emissions by a similar degree.⁶⁷ To this end, the European Commission has developed a roadmap for moving to a competitive low-carbon economy in 2050.⁶⁸

The **Directive on the Promotion of the use of biofuels and other renewable fuels for transport** (the 'Biofuels Directive') set out that biofuels should make up 5.75% of all transport fossil fuels by 2010.

⁶³ See http://ec.europa.eu/clima/policies/brief/eu/index_en.htm (accessed 28/08/13).

⁶⁴ United Nations Framework Convention on Climate Change Copenhagen Accord 18 December 2009 (available at: <http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf>)

⁶⁵ See http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/targets/index_en.htm (accessed 28/08/13)

⁶⁶ Commission of the European Communities (2007) Limiting Global Climate Change to 2 degrees Celsius: The way ahead for 2020 and beyond [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0002:FIN:EN:PDF> (accessed 11/2012)

⁶⁷ See http://ec.europa.eu/clima/policies/brief/eu/index_en.htm (accessed 28/08/13)

⁶⁸ See http://ec.europa.eu/clima/policies/roadmap/index_en.htm (accessed 28/08/13)

Nationally established objectives

The **Climate Change Act** (2008) sets out legally binding targets for greenhouse gas (GHG) emissions in the UK. The targets are for the six Kyoto GHGs to be at least 80% lower than the 1990 baseline. The GHGs are:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF₆).

Of particular relevance to rural development and agriculture is the reduction in methane and nitrous oxide.

The Department for Transport (DfT) '**Door to Door**' strategy focuses on four core areas which we know need to be addressed so that people can be confident in choosing sustainable transport, thereby reducing their GHG emissions, mainly CO₂ in this case:

- accurate, accessible and reliable information about the different transport options for their journeys;
- convenient and affordable tickets, for an entire journey;
- regular and straightforward connections at all stages of the journey and between different modes of transport; and
- safe, comfortable transport facilities.

The voluntary and industry led **Greenhouse Gas Action Plan**⁶⁹ (GHGAP) sets out how the agriculture industry in England is responding to the challenge of providing for a high quality diet with scarcer land, water and energy. The agricultural sector has committed to reducing greenhouse gas emissions by three million tonnes of CO₂ equivalent per year from 2018-2022.

⁶⁹ Agriculture and Horticulture Development Board (2012) *Greenhouse Gas Action Plan (GHGAP)* [online] available at: <http://www.ahdb.org.uk/projects/GreenhouseGasActionPlan.aspx> (accessed 09/09/2013)

What's the environmental 'baseline'?

Ecosystems services

The UKNEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. 'Climate regulation' (specifically in terms of capture and storage of carbon in soils) is classified as a 'regulating' service.

This service, across the broad habitats assessed in the UKNEA has experienced about the same numbers of improvements and deterioration. Of the high importance habitats for the delivery of climate regulation, mountains, moorlands & heaths has had no net change, enclosed farmland has had some improvement, woodlands have had some improvement but urban and marine have both experienced some deterioration. Amongst the medium – high habitats, semi-natural grasslands have experience no net change, whilst coastal margins have experienced some improvement.

Current baseline

Global Warming Potential (GWP)

The European Commission defines GWP as *"a term used to describe the relative potency, molecule for molecule, of a greenhouse gas, taking account of how long it remains active in the atmosphere."*

*The global-warming potentials (GWPs) currently used are those calculated over 100 years. Carbon dioxide is taken as the gas of reference and given a 100-year GWP of 1."*⁷⁰

Methane and nitrous oxide are the most important GHG gases after carbon dioxide.⁷¹ At the 100 year reference, methane has a roughly 20 times and nitrous oxide a roughly 300 times higher GWP than carbon dioxide.⁷² This is an important consideration and emissions are reported as carbon dioxide equivalents (CO₂e) to provide consistency.

⁷⁰ European Commission Eurostat (2013) *Glossary: Global-warming potential (GWP)* [online] Available from: [http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Global-warming_potential_\(GWP\)](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Global-warming_potential_(GWP)) (accessed 09/09/2013)

⁷¹ DECC (2013) *2012 UK Greenhouse Gas Emissions, provisional figures and 2011 UK Greenhouse Gas Emissions, final figures by fuel type and end-user* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193414/280313_ghg_national_statistics_release_2012_provisional.pdf (accessed 03/10/2013)

⁷² IPCC (2007) *IPCC Fourth Assessment Report: Climate Change 2007*. Available from: http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html

Emissions of Climate Change Gases

Carbon Dioxide is the main climate change gas, produced largely by combustion of fossil fuels. **Figure 14** shows that for CO₂ emissions for the UK have been declining since 1990.

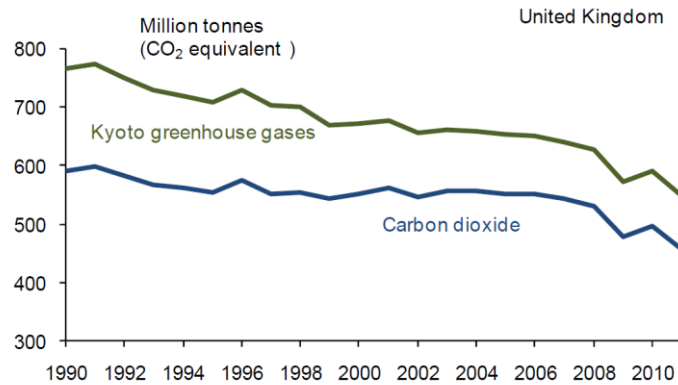
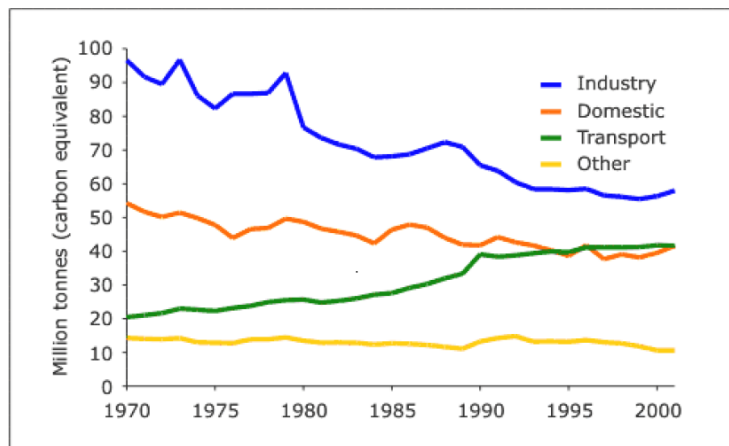


Figure 14: CO₂ emissions in the UK since 1990.

Between 1970 and 2003, total carbon dioxide emissions fell by 19 per cent. Much of this decline has come from a reduction in emissions attributable to industry which declined by almost half since 1970. **Figure 15** shows that emissions caused by domestic users have declined by 24 per cent since 1970; those attributable to transport have increased by 89 per cent.



Source: Defra / Indicators of Sustainable Development

Figure 15: Sources of Climate Change Gases in the UK

Figure 16 shows the breakdown of total GHG emissions by their source. Energy supply is the most important source and responsible for roughly a third of GHG emissions. Transport emits 21% of GHG emissions and if the trend continues will become more important in future. Agriculture's share of total GHG emissions is 8% and waste management causes 3% of total emissions.

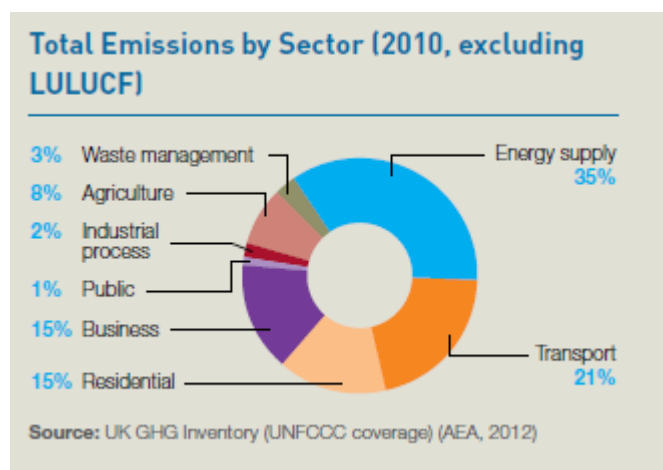


Figure 16: Total emissions by sector (2010, excluding LULUCF).

Agriculture is responsible for a very small share of CO₂ emissions. However, other gasses, including methane and nitrous oxide, also contribute towards climate change, and agricultural practices are much more significant sources of such gases.

Table 5 provides a breakdown of GHG emissions by gas and end user. Business, transport and residential have the highest carbon dioxide emissions but emit other GHG only to a lesser extent. Agriculture has by far the highest emissions of methane than all other sectors bar waste. N₂O is also emitted in far higher levels through agricultural activities than any other activity.

	Carbon dioxide	Methane	Nitrous oxide	Fluorinated gases	Total
Business	157.9	3.2	1.5	12.4	175.0
Transport	133.1	0.6	1.2	0.0	134.8
Residential	124.1	3.2	0.5	2.7	130.5
Agriculture	6.5	17.9	29.2	0.0	53.6
Waste Management	0.3	15.8	1.3	0.0	17.3
Public	15.5	0.4	0.1	0.0	15.9
Exports	15.1	0.5	0.2	0.0	15.8
Industrial Process	10.1	0.3	0.2	0.4	11.1
LULUCF	-3.9	0.0	0.6	0.0	-3.3
Total	458.6	41.9	34.7	15.5	550.7

All figures are for the UK and Crown Dependencies only, and exclude Overseas Territories.

Table 5: Breakdown of 2011 UK greenhouse gas emissions by gas and end-user sector (MtCO₂e)⁷³

⁷³ DECC (2013) 2012 UK Greenhouse Gas Emissions, provisional figures and 2011 UK Greenhouse Gas Emissions, final figures by fuel type and end-user [online] available at:

The most recent UK Greenhouse Gas Inventory indicates that for methane, emissions have decreased by 57.3%.⁷⁴ **Figure 17** illustrates the UK trends in methane emissions by sector. Emissions from energy supply and waste management decreased substantially since 1990. Agricultural emissions have declined to a lesser extent and therefore the proportion of the total methane emissions increased..

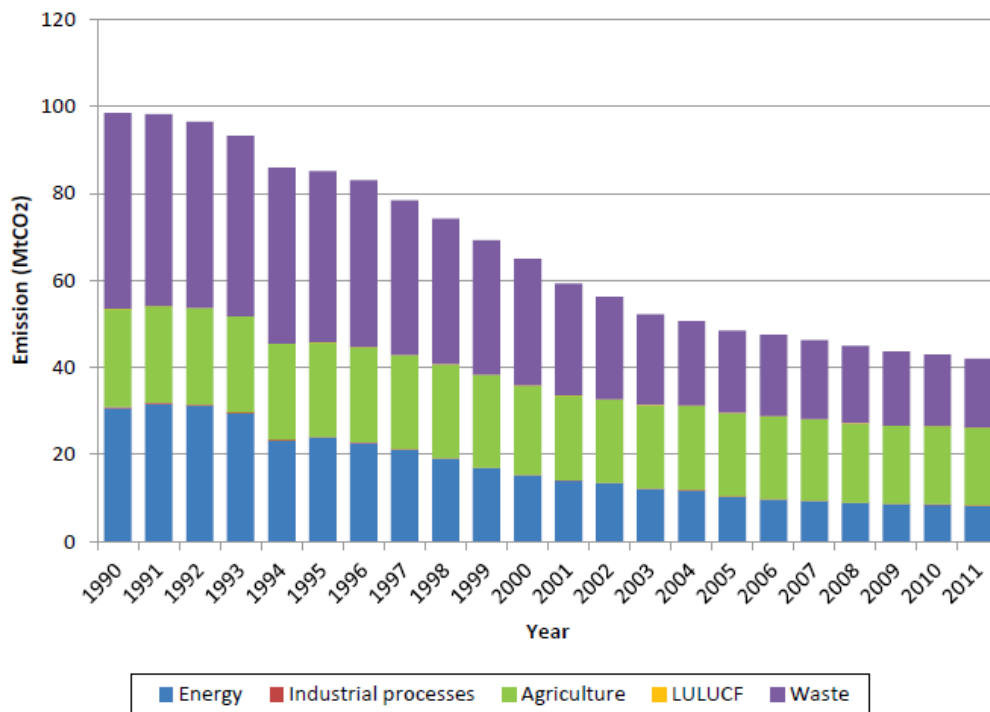


Figure 17: UK Trends in CH₄ Emissions by Sector

Figure 18. shows the decline of nitrous oxide emissions from 1990 to 2011. With the decline of emissions from industrial processes, agriculture is by far the greatest emitter of N₂O, but has also decreased its emissions since 1990.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193414/280313_ghg_national_statistics_release_2012_provisional.pdf (accessed 09/09/2013)

⁷⁴ DECC (2013) *UK Greenhouse Gas Inventory, 1990 to 2011*. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207605/UK_GHG_Inventory_1990-2011-Report.pdf (accessed 09/09/2013)

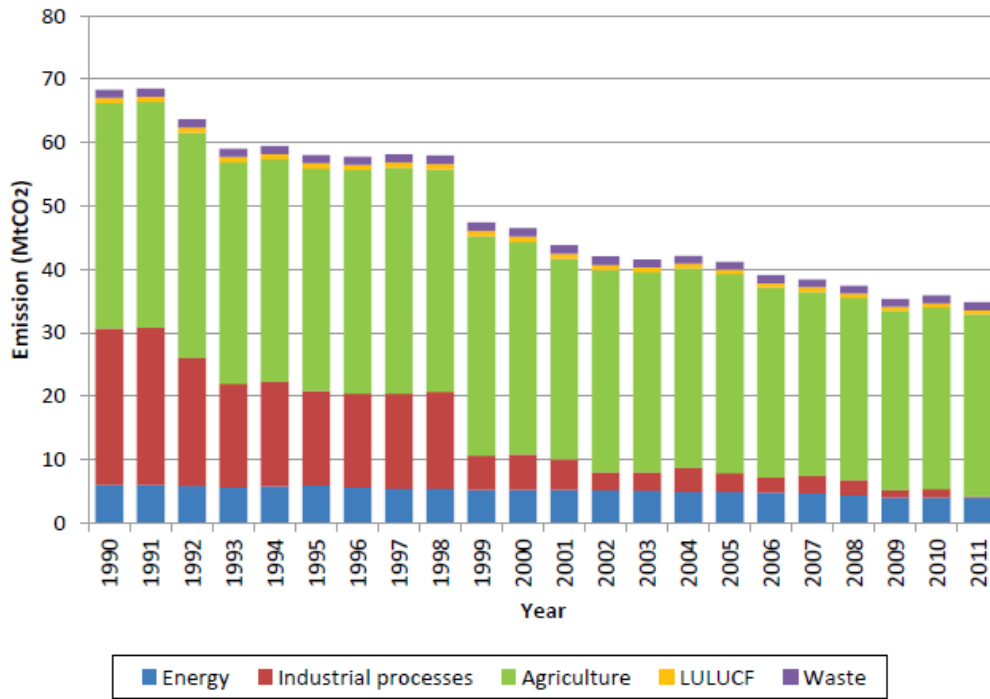


Figure 18: UK Trends in N₂O Emissions by Sector

Agriculture

The relationship between agriculture and climate change is complex. Although agriculture is responsible for only a small proportion of carbon dioxide emissions, the sector is much more closely associated with emissions of other greenhouse gases such as methane and nitrous oxide. In addition, climate change is already having physical effects which will affect farming and farm-based wildlife. At the same time, the policy response to climate change will create opportunities for farming in relation to biomass energy

Fertiliser application and emissions from agriculture wastes are the most important sources of nitrous oxide. **Figure 19** shows the volume of fertiliser applied to agricultural land in the UK.

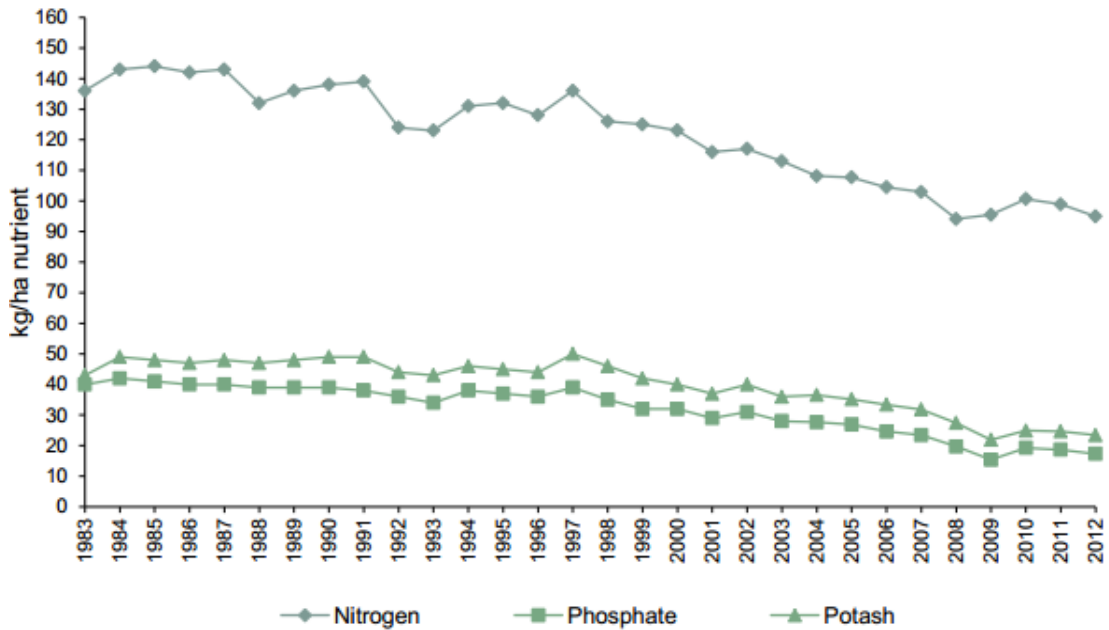


Figure 19: Fertiliser trends (UK)⁷⁵

The usage of fertiliser varies substantially between farm types. This can be explained by different nutrient requirements of different crops. **Figure 20** illustrates the usage of nitrogen for a range of crops in England and Wales. Overall there is a downward trend in the application since the 1980s. However, there hasn't been a significant reduction since the early 1990s.

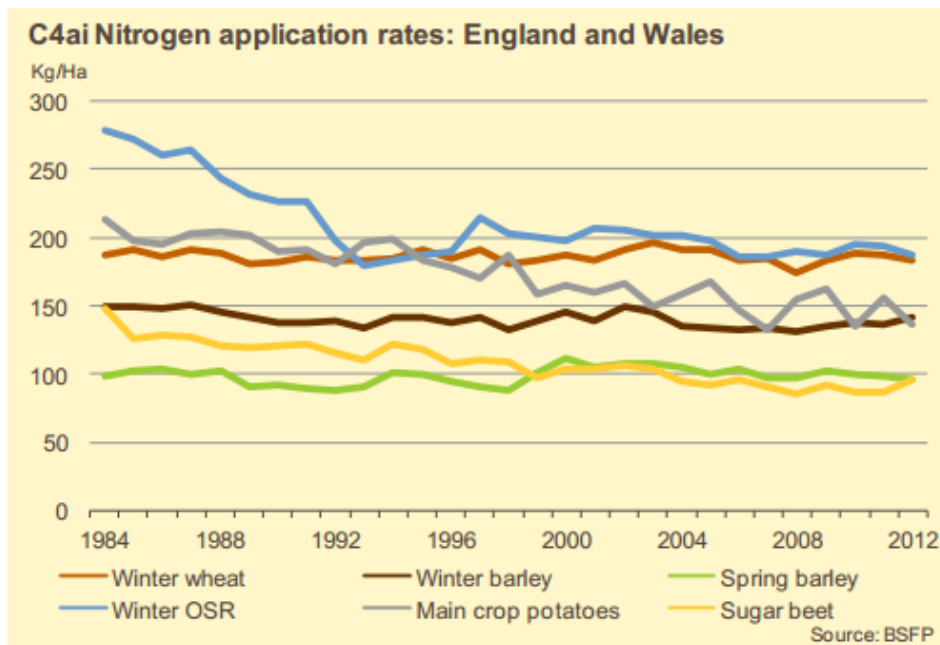


Figure 20: Nitrogen application rates: England and Wales⁷⁶.

⁷⁵ British Survey of Fertiliser Practice (2012) Fertiliser Use On Farm Crops For Crop Year 2012 [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192605/fertiliseruse-report2012-25apr13.pdf [accessed 12/09/2013]

The emissions from agricultural wastes is directly influenced by livestock numbers and the infrastructure used in storing the waste. **Figure 21** shows the general decline of livestock numbers, with sheep being the notable exception. The UK's GHG inventory is currently a rather crude estimate and can reflect changes in storage practice to a limited extent. This also holds for the use of anaerobic digestion. Livestock is also the main emitter of agricultural methane emissions. Reductions in livestock numbers accordingly reduce their methane emissions.

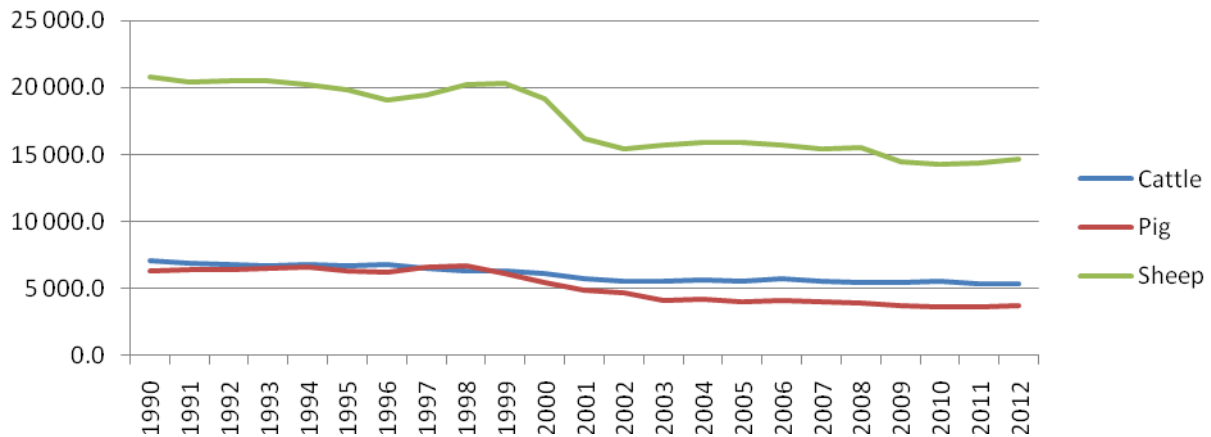


Figure 21: Livestock numbers for England from 1990 to 2012 (Data source: June survey 2013⁷⁷)

⁷⁶ Defra (2012) Observatory monitoring framework – indicator data sheet [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193799/agindicator-c4-02may13.pdf [accessed 12/09/2013].

⁷⁷ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183103/defra-stats-foodfarm-landuselivestock-june-results-englandtimeseries-121101.xls

Energy Use

The direct use of energy on farms has fallen by 40% since 1995, as shown in **Figure 22**.

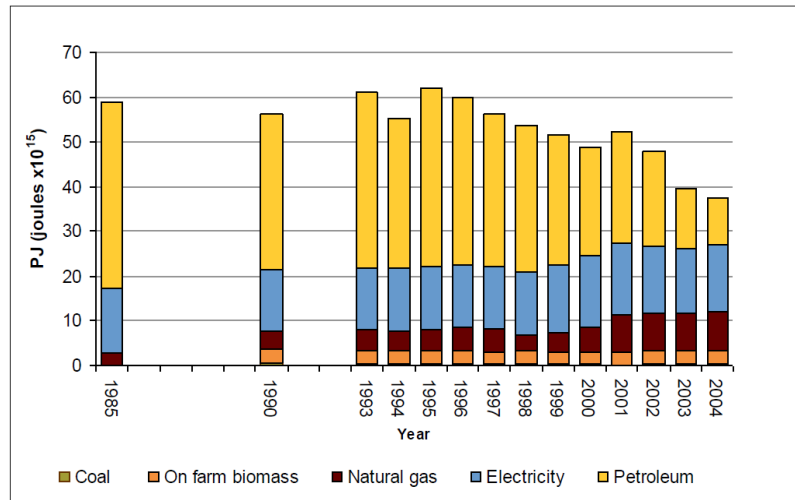


Figure 22: On Farm Use of Energy 1995-2004

Use of petroleum products has fallen considerably, but there has been an increase in the amount of electricity used. In addition, agriculture uses a substantial amount of energy through inputs such as the manufacturing of fertilisers, pesticides and animal feed. Indirect energy use has also fallen, in part reflecting a decline in the use of fertilisers. A combination of market forces and government policy, in particular the introduction of the climate change levy on industrial use of energy, has caused a rise in energy prices over recent years. This means that farm costs will have risen, but also implies a greater incentive to take up energy efficiency savings.

The relatively large proportion of farms that use less than 150 litres of diesel per hectare on cereal, general cropping and dairy farms indicates that there is real scope to reduce the fuel consumption on many farms. However farm types are based on the predominant type of farming within the farm business and that cropping patterns within farm types can also be highly variable. So for example, a cereal farm could also have a small horticultural or intensive livestock enterprise that will contribute to the fuel usage.

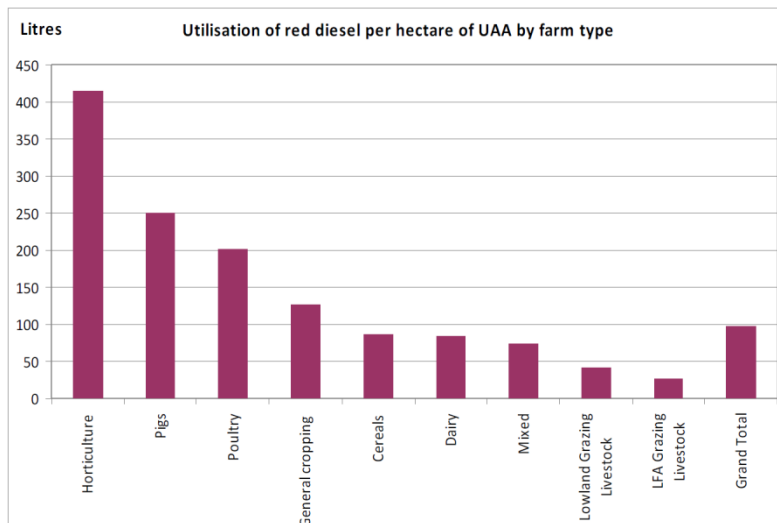


Figure 23: Utilisation of red diesel per ha of UAA by farm type.

Similarly, the variation amongst horticulture and intensive livestock farms may be due to alternative forms of energy being used to heat glasshouses and sheds as well as the fact that farmed area is not such an appropriate denominator for these farm types. Few farms were using renewable sources of energy for heating livestock sheds or crop drying. Of the 464 respondents to the survey only 20 were using recovered fuel oil and none were using straw as a source of energy.

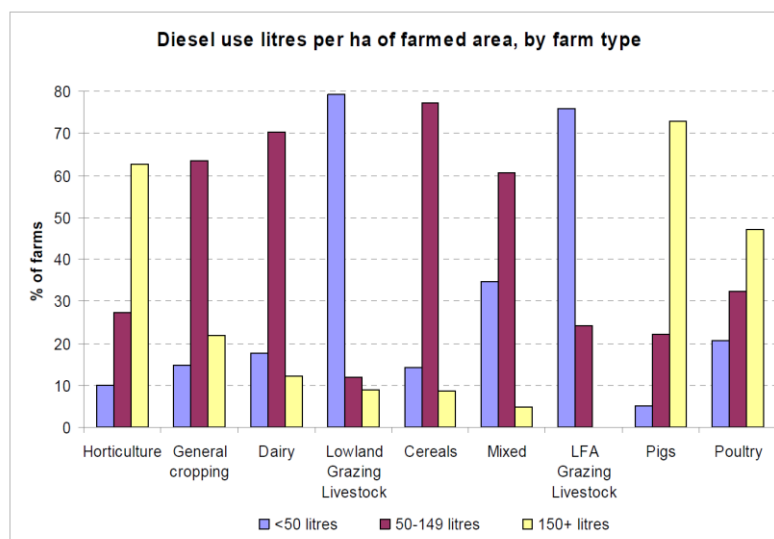


Figure 24: Diesel use (litres per ha of farmed area, by farm type)

Emissions of methane and nitrous oxide from agriculture have declined substantially in recent years, largely because of a reduction in livestock numbers and fertiliser use. Although historically agri-environment schemes in England have not been primarily designed to deal with climate change; they have had indirect effects, for example by encouraging low input agriculture, taking land out of production for e.g. buffer strips, flower

mixes and reducing grazing intensity.⁷⁸ Nonetheless, the sharper declines in emissions of these gases from other sources mean that agriculture is the single largest source of all of these at present:

- nitrous oxide emissions from agriculture fell by 19 per cent between 1990 and 2011;
- emissions from agriculture have reduced by 21 per cent in the period 1990 – 2011; and
- direct GHG emissions from agriculture have declined by 20% in the period 1990 - 2011.⁷⁹

Future baseline under the business as usual scenario

Climate change mitigation is likely to increase as an 'issue' as the impacts are increasingly felt. The 2009 UK Climate Change Projections predict that (by 2080):

- Winters are likely to be warmer by around 2.2°C;
- Summers are likely to be hotter by around 2.8°C (see **Figure 25**);
- Winter rainfall is likely to increase by 16%; and
- Summer rainfall is likely to decrease by 19% (see **Figure 26**).

The future baseline under the 2009 UK Climate Change Projections also includes a potential increase in the frequency of extreme weather events over time, such as heatwaves, storms and flooding.

⁷⁸ DECC (2013) *UK Greenhouse Gas Inventory, 1990 to 2011*. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207605/UK_GHG_Inventory_1990-2011-Report.pdf (accessed 09/09/2013)

⁷⁹ DECC (2013) *UK Greenhouse Gas Inventory, 1990 to 2011*. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/207605/UK_GHG_Inventory_1990-2011-Report.pdf (accessed 09/09/2013)

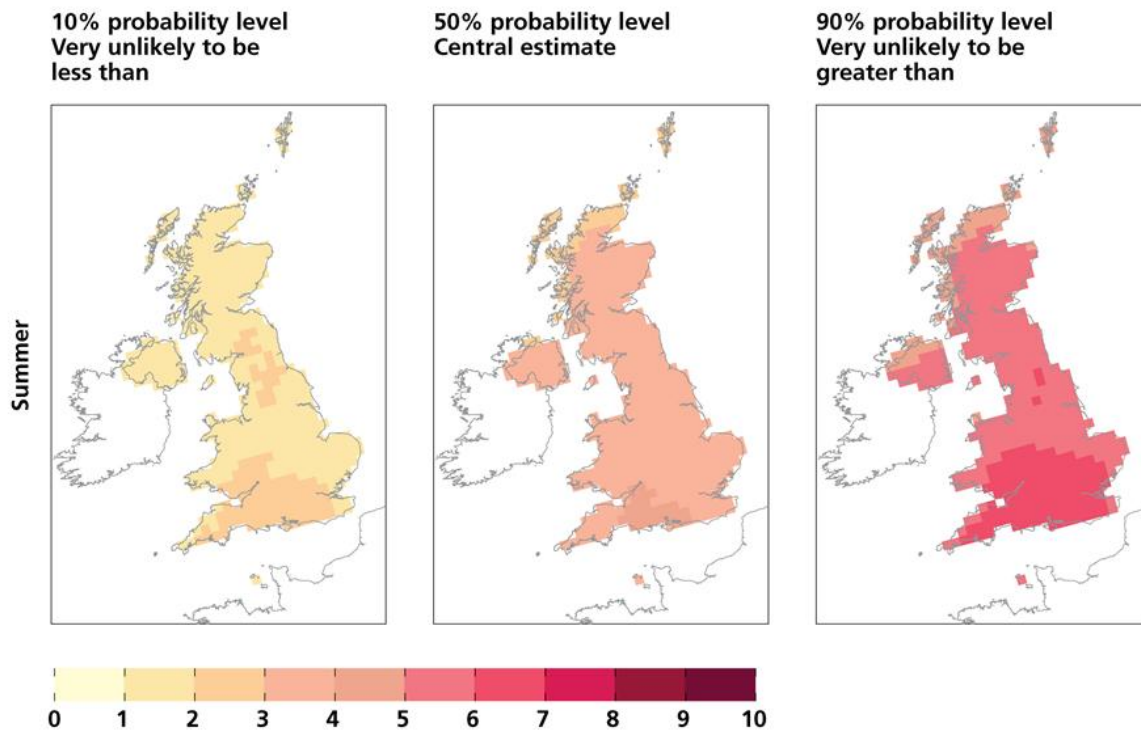


Figure 25: Change in summer mean temperature ($^{\circ}\text{C}$) for the 2080s, Medium emissions scenario.⁸⁰

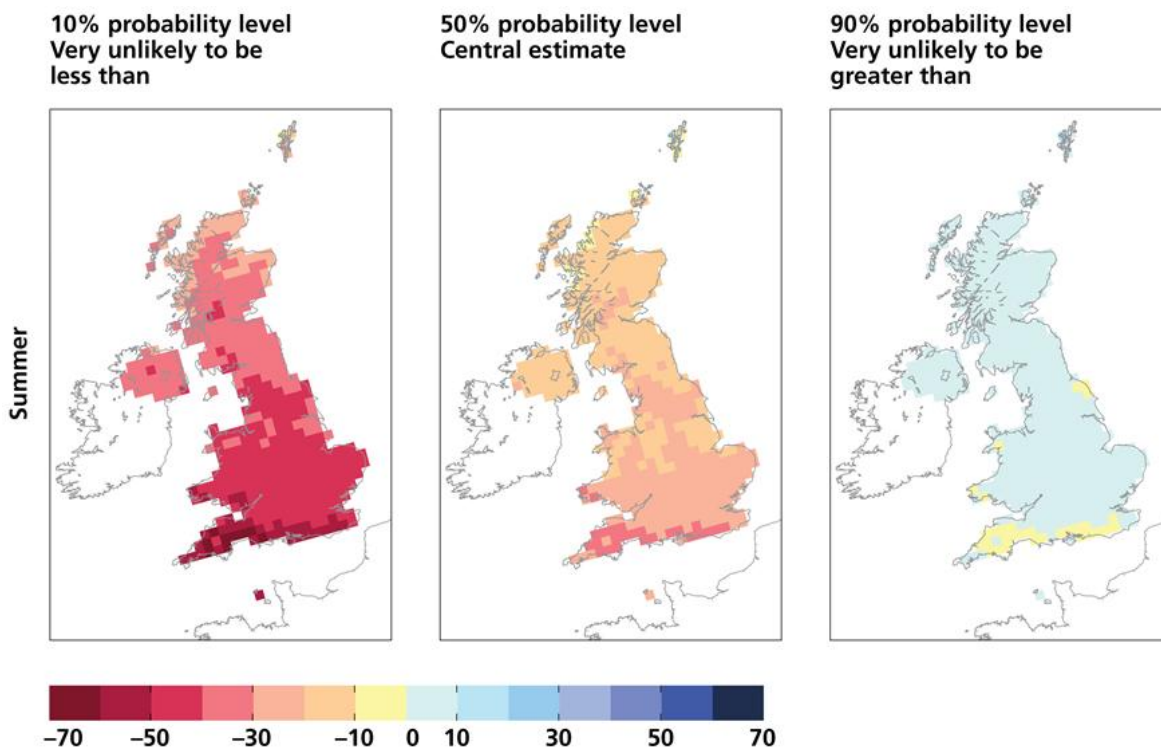


Figure 26: Change in summer mean precipitation (5) for the 2080s, Medium emissions scenario.⁸¹

⁸⁰ UKCIP (2009) *UK impacts – maps & key findings* [online] available at: <http://www.ukcip.org.uk/essentials/uk-impacts/#precipitation> (accessed 09/09/2013)

In the absence of influence of the programme, the probability of rural activities reducing emissions would be lower, given that funding for projects would run out in the medium term.

What are the key issues that should be the focus of the SEA?

1. Agriculture is responsible for a small proportion of CO₂ emissions, but a significantly greater proportion of the wider basket of greenhouse gases. Emissions of such gases from agriculture have fallen, but to a more limited extent than the decline from other sources. This trend is likely to continue.
2. Energy prices are likely to continue their increase; the potential benefits from energy efficiency in all sectors, including farming, will therefore also increase.
3. Market trends, rising costs and the introduction of EC Directives on the use of Biofuels will widen the market for energy crops.

SEA Framework questions - will the RDP?

- Reduce the emissions of greenhouse gases?
- Increase energy efficiency?
- Encourage the use / development of zero / low carbon energy?
 - Reduce emissions to a similar extent to those from other sources?
 - Help create an environment whereby energy efficiency and low carbon development / practices are enabled?

⁸¹ UKCIP (2009) *UK impacts – maps & key findings* [online] available at: <http://www.ukcip.org.uk/essentials/uk-impacts/#precipitation> (accessed 09/09/2013)

Climate change adaptation

This section sets out the policy context and the environmental baseline with respect to climate change adaptation. It is important to note that climate change adaptation has significant inter-relationships with other topics, in particular biodiversity and nature conservation, the rural economy, woodlands, water management and soil management.

What's the policy 'context'?

Nationally established objectives

The **National Adaptation Programme**⁸² is the Government's response to the Climate Change Risk Assessment 2012 (CCRA). The NAP sets out objectives, policies and proposals to address the highest order risks identified in the CCRA. The key objectives cover four areas:

1. increasing awareness;
2. increasing resilience to current extremes;
3. taking timely action for long-lead time measures; and
4. addressing major evidence gaps.

The risks and objectives as related to rural development are set out in **Tables 6** and **7**.

Table 6: Relevant NAP risks

Risk
Forest extent affected by red band needle blight ⁸³
Insufficient summer river flows to meet environmental targets
Agricultural land at risk of flooding/regular flooding
Decline in potential yield of beech trees in England
Increases in water demand for irrigation of crops
Forest extent affected by green spruce aphid
Loss of forest productivity due to drought

⁸² Defra (2013) *The National Adaptation Programme: Making the country resilient to a changing climate*. [online] available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209866/pb13942-nap-20130701.pdf (accessed 09/09/2013)

⁸³ The CCRA selected red band needle blight as an indicative risk of wider forestry pest and disease impacts.

Flood risk for Scheduled Ancient Monument sites
Species unable to track changing 'climate space'
Changes in species migration patterns
Risks to species and habitats due to coastal evolution
Risks to species and habitats due to drier soils
Ecosystem risks due to low flows and increased water demand
Risks to coastal habitats due to flooding
Biodiversity risks due to warmer rivers and lakes
Northward spread of invasive and non-native species
Low summer river flows

Table 7: NAP objectives

Objective
Objective 15: To increase the resilience of agriculture by effectively managing the impact of volatility in the occurrence and severity of rainfall events on water availability, flooding, soil erosion and pollution due to runoff.
Objective 16: To increase the resilience of the forestry sector by increasing the level of management in England's woodlands and the uptake of adaptation good practice in woodland creation and restocking.
Objective 17: To increase resilience to pests and disease to help protect biodiversity, maintain agricultural and forestry productivity and protect the UK's ability to export products.
Objective 18: To embed climate change adaptation into agriculture, horticulture and forestry research programmes, in order to improve knowledge of likely climate impacts and contribute to the development and uptake of climate resilient crops, tree and livestock species as well as relevant technologies.
Objective 19: To build the resilience of wildlife, habitats and ecosystems (terrestrial, freshwater, marine and coastal) to climate change, to put our natural environment in the strongest possible position to meet the challenges and changes ahead.
Objective 20: To take action to help wildlife, habitats and ecosystems accommodate and smoothly make the transition through inevitable change.
Objective 21: To promote and gain widespread uptake in other sectors of adaptation measures that benefit, or do not adversely affect, the natural environment.
Objective 22: To improve the evidence base to enhance the knowledge and understanding of decision makers, land managers and others of the impacts of climate change on the natural environment and how best we can influence adaptation or accommodate change.

The **Flood and Water Management Act**⁸⁴ highlights that alternatives to traditional engineering approaches to flood risk management include:

- incorporating greater resilience measures into the design of new buildings, and retro-fitting at risk properties (including historic buildings);
- utilising the environment, such as management of the land to reduce runoff and harnessing the ability of wetlands to store water;
- identifying areas suitable for inundation and water storage to reduce the risk of flooding elsewhere; and
- sustainable drainage systems (SuDS)⁸⁵

The **National Planning Policy Framework** (NPPF) sets out that where possible, proposed development should be located away from areas most at risk of flooding (Flood Zones 2 and 3), with development not to be allocated if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding (Flood Zone 1). Where development is necessary, it should be demonstrated how flood risk from all sources of flooding to the development and from the development have been managed. Also, development should take account of the effects of climate change in the long term, taking into account a range of factors including flooding.

⁸⁴ *Flood and Water Management Act (2010)* [online] available at: <http://www.legislation.gov.uk/ukpga/2010/29/contents> (accessed 11/12)

⁸⁵ N.B. The government proposes that the provisions of Schedule 3 to the Flood and Water Management Act 2010 will come into force on the 1st of October 2012 and will make it mandatory for any development in England or Wales to incorporate SuDs.

What's the environmental 'baseline'?

Ecosystems services

The UK NEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. Flood regulation is classified as a 'regulating' service delivering final services in terms of flood control.

This service, across the broad habitats assessed in the UK NEA, has broadly experienced deterioration since 1990. Of the high importance habitats, mountains, moorlands & heaths, enclosed farmland, freshwaters, open water and wetlands & floodplains have experienced some deterioration in flood regulation. Amongst the medium – high importance habitats for delivering flood control, woodlands has seen some improvement whilst marine has seen deterioration.

Current baseline

Impacts of Climate Change

During the 20th century, the annual mean central England temperature increased by about 1.0 °C. The last decade was exceptionally warm in central England, on average about 0.7 °C warmer than the 1961-1990 average. Average global temperatures are now about 0.9 °C warmer than they were 100 years ago.

The period 2000-2009 is the warmest decade in the modern-day instrumental record with a mean temperature anomaly of 0.46 °C above the 1961-1990 long term average (see **Figure 27**).⁸⁶

⁸⁶ DECC (2013) *Central England and global surface temperature*. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229814/surface_temperature_summary_report.pdf (accessed 09/09/2013)

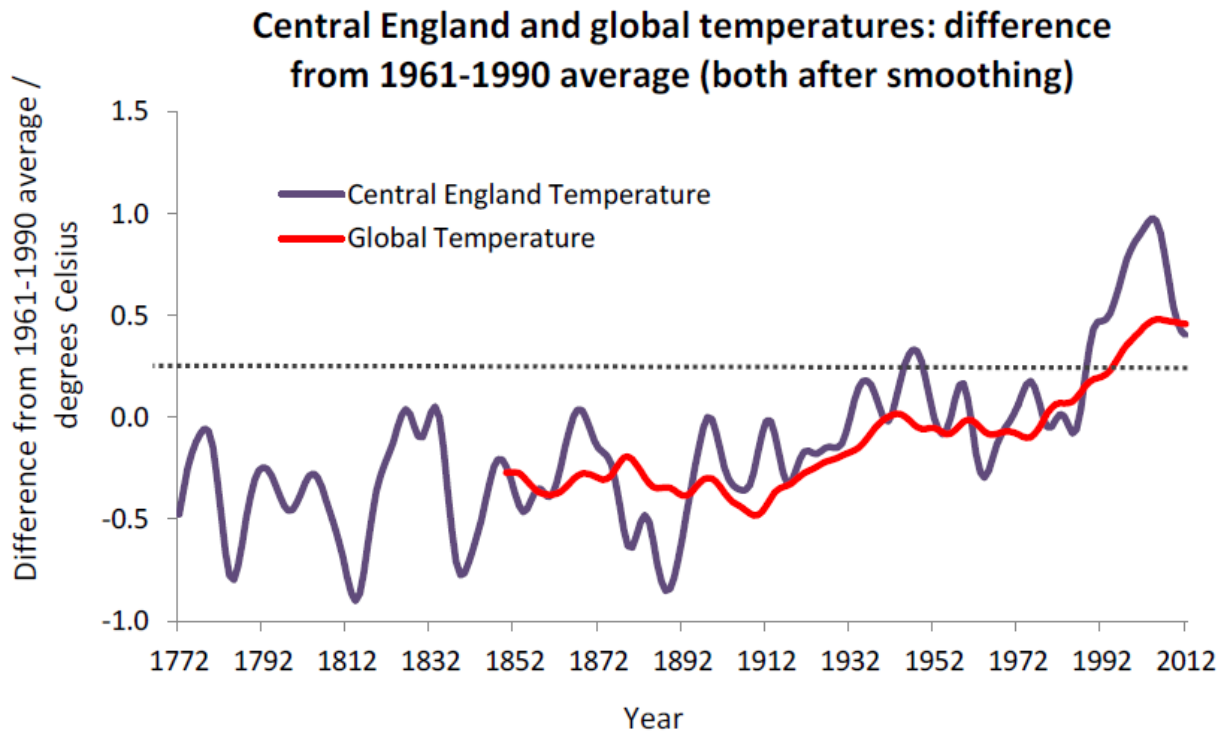


Figure 27: Trends in Central England and Global Average Temperatures⁸⁷

The physical effects of warming will have both positive and negative implications for farming. They are likely to include less stable and more unpredictable weather, as well as changes in growing seasons. Species are sensitive to rapid and extreme changes, including those from climate change. As the climate changes, the space in which species thrive will change (their ‘climate space’).⁸⁸ Clearly there needs to be ‘space’ for species to migrate into. This will be helped by working towards the Lawton Review principles of making habitats bigger, better in terms of being in a more favourable condition, and more joined up with corridors or stepping stones to allow species to move around. The Rural Development Programme and agri-environment and woodland schemes have an important role in improving UK habitats’ resilience to climate change.

Significantly, this movement into new space can be both beneficial as well as harmful. In fact, *“many species are expected to gain space in England, as there are more species restricted by cooler northern range margins than warmer southern ones.”*⁸⁹ However, for species to take advantage of this, a greater landscape scale interconnectivity of England’s wildlife habitats is required. The key aspect to this change is the ability of species and

⁸⁷ DECC (2013) *Central England and global surface temperature*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229814/surface_temperature_summary_report.pdf

⁸⁸ Adaptation Sub-Committee (2013) *Managing the land in a changing climate: Adaptation Sub-Committee Progress Report 2013*. Available at: <http://www.theccc.org.uk/publication/managing-the-land-in-a-changing-climate/>

⁸⁹ Adaptation Sub-Committee (2013) *Managing the land in a changing climate: Adaptation Sub-Committee Progress Report 2013*. Available at: <http://www.theccc.org.uk/publication/managing-the-land-in-a-changing-climate/>

habitats to adapt over an artificially shortened timescale. In the long-term some species will run out of climate space and in the short term some species may not be able to track the rapid changes in climate space.

While to date, international trade has been the main factor influencing the spread of pests and diseases, there is also a risk of an increase in pests, diseases, and non-native invasive species entering and more easily becoming established in the UK due to the shifting climate space. Red band needle blight and green spruce aphids are highlighted in the CCRA as being of concern for future forestry productivity. The biodiversity and the wider natural environment are also at an increased risk due to the potential spread of pests and diseases resulting from climate change. For the agricultural sector, the evidence for an increase in crop pests and diseases is weaker with complex interactions that are currently insufficiently understood. The National Adaptation Programme outlines actions to increase this evidence base along with the surveillance and monitoring of animal health and welfare.

The report '**Managing the land in a changing climate: Adaptation Sub-Committee Progress Report 2013**'⁹⁰ highlighted a number of key messages and potential risks of climate change in regard to adaptation:

- Water availability
 - *“Higher temperatures, drier soils and greater demand for food from population growth are all likely to increase irrigation demand in the summer. Combined with reduced supply from lower summer river flows, this could create a supply-demand imbalance for agriculture of between 45 and 115 billion litres in a dry year in the next 10 to 20 years.”*
- Soil Degradation
 - *“Intensively farmed agricultural soils may be degrading at a higher rate than other soils. Farmed soils in the Fens might lose all of their rich peat topsoil in the next 30 to 60 years, according to recent estimates.”*
- Agricultural efficiency
 - *“A decline in investment and dissemination of applied research since the 1980s is likely to be a causal factor in the observed slowdown in the growth of UK agricultural efficiency compared to countries such as France, Italy, Germany and the United States.”*

Flooding

The frequency and severity of **flooding** has increased in recent years. Research for Defra on the impacts rural land use and management have on flood generation has provided evidence that changes in land use and management practices can, and do, affect runoff

⁹⁰ Adaptation Sub-Committee (2013) *Managing the land in a changing climate: Adaptation Sub-Committee Progress Report 2013*.

[online] available at: <http://www.theccc.org.uk/publication/managing-the-land-in-a-changing-climate/> (accessed 09/09/2013)

generation and flooding at a local scale. However, the impacts at a larger catchment-wide scale (as required by the Water Framework Directive) are more difficult to ascertain.

Agricultural management can play a role in mitigating flooding by: increasing the interception of precipitation and so slowing the release of water; and increased vegetative cover which can also increase rates of transpiration which will help mitigate flooding. Conversely, soil compaction, which can result from heavy stocking rates or the inappropriate use of machinery, can increase run-off. The Framework for Environmental Accounts values flooding attributable to agriculture in England at £212.4 m in 2008, up from £168.4 m in 2000.⁹¹





Water availability

The agriculture sector obtains around 55-60% of its water supply from the public water supply. English upland areas (where the primary land-use is agriculture) are the major water gathering and storage area for much of England's water supplies. Irrigation accounts for a significant proportion (75%) of the water abstracted for agriculture. This is a high proportion but in reality this is about 1% of total freshwater abstractions across all sectors mainly due to the fact that crop production is rain fed.⁹²

This abstraction rate is exacerbated by the limited availability of water in areas of the UK (despite the emphasis on rain-fed crop production). **Figure 28** illustrates the areas of water availability in England.

⁹¹ Defra (Date unknown) Environmental Account for Agriculture 2000-2008 [online] available at: <http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/envacc/documents/UKCountryTables.xls>

⁹² Adaptation Sub-Committee (2013) *Managing the land in a changing climate: Adaptation Sub-Committee Progress Report 2013*. [online] available at: <http://www.theccc.org.uk/publication/managing-the-land-in-a-changing-climate/> (accessed 09/09/2013)

Resource availability status	Licence availability
 Water available	Water is likely to be available at all flows, including low flows. Restrictions may apply.
 No water available	No water is available for further licensing at low flows. Water may be available at higher flows with appropriate restrictions, or through licence trading.
 Over-licensed	Current actual abstraction is such that no water is available at low flows. If existing licences were used to their full allocation they could cause unacceptable environmental damage at low flows. Water may be available at high flows, with appropriate restrictions, or through licence trading.
 Over-abstracted	Existing abstraction is causing unacceptable damage to the environment at low flows. Water may still be available at high flows, with appropriate restrictions, or through licence trading.

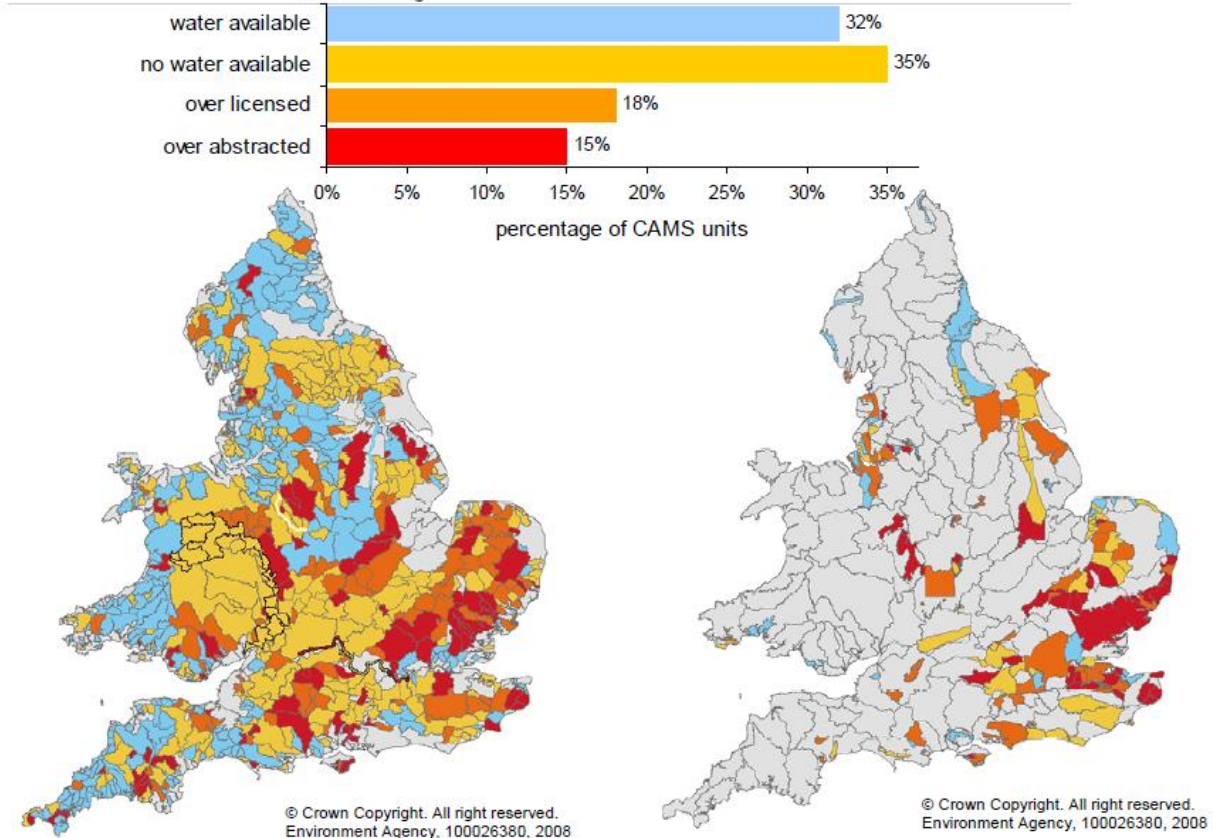


Figure 28: Water available for abstraction (surface water combined with groundwater) (left) and water available for abstraction (groundwater) (right).⁹³

Future baseline under the business as usual scenario

In future, changes in land use are likely to continue to be a source of flood damage in rural areas. Such occurrences may become more serious as a result of climate change, which may lead to increasingly intense rainfall events.

The impact on growing seasons and crops is uncertain; however it is likely that there would be increased incidents of crop damage due to extreme weather events. There may

⁹³ EA (2008) Water resources in England and Wales- current state and future pressures Available from: <http://cdn.environment-agency.gov.uk/geho1208bpas-e-e.pdf>

also be opportunities for growing new crops or having more harvest cycles if growing seasons are lengthened. It is likely that water availability will be worsened and soil degradation continued.

Without the implementation of the Rural Development Programme, rural business and agriculture may not be as resilient to changes in climate and extreme weather events. This may result in more losses of crops and a failure to capitalise on the opportunities presented by climate change.

What are the key issues that should be the focus of the SEA?

1. There is clear evidence that temperatures have increased, particularly in recent years, and this will have impacts in terms of both growing seasons and conditions for wildlife; adaptation will need to consider species migration, both native and non-native and changes in the prevalence of pests and disease;
2. **Extreme weather** events will likely occur more often;
3. Land use management can affect **flood risk**;
4. There is need to plan for the **long term** including projects with a long lead in time;
5. **Water availability**, exacerbated by climate change, reduction in agricultural efficiency and an increased demand for food through a growing population will increasingly become an issue

SEA Framework questions - will the Rural Development Programme?

- Help reduce the risk of flooding?
- Encourage a resilient agricultural base?
 - Help reduce the risk of flooding to dwellings, infrastructure, farmlands and habitats?
 - Help create a rural economy resilient to the effects of climate change?

Landscape & cultural heritage

This section sets out the policy context and the environmental baseline with respect to landscape and cultural heritage. It is important to note that landscape and cultural heritage have significant inter-relationships with other topics, in particular human health, biodiversity and nature conservation, tourism and access and the rural economy.

What's the policy 'context'?

Internationally established objectives

Landscape

The **European Landscape Convention** (ELC) came into force in the UK in March 2007. The ELC defines landscape as: “*An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.*” It recognises that the quality of all landscapes matters – not just those designated as ‘best’ or ‘most valued’. Among other things, the ELC provides a common framework that can be used by signatory nations when establishing and implementing policies aimed at landscape protection, management and planning / integrating landscape into town planning, cultural, environmental, agricultural, social and economic policies.

Nationally established objectives

Landscape

The **National Parks and Access to the Countryside Act** of 1949, effectively created the designations of National Park and Areas of Outstanding Natural Beauty (AONB). Under the Act, National Parks have the following purpose:

- conserving and enhancing the natural beauty, wildlife and cultural heritage of the areas specified in the next following subsection; and
- promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public.

The **Countryside and Rights of Way** (CROW) Act 2000 brought in new measures to help protect AONBs further. The role of local authorities was clarified; this now includes the preparation of management plans to set out how they will care for their AONBs.

The Government's **Statement on the Historic Environment for England**⁹⁴ sets out its vision for the historic environment. It calls for those who have the power to shape the

⁹⁴ HM Government (2010) *The Government's Statement on the Historic Environment for England* [online] available at:

historic environment to recognise its value and to manage it in an intelligent manner in light of the contribution that it can make to social, economic and cultural life. Also of note is the reference to promoting the role of the historic environment within the Government's response to climate change and the wider sustainable development agenda.

Common land is a piece of land in private ownership where other people have certain traditional rights of use, such as being allowed to graze livestock or gather firewood.⁹⁵ Currently, there are around 550,000 hectares of registered common land in England and Wales, making up around 4% of the total land area.⁹⁶

While common land covers a range of terrestrial and coastal environments, upland and acid soils predominate; with acid grassland, heathland, and blanket bog making up more than 50 per cent of the total common land area.⁹⁷ **The Commons Act** of 2006 aims to protect these areas of common land and manage them in a sustainable manner to deliver benefits for farming, public access and biodiversity.

Heritage at Risk⁹⁸ lists every heritage asset currently considered to be at risk in the UK according to local planning authority. Heritage assets are split into a number of categories namely; buildings, places of worship, scheduled monuments, registered parks and gardens, registered battlefields, protected wreck sites and conservation areas. English Heritage has been tasked by the Department of Culture Media and Sport (DCMS) to remove 25% of heritage assets from the register by 2015 (from the baseline 2010 register).⁹⁹

http://webarchive.nationalarchives.gov.uk/+/http://www.culture.gov.uk/reference_library/publications/6763.aspx (accessed 09/09/2013)

⁹⁵ Natural England (undated) *Common Land* [online] available at:

<http://www.naturalengland.org.uk/ourwork/landscape/protection/historic-cultural/commonland/default.aspx> (accessed 09/09/2013)

⁹⁶ Defra (2013) *Common land: management, protection and registering to use* [online] available at:

<https://www.gov.uk/common-land-management-protection-and-registering-to-use> (accessed 09/09/2013)

⁹⁷ <http://www.naturalengland.org.uk/ourwork/landscape/protection/historic-cultural/commonland/default.aspx>

⁹⁸ English Heritage (2012) *Heritage at Risk* [online] available at: <http://www.english-heritage.org.uk/content/publications/publicationsNew/heritage-at-risk/har-2012-lpa/HAR-entries-lpa-2012.pdf> (accessed 09/09/2013)

⁹⁹ English Heritage (2011) *English Heritage's Heritage at Risk National Strategy 2011-2015*. [online] available at: <http://www.english-heritage.org.uk/publications/eh-har-strategy-2011-15/har-strategy-11-15.pdf> (accessed 09/09/2013)

What's the environmental 'baseline'?

Ecosystems services

The UKNEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. 'Landscape' (or in NEA terminology 'Environmental settings: landscapes/seascapes') is classified as a 'cultural' service delivering final goods and services in terms of aesthetic/inspiration. Cultural heritage, for the purpose of this SEA is classified, again under 'cultural' services but as 'Environmental settings: local places.

Landscapes / seascapes

This service, across the broad habitats assessed in the UKNEA has experienced broadly no change. Of the high importance habitats for the delivery of this service, only coastal margins have experienced some improvement. Similarly, for the medium-high habitats, all have experienced no net change bar woodland which has experienced some improvement.

Local places

There has broadly been an increase in the provision of this service across the habitats assessed, with both high importance habitats experienced improvements. Woodlands experienced improvements whilst freshwaters – open waters, wetlands and floodplains – have experienced some improvement.

Current baseline

Landscape

Distinctive landscapes have evolved in all English regions, closely influenced by the types and patterns of agriculture and settlement which have developed in different areas. National Parks and Areas of Outstanding Natural Beauty (AONB) are the main designations made on the basis of landscape. There are nine National Parks in addition to the Norfolk Broads (which serves the same purpose) in England. These cover 8% of the land. There are 33 AONBs, covering 16% of the land. Agricultural use currently accounts for around 74% of land in England, and so is one of the biggest influences on the landscape. In all, AONB designation covers approximately 15 per cent of the land area of England with the smallest, the Isles of Scilly, being a mere 16 sq km and the largest the Cotswolds, totalling 2,038 sq km.¹⁰⁰

¹⁰⁰ <http://www.naturalengland.org.uk/ourwork/conservation/designations/aonb/>



Figure 29: Protected landscapes and national trails in England.¹⁰¹

Agricultural intensification over the last 60 years has reduced landscape quality in England. For example, traditional and vernacular buildings and field boundaries are key elements of landscape; and many have been lost over the last 60 years, reducing landscape quality.

One of the most notable findings from the Countryside Survey was a loss of field boundaries. Between 1984 and 1990, it was estimated that the length of hedges declined by about 23% and the length of walls by about 10% in Great Britain. As with farmland birds, the situation has since stabilised – the figure below shows the current stock of such linear features, together with changes from 1990-98.

¹⁰¹ Natural England (2012) *Protected Landscapes and National Trails in England* [online] available at: http://www.naturalengland.org.uk/Images/ProtectedLandscapesandNationalTrailsMap_tcm6-33661.pdf (accessed 09/09/2013)

It has also been estimated that 46% of historic parkland in England recorded at the start of the 20th century has now been lost, an area in excess of 2,000 km². In some character areas, the rate of loss has been as high as 70%, with arable intensification being the most significant cause of this loss.

Hedgerows play an important role on farms; helping to prevent soil erosion and water runoff, providing shelter, controlling livestock and protecting crops from the wind. They also provide an important habitat for wildlife and are often seen as defining the character of the English landscape.

Since World War II, hedgerows have been removed at a much faster rate than they have been planted. In some parts of the country 50% of hedgerows have gone, while others are so badly managed that their value to wildlife is much reduced. Loss of hedgerows has been identified as a factor in the decline of many plant and animal species traditionally associated with farmland. Reasons for hedge loss include changes in farming practices, development, damage caused by straw and stubble burning (banned since 1992), spray drift, neglect and indiscriminate trimming. An Institute of Terrestrial Ecology (ITE) survey of hedgerow changes revealed that between 1984 and 1990 hedgerow length in England had declined by 20% and in Wales by 25%. While outright removal of hedgerows accounted for 9,500 km per year, almost half of the loss was a result of lack of management.

Between 1990 and 1993, the removal of hedgerows lessened to about 3,600 km per year, and the rate of planting at 4,400 km per year exceeded the rate of removal. As a result of hedgerow incentive schemes, many farms had begun work to restore and manage hedgerows and other boundary features.

Linear features also have a particular value for wildlife because, with road and rail verges, they provide corridors, and link larger sites. In the context of species movement caused by climate change, the creation of such corridors to facilitate migration is an important benefit.

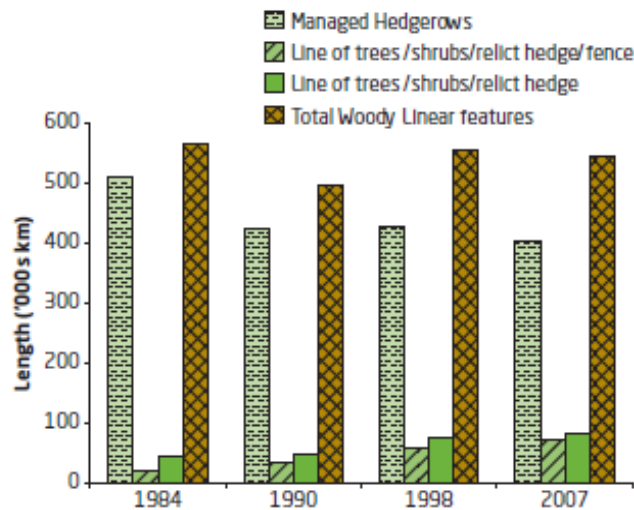


Figure 30: The change in total length ('000s km) of woody linear feature types in England between 1984 and 2007¹⁰²

- The total length of woody linear features was 547,000km in England in 2007, and was distributed mainly between the Easterly and Westerly Lowlands Environmental Zones.
- The total length of managed hedgerows was 402,000km in England in 2007, and was distributed mainly between the Easterly and Westerly Lowlands Environmental Zones.
- The total length of walls was 82,000km in England and was distributed mainly in the Uplands and Westerly Lowlands Environmental Zone.
- The total length of banks and grass strips was 42,000km, with much of this in the Westerly Lowlands Environmental Zone.
- The total length of woody linear features decreased by 1.4% (8,000km) in England between 1998 and 2007 following an increase between 1990 and 1998 and a decrease between 1984 and 1990.
- The length of managed hedgerows decreased by 6.1% (26,000km) in England between 1998 and 2007 with a large proportion of these managed hedges turning into lines of trees and relict hedges (which increased significantly), reflecting a reduction in management intensity.
- The length of walls decreased by 1.1% (approximately 900km) overall in England between 1998 and 2007, with the largest losses occurring in the Uplands Environmental Zone.

Measurement of Landscape change

Nationally, the monitoring of landscape change has been done through a combination of quantitative and qualitative assessment. The Countryside Quality Counts project

¹⁰² Countryside Survey (2007) *Boundary and Linear Features Broad Habitat* [online] available at: <http://www.countryside-survey.org.uk/sites/default/files/pdfs/reports2007/england2007/CS-England-Results2007-Chapter05.pdf> (accessed 09/09/2013)

measured landscape change by assessing change in landscape character for two periods: 1990-1998 and 1999-2003.¹⁰³

The project used England's National Character Areas (NCAs) as the geographical framework for reporting and assessing both the magnitude and the direction of landscape change for each NCA, using four categories:

1. Maintained;
2. Enhancing;
3. Neglected; and
4. Diverging.

The assessment for the second period (1999- 2003) showed that:

- Existing landscape character is being maintained in 51 per cent of England's landscapes (NCAs).
- A further 10 per cent of existing character is being enhanced.
- However, 20 per cent of our landscapes are showing signs of neglect, in the sense that past loss of character has not been reversed.
- A further 19 per cent of new landscape characteristics are emerging.
- The assessment suggests that the erosion of valued landscape character revealed in the 1990-1998 assessment has been stopped or slowed in some places and slowed in others.
- There is also evidence that in many key localities the existing landscape character has been sustained or strengthened.
- Areas where the landscape character was neglected or diverging are generally close to major centres of population and transport routes.

Landscape quality is key to the public enjoyment of the countryside. Information on landscape allows assessment of the impact of agricultural change on the landscape. This could affect the use of the countryside for leisure and tourism activities, with associated impacts on the local economies of rural areas. The Countryside Quality Counts (CQC) study provided evidence about the way the English countryside is changing. The CQC study made the first assessment of change for the period 1990 to 1998 which was published in 2004. The second and current assessment published in 2007, looked at changes between 1999 and 2003. The CQC will be replaced in the future by Character and Quality of England's Landscapes (CQuEL), an enhanced and updated assessment of landscape quality.

¹⁰³ Natural England (undated) *Countryside Quality Counts* [online] available at: <http://www.naturalengland.org.uk/ourwork/landscape/englands/character/cqc/default.aspx> (accessed 09/09/2013)

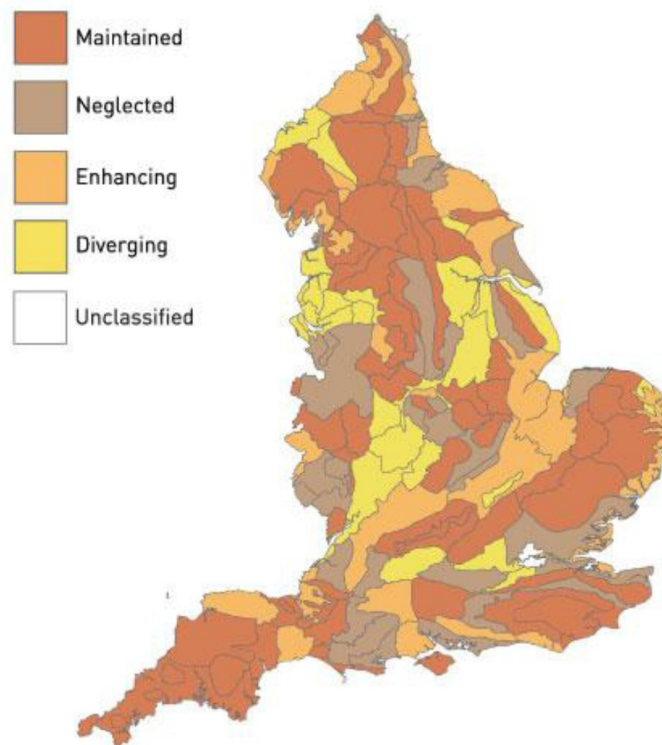


Figure 31: Landscape change 1999 – 2003¹⁰⁴

Cultural Heritage

Landscape is more than just physical features. The ELC includes people as a landscape concept. Cultural landscape includes history (such as built heritage) but also ways of living and farming. Managing common land is an example of such a cultural landscape as it includes traditional methods such as: hefting (where animals keep to a certain area of the common without fencing) and working together to gather animals at particular times of year etc.

The historic environment makes a fundamental contribution to the character and public appeal of the countryside and its settlements. Nearly half of all listed buildings, three quarters of all scheduled monuments, and two-thirds of Anglican parish churches are located in rural areas. Most buildings and monuments are privately owned.

There are major pressures for change on the traditional farm building stock as a result of changes in farming methods and the decline in profitability of agriculture. Almost a third of listed working farm buildings have already been converted to other uses, the majority to residential use, while large numbers of agricultural buildings are well on the way to

¹⁰⁴ Defra (2012) Observatory monitoring framework – indicator data sheet Environmental impact: Landscape Indicator DF3: Landscape change [online] available at: <http://webarchive.nationalarchives.gov.uk/20130123162956/http://www.defra.gov.uk/statistics/files/defra-stats-foodfarm-envirob-obs-indicators-df3-121219.pdf/> (accessed 09/09/2013)

becoming derelict. Recent work on this topic by English Heritage¹⁰⁵ found that over half of all traditional farm buildings had been subject to planning application for development, implying at least a change of use, and that a small but significant proportion of around 7% were in an advanced state of structural disrepair.

The shortage of craft skills is particularly acute in the countryside, which is clearly an issue in maintaining and restoring distinctive landscape features. Dry-stone walling, thatching, millwrighting, earth walling and flint-knapping traditions are seriously threatened.

The national Monuments at Risk (MARS) project¹⁰⁶, published in 1998, found that, since 1945, agriculture had been the single biggest cause of unrecorded loss to archaeological sites in England, and was responsible for 30% of instances of cumulative damage. Between 1950 and 2001, an area of 637,000 hectares of permanent grassland was lost in England containing 14,000 archaeological sites. It is estimated that 3,000 Scheduled Ancient Monuments are being ploughed and damaged annually.

The table below shows the importance of designated areas in terms of the historic environmental assets they contain: however, it is also clear that the majority of these assets occur in the wider countryside (as shown by the proportions in the final column). Figures from Countryside Counts also show that the majority of designated historic assets occur in rural rather than urban areas (some 85% compared to 15%).

Table 8: Historic Assets in Designated Areas

Designated Asset	National Parks	AONBs	Total	% of National Total
Listed buildings	11,243	52,068	63,311	17.02
Scheduled Monuments	4,264	6,170	10,434	52.92
Parks & Gardens	30	313	343	21.61
Battlefields	2	8	10	23.26

Source: Heritage Counts 2005, English Heritage

Heritage at Risk¹⁰⁷ sets out all the heritage assets at risk in each English region. **Table 9** has set these out for England as a whole.

¹⁰⁵ English Heritage (2006) *Living Buildings in a Living Landscape* [online] available at: <http://www.english-heritage.org.uk/publications/living-buildings-in-living-landscape/living-buildings-long-version/> (accessed 09/09/2013)

¹⁰⁶ English Heritage (2008) *1998/2008 Surveys* [online] available at: <http://www.english-heritage.org.uk/caring/heritage-at-risk/archaeology/scheduled-monuments-at-risk/1998-2008-surveys/> (accessed 09/09/2013)

¹⁰⁷ English Heritage (2012) *Heritage at Risk* [online] available at: <http://www.english-heritage.org.uk/content/publications/publicationsNew/heritage-at-risk/har-2012-lpa/HAR-entries-lpa-2012.pdf> (accessed 11/2012)

Table 9: Heritage assets at risk in England¹⁰⁸

Region	Buildings at risk	Places of worship at risk	Scheduled monuments at risk	Registered parks and gardens at risk	Registered battlefields at risk	Protected wreck sites at risk	Conservation areas at risk
East of England	122	74	199	6	0	0	44
East Midlands	143	76	104	6	0	0	56
North East	104	18	151	3	1	0	20
North West	137	75	157	7	0	0	84
South East	154	62	208	24	1	4	62
South West	181	38	1,390	18	0	0	83
West Midlands	132	40	204	10	0	0	57
Yorkshire and the Humber	108	63	661	13	4	0	53
England Total	1,081	446	3,074	87	6	4	459

There is a strong link between Agri-Environment Schemes and the condition of Scheduled Monuments. Over 80% of England's 20,000 Scheduled Monuments are on agricultural land (16,685 of 20K Scheduled Monuments were on agricultural land in 2012 i.e. 83%).¹⁰⁹ Farmers and landowners therefore play a key role in ensuring the continued preservation of scheduled monuments for future generations.

Common Land

Common lands, in addition to their significance for local farmers and residents who graze animals or exercise other rights, provide a wide range of services to the UK public in supporting landscape, wildlife, and archaeological interests.¹¹⁰ More than three-quarters of all common land, for example, lies within National Parks and Areas of Outstanding Natural

¹⁰⁸ Note that London is excluded from this analysis – it is treated as non-rural and therefore out of scope.

¹⁰⁹ English Heritage (2013) Per. Comm

¹¹⁰ <http://www.foundationforcommonland.org.uk/sites/default/files/a-common-purpose-revised-edition.pdf>

Beauty. 20 per cent are designated as Sites of Special Scientific Interest and 11 per cent of all Scheduled Ancient Monuments associated with common land.¹¹¹

Many commons outside these protected landscapes have settlements clustered around them and as a result, common lands contribute important services to local communities such as providing a setting for local settlements, a sense of identity, a place to exercise and experience nature, and space for children to play.¹¹² Since common lands are often closely connected to local communities, they are often referred to in art, literature, and traditional local customs and gatherings.¹¹³

A 2009 review of the trends of common land usage in the UK found that there are declining numbers of active graziers on common lands and it is expected that the number of full time commoners will continue to decline in the uplands, with some abandonment possible. As a result, livestock numbers are declining and there is a growing long term shift in vegetation type and composition which is changing the nature of landscape.¹¹⁴

Future baseline under the business as usual scenario

Landscape

The rural landscape has been shaped by agricultural practices for thousands of years. This driver of change is unlikely to change in the future i.e. agricultural practices are likely to drive future changes in the landscape. This pressure is combined with other drivers for change including climate change mitigation (provision of renewables such as wind energy) and a changing climate (precipitation and temperature changes). With or without the programme these changes would occur – however, without the programme there may be greater pressure on landscapes from unsustainable farming practices resulting in a degradation of landscape character.

Cultural Heritage

The cultural heritage of rural areas is likely to face increased pressure in future years due to the effects of a growing population, changes in farming practices and the conversion of farm buildings to non-agricultural uses. Without protective measures these heritage assets may be more likely to be lost or damaged by development, and opportunities for their redevelopment and restoration may be lost.

¹¹¹ <http://www.naturalengland.org.uk/ourwork/landscape/protection/historiccultural/commonland/default.aspx>

¹¹² Defra and the Rural Affairs' National Common Land Stakeholder Group (2012) *A Common Purpose: A guide to Community Engagement for those contemplating management on Common Land* [online] available at: <http://www.foundationforcommonland.org.uk/sites/default/files/a-common-purpose-revised-edition.pdf> (accessed 09/09/2013)

¹¹³ Natural England (undated) *Common Land* [online] available at: <http://www.naturalengland.org.uk/ourwork/landscape/protection/historiccultural/commonland/default.aspx> (accessed 09/09/2013)

¹¹⁴ Natural England (2009) Trends in Pastoral Commoning (NECR001) [online] available at: <http://publications.naturalengland.org.uk/publication/46004?category=40026> (accessed 09/09/2013)

What are the key issues that should be the focus of the SEA?

1. The great majority of protected landscapes and historic assets are associated with patterns of land management and occur in rural areas.
2. Changes in agricultural practice, particularly mechanisation of farming, have resulted in larger field sizes and a consequent loss of some distinctive linear features.
3. There has been conflict between conservation of archaeological sites and farming.
4. The combination of these and other factors has resulted in significant changes to landscapes which reduce their regional distinctiveness.
5. Landscape quality remains a key feature attracting people to the countryside.
6. Pressure from changing agricultural practices and farm building conversions provides a threat to cultural heritage.

SEA Framework questions - will the Rural Development Programme?

- Help reduce the erosion of landscape character?
- Protect and enhance cultural heritage in rural areas?
 - Minimise the potential for field enclosures and removal of linear or other characteristic features?
 - Reduce the potential for farm activities to damage archaeological assets?
 - Retain regional distinctiveness?

Population and human health

This section sets out the policy context and the environmental baseline with respect to population and human health. It is important to note that human health has significant inter-relationships with all of the other topics.

What's the policy 'context'?

Internationally established objectives

The United Nations Universal Declaration of Human Rights sets out a common standard of achievement for all peoples and all nations. It sets out 30 Articles, all of which are relevant to the RDP. Those of particular relevance to population and human health are:

Article 25: (1) *“Everyone has the right to a standard of living adequate for the **health and well-being** of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.”*¹¹⁵ [our emphasis]

Nationally established objectives

Population

The **Equalities Act 2010** legally protects people from discrimination in the workplace and in wider society. The Act includes a duty on the public sector to consider all individuals when carrying out their day-to-day work – in shaping policy, in delivering services and in relation to their own employees.¹¹⁶

The Select Committee on Public Service and Demographic Change report **Ready for Ageing?**¹¹⁷ warns that society is underprepared for the ageing population. The report says that ‘longer lives can be a great benefit, but there has been a collective failure to address the implications and without urgent action this great boon could turn into a series of miserable crises’. Key projections about ageing include 51% more people aged 65 and over and 101% more people aged 85 and over in England in 2030 compared to 2010; and a 90% increase in people with moderate or severe need for social care over the same time period. Organisations involved in planning will need to adjust to an older population and will have an important role to play in preventing the social isolation of older citizens.

¹¹⁵ United Nations (date unknown) Universal Declaration of Human Rights [online] available at: <http://www.un.org/en/documents/udhr/#atop> [accessed 12/09/13]

¹¹⁶ DCMS (2013) Equality Act 2010: guidance [online] <https://www.gov.uk/equality-act-2010-guidance> [accessed 12/09/13]

¹¹⁷ Select Committee on Public Service and Demographic Change (2013) *Ready for Ageing?* [online] available at: <http://www.parliament.uk/business/committees/committees-a-z/lords-select/public-services-committee/report-ready-for-ageing/> [accessed 15/03/2012]

The report says that the housing market is delivering much less specialist housing for older people than is needed. Central and local government, housing associations and house builders need urgently to plan how to ensure that the housing needs of the older population are better addressed and to give as much priority to promoting an adequate market and social housing for older people as is given to housing for younger people. The report notes that “*if the country had an adequate supply of suitably located, well-designed, supported housing for older people, this could result in an increased release onto the market of currently under-occupied family housing, expanding the supply available for younger generations*”. It recommends that local government should ensure better housing provision for older people by both encouraging private market provision and by making specific mention of older people’s needs when drawing up Local Plans.

Human Health

Healthy Lives, Healthy People: Our strategy for public health in England¹¹⁸ sets out a long-term vision for public health in England. The paper responds to Fair Society, Healthy Lives (‘The Marmot Review’ – see below). Chapter two of the white paper sets out the Government’s approach to tackling public health challenges. Specifically it sets out to: protect the population from health threats; empower local leadership; encourage wide responsibility across society to improve everyone’s health and wellbeing; focus on key outcomes; positively promote healthy behaviours and lifestyles; adapting the environment to make healthy choices easier; and making voluntary approaches work before resorting to regulation.

Fair Society, Healthy Lives¹¹⁹ (‘The Marmot Review’) investigated health inequalities in England and the actions needed in order to tackle them. Subsequently, a supplementary report was prepared providing additional evidence relating to spatial planning and health on the basis that there is: ‘overwhelming evidence that health and environmental inequalities are inexorably linked and that poor environments contribute significantly to poor health and health inequalities’.

It highlights three main policy actions to ensure that the built environment promotes health and reduces inequalities. These should be applied on a universal basis, but with a scale and intensity that is proportionate to the level of disadvantage. Specifically these actions are to:

- fully integrate the planning, transport, housing, environmental and health systems to address the social determinants of health in each locality;
- prioritise policies and interventions that both reduce health inequalities and mitigate climate change by: improving active travel; improving good quality open and green

¹¹⁸ Department of Health (2010) *Healthy Lives, Healthy People: Our strategy for public health in England* [online] available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216096/dh_127424.pdf

¹¹⁹ The Marmot Review (2011) *The Marmot Review: Implications for Spatial Planning* [online] available at: <http://www.nice.org.uk/nicemedia/live/12111/53895/53895.pdf> (accessed 08/2012)

spaces; improving the quality of food in local areas; and improving the energy efficiency of housing; and

- support locally developed and evidence-based community regeneration programmes that remove barriers to community participation and action; and reduce social isolation.

The NHS National Institute of Health and Clinical Excellence (NICE) have published guidance on local measures to promote walking and cycling.¹²⁰ The evidence presented in this report suggests that ‘effective support’ from local councils plays a key role in increasing rates of walking and cycling. The report emphasises that increasing the numbers of people who walk and cycle, and how often, can reduce the health costs associated with air pollution and inactivity. Relevant recommendations made in the report include:

- Ensure local, high-level strategic policies and plans support and encourage both walking and cycling.
- Develop coordinated, cross-sector programmes to promote walking and cycling for recreation as well as for transport, based on a long-term vision of what can be achieved, taking account of the needs of the whole population.
- Address infrastructure issues that may prevent people from wanting to walk.

Key messages from the NPPF include -

- The social role of the planning system involves ‘supporting vibrant and healthy communities’.
- A core planning principle is to ‘take account of and support local strategies to improve health, social and cultural wellbeing for all’.
- The planning system can play an important role in facilitating social interaction and creating healthy, inclusive communities’
- Promote the retention and development of local services and community facilities such as local shops, meeting places, sports venues, cultural buildings, public houses and places of worship.
- Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities.

¹²⁰ NICE (2012) *Walking and cycling: local measures to promote walking and cycling as forms of travel or recreation* [online] available at: <http://guidance.nice.org.uk/PH41> (accessed 09/09/2013)

What's the environmental 'baseline'?

Current baseline

Population

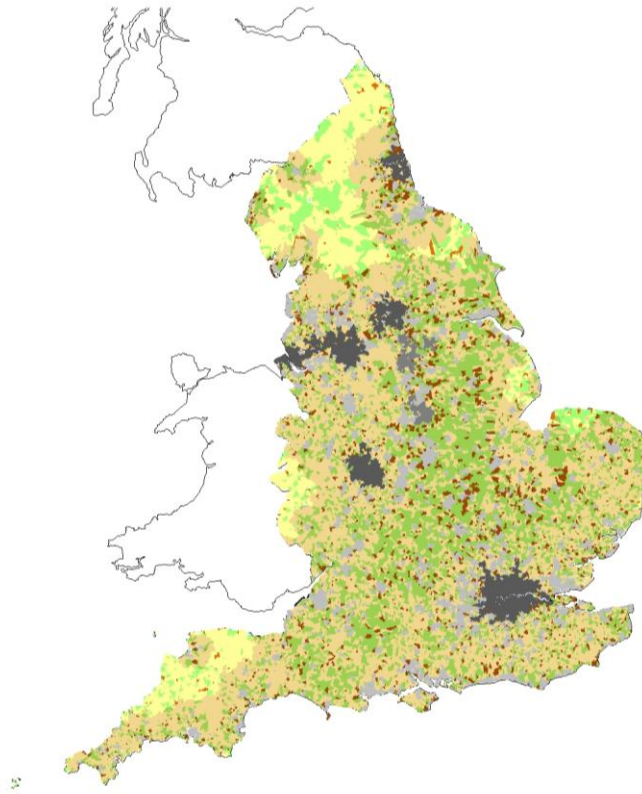


Figure 32: 2011 Rural-Urban Classification (for Census Output Areas)¹²¹

9.3 million people, or 17.6% of the population, live in rural areas. Only 481,000 people live in settlements in a sparse setting. The population living in a sparse setting accounts for 0.9% of the national population and 5.2% of the total rural population.¹²²

	Resident population	%
Urban major conurbation	18,783,700	35.4
Urban minor conurbation	1,906,100	3.6
Urban city and town	22,889,800	43.2
Urban city & town <i>in a sparse setting</i>	88,900	0.2
Total Urban	43,668,600	82.4
Rural town and fringe	4,470,700	8.4
Rural village	2,772,700	5.2
Rural hamlet & isolated dwellings	1,619,000	3.1
Rural town & fringe <i>in a sparse setting</i>	186,300	0.4
Rural village <i>in a sparse setting</i>	157,700	0.3
Rural hamlet & isolated dwellings <i>in a sparse setting</i>	137,400	0.3
Total Rural	9,343,900	17.6
Total England	53,012,500	100.0

Source: 2011 Census, Rural-Urban Classification

Table 10: 2011 Rural-Urban populations in England

Over half of those living in rural areas are aged over 45 years, compared with two fifths of those living in urban areas. There is a marked difference between rural and urban populations in the 15 to 29 age group. In urban conurbations this age group accounts for 22.2% of the population whereas in rural areas they make up just 14.6%.¹²³ At a more detailed level settlements in a sparse setting tend to have the highest proportions of their populations amongst older age groups. This reaches its peak in rural towns and villages in sparse settings, where about 25% of the population are over 65 years old compared with just 13% of the population in major conurbations.

Urban and rural populations in England. Census 2011		
Area type	Population	Proportion
Urban major conurbation	18,783,742	35.4%
Urban minor conurbation	1,906,101	3.6%
Urban city and town	22,889,830	43.2%
Urban city and town in a sparse setting	88,927	0.2%
Total urban	43,668,600	82.4%
Rural town and fringe	4,470,693	8.4%
Rural village	2,772,721	5.2%
Rural hamlet and isolated dwellings	1,618,993	3.1%
Rural town and fringe in a sparse setting	186,314	0.4%
Rural village in a sparse setting	157,743	0.3%
Rural hamlet and isolated dwellings in a sparse setting	137,392	0.3%
Total rural	9,343,856	17.6%
England	53,012,456	100.0%

Table 11: Urban and rural populations in England

¹²³ Defra (2013) Statistical Digest of Rural England 2013

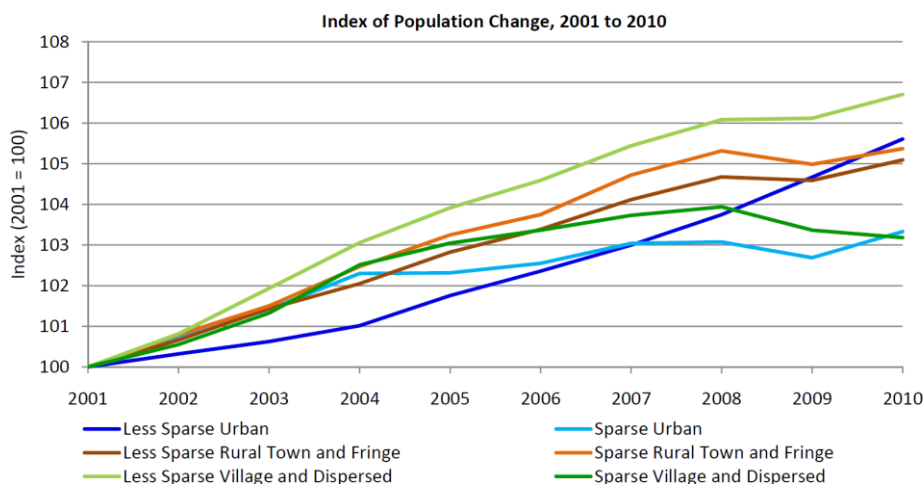


Figure 33: Index of population change, 2001 to 2010¹²⁴

On average, predominantly rural local authority areas have seen greater increases in their population than predominantly urban ones. This has been in large part driven historically by internal migration from urban to rural areas. However, fewer people are migrating to predominantly rural local authorities compared with ten or so years ago (levels in 2009/10 were around two thirds of the levels seen in 2000/01).

Housing

Outlined below are key points as they relate to the Rural Development Plan separated into the categories set out in the Statistical Digest.

House building

In 2011-12 the rate of house building starts and completions per 10,000 population was highest in predominantly rural areas. In 2010-11 the rate of starts per 10,000 population for significant rural areas was below the national average. The long term pattern, however, has been reasonably similar across the different area types – see Figure 35.

There was sustained growth in building starts until 2007-08, when there was a sharp downturn. This is likely to reflect the economic downturn and later recession. After 2008-09 the rate of starts began to recover, but completions increased more gradually.

Homelessness and Temporary Accommodation

The proportion of people who are homeless and in priority need of assistance in securing permanent settled accommodation, as a rate per 1,000 households, is much lower in rural areas than in urban areas. This is the same for the proportion of people who are in temporary accommodation.

¹²⁴ Defra (2013) *Statistical Digest of Rural England 2013* [online] available at: <https://www.gov.uk/government/publications/statistical-digest-of-rural-england-2013> (accessed 09/09/2013)

The rate of homeless and in priority need of assistance increased for all area types between 2009-10 and 2010-11.

Homelessness and being in temporary, rather than settled, accommodation is a social problem associated both with individual and wider wellbeing.

Historically, changes in homelessness levels coincide with changes in numbers of people in temporary accommodation a few years later.

Housing affordability

The ratio of lower quartile house prices to earnings is a useful indication of housing affordability. Workplace based earnings data are used because residence based earnings data are not available at district level before 2002. As a result this doesn't take into account non-earned income and the assumption that earners would want to buy a house where they work which isn't necessarily the case.

The data shows that the most rural areas have, on average, lower affordability than other types of area. The ratio between house prices and earnings decreased between 2007 and 2009. This was almost certainly due to the recession negatively impacting on house prices. Because earnings did not decrease at the same rate the ratio is seen to drop. Although there was an increase in 2010, there has been a slight decrease in 2011.

The pattern of change over the past 13 years has been broadly similar across all area types. The gap between the ratio in predominantly rural areas and the ratio in predominantly urban areas was greatest in 2005, but since then has reduced. Although the gap has reduced in recent years, housing affordability is on average, lower in rural areas than other areas and compared with the England average.

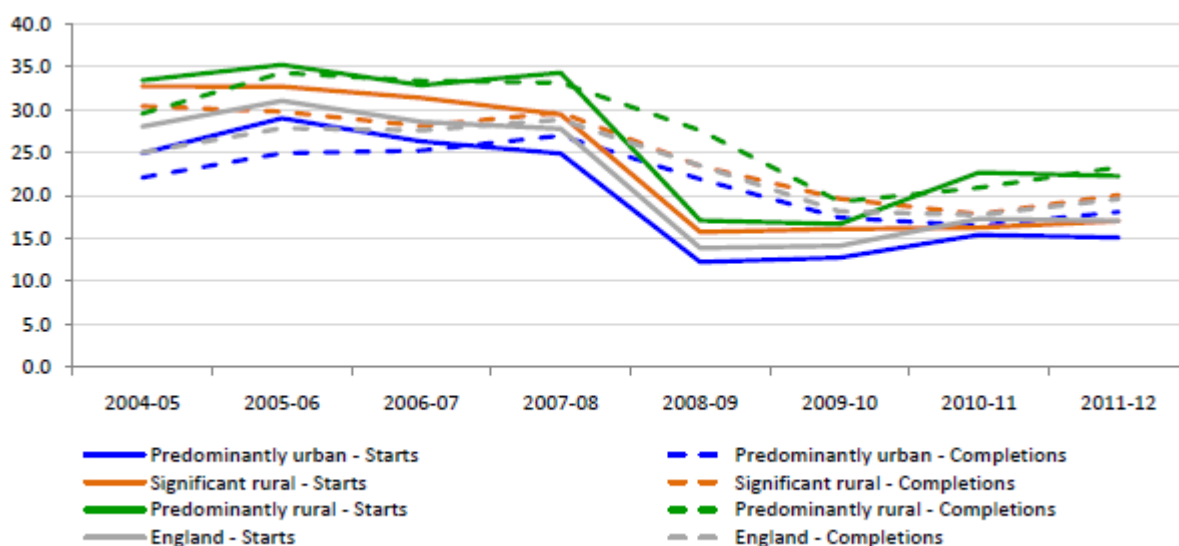


Figure 34: Permanent dwellings started and completed per 10,000 population, by Local Authority Classification in England, 2004/05 to 2011/12

Education

The proportion of school pupils living in rural areas leaving with five or more A* - C GCSEs in 2011/12 was very similar to the England proportion overall. However, in terms of the location of schools, the proportion of those leaving rural schools with *at least* 5 A* - C GCSEs was lower than for urban schools – essentially meaning that more pupils were leaving school with fewer qualifications in rural areas.

Deprivation

The Index of Multiple Deprivation (IMD) measures relative deprivation of areas in England. 98% of the most deprived Lower Super Output Areas (LSOAs) are in urban areas but there are still pockets of deprivation in rural areas.¹²⁵ **Figure 36** shows the IMD for Local Authorities in England.

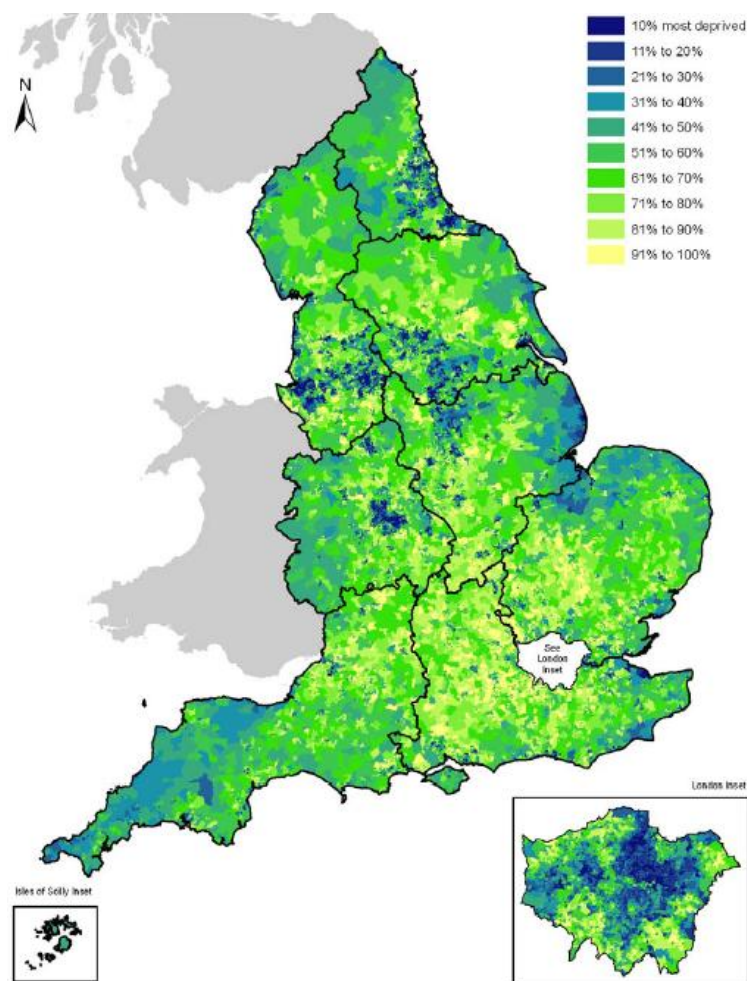


Figure 35: Index of multiple deprivation 2010¹²⁶

¹²⁵ DCLG (2011) *The English Indices of Deprivation 2010*. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf (accessed 09/09/2013)

¹²⁶ DCLG (2011) *The English Indices of Deprivation 2010*. [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6871/1871208.pdf (accessed 09/09/2013)

Human Health

There are three main ways in which health issues are relevant to rural areas. Firstly, the availability of fresh, healthy food is critical to health. Secondly, countryside access provides facilities for outdoor exercise, and also a setting which is valued for its tranquillity and associated benefits in terms of mental health. Thirdly, there are health benefits associated with work – unemployment is generally associated with poorer health.

Maintenance of food production in line with market demands is central to delivery of Defra's Business Plan priorities, and is, clearly, the main driver behind agricultural production – see Rural Economy chapter for further information on economic performance of rural areas.

Over the last three years (after a peak in 2009) visits to the countryside have been on the increase.¹²⁷ The extent of current visits is explored in the Tourism and Recreation section of this profile, but in summary, such visits provide benefits in terms of both physical exercise and (at least perceived) mental well-being. Measures which expand access to the countryside are therefore likely to have a positive effect, although that is not the main driver for such projects.

Studies have consistently found that employment is significant in terms of providing status, purpose, income, social support, structure to life, and means of participating in society, all of which in turn have impacts on health. In general, good working conditions, and higher levels of pay are associated with better health. Conversely, unsatisfactory or insecure jobs are associated with the same level of health risks as unemployment, and stressful working conditions have a negative impact. Studies also show that having more control over work is associated with better health. Unemployment impacts upon health because it leads to:

- poverty and hardship
- social exclusion – including isolation and stigma
- disruption of future work careers – people who experience a spell of unemployment are more likely to become unemployed again within 2 years

Health outcomes are more favourable in rural areas than urban areas; life expectancy is higher, infant mortality rate lower and potential years of life lost from common causes of premature death lower in rural areas than in urban areas.¹²⁸

¹²⁷ Natural England (2013) *Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment*. [online] available at: http://www.naturalengland.org.uk/Images/mene-infographic-report-2012-13_tcm6-36346.pdf

¹²⁸ Defra (2013) *Living in rural areas* [online] available at: <http://www.defra.gov.uk/statistics/rural/rural-living/health/> (accessed 09/09/2013)

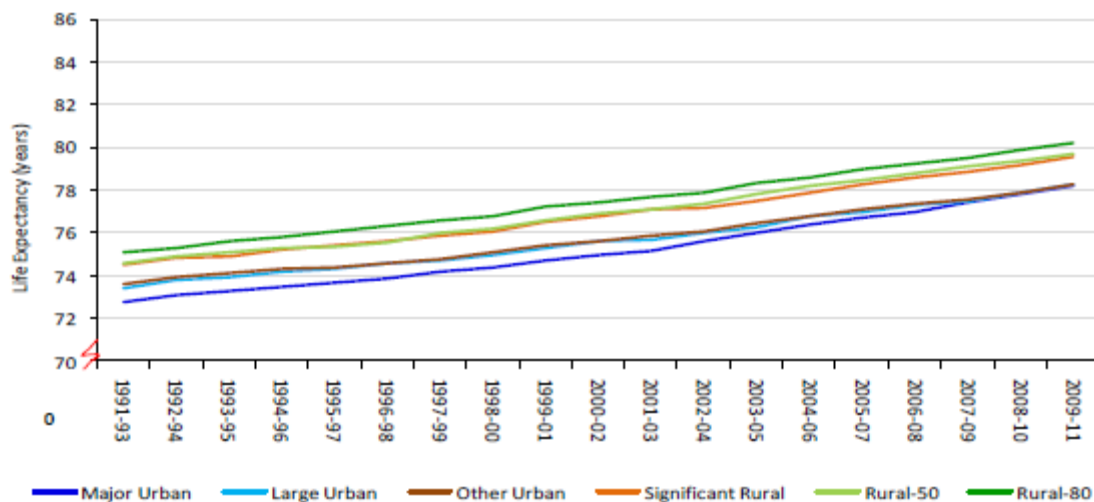


Figure 36: Male life expectancy at birth, 1991-93 to 2009-11

Life expectancy was highest in Rural-80 areas. Men born in Rural-80 areas in 2009-10 were expected to live just over two years longer than men born in Major Urban areas and women in Rural-80 areas were expected to live one and a half years longer than women born in Major Urban areas.

In 2011, the infant mortality rate in rural areas was 3.7 deaths per 1,000 live births, which was lower than the England average of 4.3 per 1,000 live births.

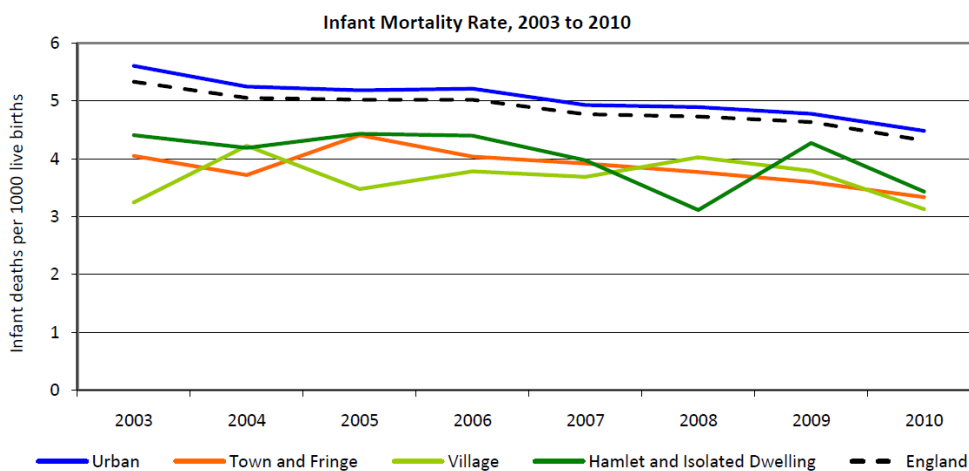


Figure 37: Infant mortality rate, 2003 to 2010.

Potential years of life lost (PYLL) from cancer in Predominantly Rural areas in 2008-10 was 134.7 years per 10,000 people, over fifteen years lower than in Predominantly Urban areas, 150.6 years.

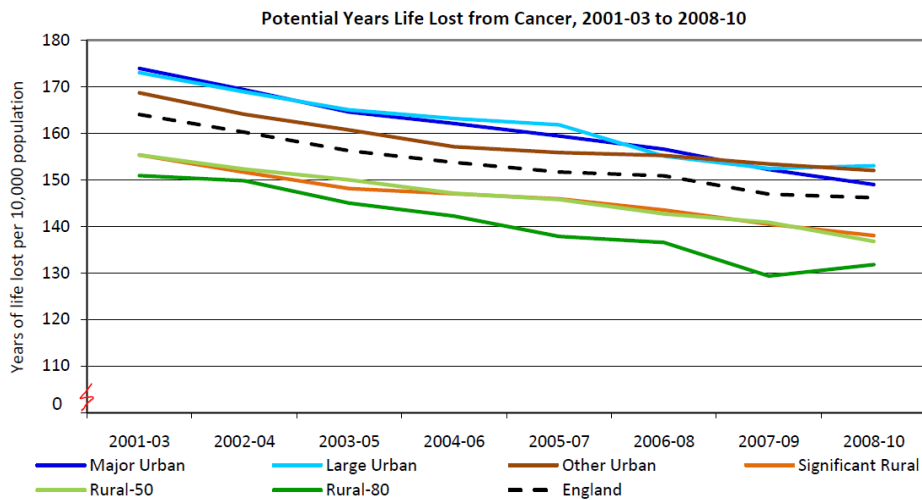


Figure 38: Potential years of life lost from cancer, 2001-03 to 2008-10.

PYLL from stroke or related diseases is lower in rural areas than England. In 2008-10, PYLL from stroke in Predominantly Rural areas was 12.5 years per 10,000 population. In Predominantly Urban areas PYLL was 16.6 years.

PYLL from Coronary Heart Disease has decreased by 20 years per 10,000 between 2001-03 in England and 2008-10 to 46.9 years per 10,000. PYLL from Coronary Heart Disease in Predominantly Rural areas was 10 years less than the England average, 36.0 years in 2008-10.

Future baseline under the business as usual scenario

The age profile of rural populations will increase, with in-migration to rural areas also likely to be a contributory factor. This will place a strain on health infrastructure and potentially reduce economic potential as the proportion of the working age population decreases. This figure is exacerbated by the fact that rural life expectancy is higher (and indeed general health indicators are better) in rural areas.

It is not considered that the new Rural Development Programme would have any direct influence on human health and population. However, without the programme, it might be that human health suffers though a loss in economic activity.

What are the key issues that should be the focus of the SEA?

1. Rural populations are generally older than those of England as a whole.
2. Quality of life in rural areas is closely related to environmental quality.
3. In-migration tends to be more pronounced amongst older people.

4. Increasing levels of economic activity help to improve community sustainability by widening opportunity and reducing out-migration of those of working age.
5. The production of food is, and will remain, the central purpose of the agricultural sector, and this will have an impact on the health of the population in England.
6. More widely, however, there is increasing recognition of the mental and physical health benefits of exercise and of access to green space and the countryside.

SEA Framework questions - will the Rural Development Programme?

- Help support the health and well-being of rural populations?
 - Increase levels of economic activity?
 - Help support and promote the production of healthy food and drink?
 - Support a better quality of life for rural populations, including for an increasingly ageing population?
 - Encourage a redistribution of age ranges in rural areas?

Soil management

This section sets out the policy context and the environmental baseline with respect to soil management. It is important to note that soil management has significant inter-relationships with other topics, in particular biodiversity and nature conservation, the rural economy and climate change adaptation. Critically, soil management and the purification and detoxification of soils are a 'regulating' service delivering final goods in terms of pollution control.

What's the policy 'context'?

Internationally established objectives

The **Thematic Strategy for Soil Protection** (Communication COM(2006)231) set a framework for ensuring the sustainable use of soil in Europe. The communication states that soil erosion is a serious problem in Europe, driven by "*inadequate agricultural and forestry practices, industrial activities, tourism, industrial sprawl and construction works.*"¹²⁹ The overarching objective of the communication is the protection and sustainable use of soil. It includes two guiding principles:

1. Preventing further soil degradation and preserving its functions:
 - a. When soil is used and its functions are exploited, action has to be taken on soil use and management patterns, and
 - b. When soil acts as a sink/receptor of the effects of human activities or environmental phenomena, action has to be taken at source.
2. Restoring degraded soils to a level of functionality should at least be consistent with current and intended use, and thus should also consider the cost implications of the restoration of soil.

Nationally established objectives

Current policies focus on protecting English soils and the important ecosystem services that they provide. In June 2011, the Government outlined its vision for England's soils in **the Natural Environment White Paper**¹³⁰ (NEWP). This set a clear target that by 2030 all of England's soils should be managed sustainably and degradation threats tackled successfully, in order to improve the quality of soil and to safeguard its ability to provide essential ecosystem services and functions for future generations. As part of this vision, the Government committed to undertaking further research to explore how soil degradation

¹²⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0231:FIN:EN:PDF>

¹³⁰ <http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf>

can affect the ability of soils to support vital ecosystem services; and how best to manage lowland peatlands in a way that supports efforts to tackle climate change.

In **Safeguarding our Soils: A Strategy for England**¹³¹, a vision was set out for the future of soils in the country. Elements of this vision included the better management of agricultural soils, managing the impacts of climate change and preventing soil pollution (including the legacy of contaminated land). The strategy identifies three main threats: soil erosion by wind and rain, compaction, and organic matter decline. Key messages from the report include:

- **Agricultural soils** - The strategy mentions that ‘good progress’ has been made in preventing soil degradation through schemes such as CAP cross compliance, Environmental Stewardship, the England Catchment Sensitive Farming Delivery Initiative and the new Code of Good Agricultural Practice. The report highlights that these tools need to improve their effectiveness.
- **Soil carbon** - carbon stores in soil are important and Defra must do all it can to protect this store: *“all future policy development on soils is guided by the need to protect our existing carbon stores...”*
- **Resilience of soils** - soils also have the potential to support wider adaptation of the economy and society to climate change in the face of hotter dryer summers and warmer wetter winters. This is in the face of potential loss of production and other costs associated with the impacts of climate change.
- **Soil pollution** – *“ensure that the return of materials to land is encouraged whilst continuing to monitor trends in pollutants and investigate further the potential for reducing pollutants entering soil through recycled materials.”*

In terms of future trends, the report notes that pressures on soils and competition for land is likely to increase in future as a result of population growth, As a result, the effects of these trends and the ‘changing demands on our soils’ needs to be better understood and it must be ensured that ‘appropriate consideration is given to soils in the planning process’.

Key messages from the NPPF include:

- Protecting and enhancing soils. The value of best and most versatile agricultural land should be taken into account in decision-making.

¹³¹ Defra (2009) *Safeguarding our Soils: A strategy for England* [online] available at: <http://archive.defra.gov.uk/environment/quality/land/soil/documents/soil-strategy.pdf> (accessed 11/2012)

What's the environmental 'baseline'?

Ecosystems services

The UKNEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. Purification and detoxification of soils is a 'regulating' service delivering final goods in terms of pollution control.

This service, across the broad habitats assessed in the UKNEA has experienced broad deterioration since 1990. Of the high importance habitats essential for the delivery of this service, semi-natural grasslands, and enclosed farmland both experienced some deterioration. Of the medium-high habitats, freshwaters – open waters, wetlands and floodplains experienced some deterioration whilst urban habitats experienced deterioration.

Current baseline

The function of soils is critical to a range of environmental issues. Although the most obvious function for farming is to produce crops, the same soils, depending on their type and location, may help regulate water flow, water quality and flooding, protect archaeological remains and support wildlife.

Soil erosion

Soil erosion can be defined as *“the detachment, entrainment, transport and deposition of soil particles or small soil aggregates, by an erosive force such as water, wind, tillage and co-extraction with root vegetables and machinery.”*¹³² The spatial distribution of predicted probability of soil erosion is shown in **Figure 39**.

¹³² Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

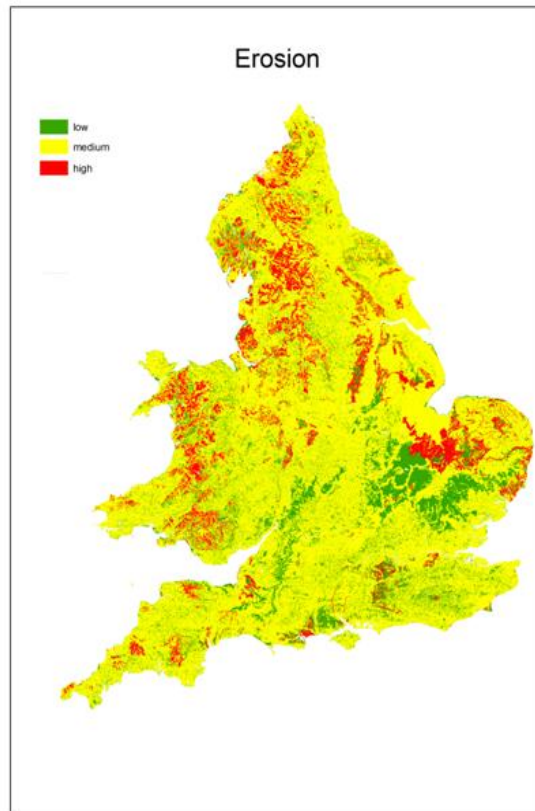


Figure 39: Spatial distribution of predicted probability of soil erosion in England and Wales

The main causes of soil erosion are related to:

- Intensive cultivation, particularly when soils are compacted by heavy machinery or left exposed to heavy rain, as is the case with winter cereals.
- High livestock densities, with associated trampling of soils by sheep and cattle; rooting by free-range pigs is also an issue.
- Poor forestry practice, especially during road construction and harvesting.

A study by Cranfield University estimated that soil erosion affects 17% of the land in England and Wales, *“mostly on lighter arable soils on hill slopes and of peats in upland areas.”* Soil erosion can be classified into four types, (water, wind, tillage and co-extraction) of which water is the most extensive although erosion by wind can cause a greater loss of soil per unit of land where it occurs. **Table 12** shows the probability of erosion by soilscape in England and Wales.

Table 12: The assumed relative probability of erosion by soilscape in England and Wales¹³³

Land use	Soil types			
	Clay	Silt	Sand	Peat
Urban	L	H	H	n/a
Horticulture	L	H	H	H
Arable intensive	L	H	H	H
Arable extensive	L	M	H	H
Grassland improved	L	M	M	H
Grassland unimproved	L	M	M	H
Rough grassland	L	M	M	H
Forestry	L	L	L	M
Woodland	L	L	L	M
Wildscape	L	L	L	M

Soil losses from cultivated land are generally low in the UK. The Cranfield University research calculated the erosion in England and Wales to be about 2.9 Mt yr⁻¹. **Table 13** sets out erosion rates for land types.¹³⁴ Of these land types, it was estimated that extensive arable would experience the greater level of erosion (some 1.6 Mt per year) with intensive arable and improved grassland being the next highest levels of erosion.

¹³³ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

¹³⁴ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

Table 13: Selected erosion rates (t ha⁻¹ yr⁻¹) used for each Land use/soil type category

Land use	Soil types			
	Clay	Silt	Sand	Peat
Urban	0	10	5	0
Horticulture	2	20	5.08	15
Arable intensive	1.92	22.4	20.3	20
Arable extensive	1	6.3	3.46	10
Grassland improved	0.36	4.49	4.09	7
Grassland unimproved	1.29	2.07	1.5	10
Rough grassland	0.05	0.75	0.22	10
Forestry	0.01	0.5	0.05	0.7
Woodland	0.01	0.5	0.05	0.7
Wildscape	0.01	0.5	0.05	0.7

Cranfield University estimated the off-site costs of soil erosion in England and Wales at £136 m per year. This comprises mainly the treatment cost of nutrient removal from drinking water, the damage costs of nutrients passing into the water environment, sediment removal from rivers and lakes, sediment removal from urban drainage systems, and GHG loss linked to erosion events.¹³⁵

Carbon

UK soils are estimated to store some 10 billion tonnes of carbon in the form of organic matter (half of this carbon store is within peat habitats).¹³⁶ The trend in soil carbon concentrations is unclear.

There was a loss of soil organic matter (SOM) in arable and rotational grassland topsoils between 1980 to 1996. This is not thought to have damaged soil fertility, although impacts on soil biodiversity and soil health are unclear.

However, loss of soil organic carbon, a principal component of SOM, reduces soil carbon stocks with implications for climate change. Changes in land use, such as draining peat and converting grassland to crops, release carbon dioxide. Emissions of GHG from Land Use, Land Use Change and Forestry (LULUCF) have declined in English croplands since 1990 however the amount removed by Forestland has decreased from -2,600 GgCO₂ to -2,200 GgCO₂ in 2011.

¹³⁵ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

¹³⁶ Defra (2009) *Safeguarding our Soils: A strategy for England* [online] available at: <http://archive.defra.gov.uk/environment/quality/land/soil/documents/soil-strategy.pdf> (accessed 11/2012)

Compaction

Compaction can be defined as “the physical reduction in volume of soil due to a compressive force. Compaction occurs as a result of soil vulnerability or applied stress to the soil (either separately or in combination).”¹³⁷ The probability of soil compaction is presented in **Figure 40**.

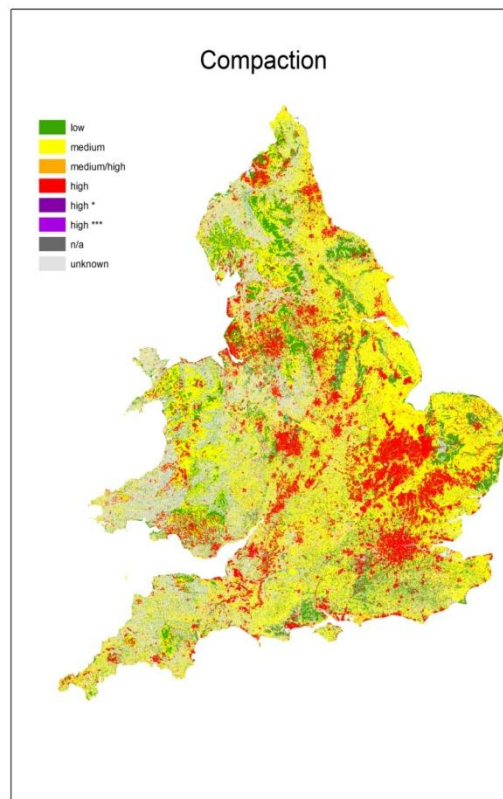


Figure 40: Spatial distribution of predicted probability of compaction in England and Wales¹³⁸

Compaction of farm land can result in ‘sealing’¹³⁹ although this is only where compaction is severe and is more commonly found in urban areas. It should be noted that compaction and erosion can often occur on the same site and some activities such as tractor wheeling can serve to cause both compaction and subsequent erosion.¹⁴⁰

¹³⁷ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

¹³⁸ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

¹³⁹ ‘Sealing’ is the detachment of the soil from the biosphere and atmosphere. This can be temporary (e.g. caused by soil capping) or permanent (e.g. due to construction of infrastructure, housing etc.). Physical effects include reduced ground permeability, compaction and reduced heat exchange. The process removes habitat for soil fauna and flora, and reduces carbon and nutrient cycling.

¹⁴⁰ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

Cranfield University research estimates the total cost of compaction at £472 million per year. The on-site costs relate to yield loss on compacted ground and loss of nitrogen associated with runoff from compacted soil. The majority of the offsite costs are associated with flood damage and flood risk management costs. The other major off site costs relate to the costs of emissions to water and atmosphere and associated cost of water treatment, damage to the water environment, and GHG emissions from production of the fertiliser that is lost due to compaction as well as the fraction that converts to N₂O and NH₃ during denitrification.¹⁴¹

Future baseline under the business as usual scenario

Whilst soil loss is generally low in the UK, some areas are at risk. Without the programme, Intensification of land use or inappropriate agricultural practices may exacerbate this risk. Changing land use to agricultural production can release soil carbon stocks. Any increases in land use as a result of the Rural Development Programme would increase this release.

As the climate (including temperature and rainfall patterns) changes in the future, it is likely that soils have the potential to be further degraded, both as a result of the direct and indirect impacts of climate change, for example as land managers adapt their practices and the crops that they grow.

What are the key issues that should be the focus of the SEA?

1. Soil erosion is of relatively low but increasing concern in England.
2. Poor management of soils is closely linked to water pollution, and also to greenhouse gas emissions.

SEA Framework questions - will the Rural Development Programme?

- Help ensure the function of agricultural soil?
- Encourage the retention, protection and utilisation of high quality agricultural soil?

¹⁴¹ Graves, A., Morris, J., Deeks, L., Rickson, J., Kibblewhite, M., Harris, J. and Fairwell, T. (2011) *The Total Costs of Soils Degradation in England and Wales*. Cranfield University

Waste

This section sets out the policy context and the environmental baseline with respect to waste. It is important to note that waste has significant inter-relationships with other topics, in particular climate change mitigation.

What's the policy 'context'?

Internationally established objectives

The **Waste Framework Directive** – Directive 2008/98/EC on waste – sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery. It explains when waste ceases to be waste and becomes a secondary raw material (so called end-of-waste criteria), and how to distinguish between waste and by-products.¹⁴² The Directive sets out principles with regard to the **waste hierarchy** and **polluter pays principle**.

The EU's **Thematic Strategy on the Prevention and Recycling of Waste** is a long-term strategy which aims to ensure that Europe becomes a recycling society that seeks to avoid waste and which uses waste as a resource.¹⁴³ The strategy proposes that approaches to waste management are modernised and that they promote more and better recycling.

Nationally established objectives

This **Government's Review of Waste Policy in England**¹⁴⁴ recognises that environmental benefits and economic growth can be the result of a more sustainable approach to the use of materials. As such, it sets out a vision to move beyond our current 'throwaway society' to a 'zero waste economy'. The report recognises that planning will play a critical role in delivering this ambition. In terms of planning for waste the report notes that local authorities should consider the infrastructure needs of their community from the earliest stages of developing their local policies and plans. It also states that local communities should benefit from the hosting of waste facilities.

The **Draft Waste Management Plan for England** is currently out for consultation. Once adopted, the Plan will supersede the existing waste management plan for England (the

¹⁴² European Commission (2008) *Directive 2008/98/EC on Waste* (Waste Framework Directive) [online] available at: <http://ec.europa.eu/environment/waste/framework/> (accessed 09/09/2013)

¹⁴³ European Commission (2011) *Thematic Strategy on the Prevention and Recycling of Waste* [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0013:FIN:EN:PDF> (accessed 11/2012)

¹⁴⁴ Defra (2011) *Government Review of Waste Policy in England* [online] available at: <http://www.defra.gov.uk/publications/files/pb13540-waste-policy-review110614.pdf> (accessed 08/2012)

Waste Strategy for England 2007). The plan provides an overview of waste management in England and provides a compilation of existing waste management policies.¹⁴⁵

The **Anaerobic Digestion Strategy and Action Plan**¹⁴⁶ sets out the vision and detailed actions that are needed to bring about an increase in energy from waste through anaerobic digestion. This covers both food wastes and agricultural wastes such as manures and slurries.

What's the environmental 'baseline'?

Current baseline

The regulations governing the (broadly, non-organic) solid waste, component have recently changed significantly, to require treatment of such waste in line with that generated from other industries. This essentially means that farm generated wastes are no different to any other wastes so uncontrolled disposal is not an option.

Although manures and slurries are not within the scope of the Waste Framework Directive, when they are used directly as a fertiliser, they are significant sources of both phosphates and nitrates, and as such must be carefully managed, in line with their potential to impact on water pollution. Furthermore, when manures and slurries are used as feedstocks for anaerobic digestion, the process is within the scope of the Waste Framework Directive and the anaerobic digestion plant is regulated as such. The plant will require an Environmental Permit from the Environment Agency or a permit exemption (if it meets the criteria for an exemption). Although in principle the use of digestate would also require a permit, the Agency has a regulatory position which states that provided the plant's only waste feedstocks are manures and slurries, the Agency will not require a permit for the spreading of the digestate.

More widely, the Government's approach to the management of waste is in line with the hierarchy of seeking to:

- avoid the production of waste in the first instance;
- reduce unavoidable waste;
- re-use waste where possible;
- recycle waste.

¹⁴⁵ Defra (2013) Waste Management Plan for England [online] available at:

<https://consult.defra.gov.uk/waste/https-consult-defra-gov-uk-waste> (accessed 09/09/2013)

¹⁴⁶ DECC and Defra (2011) *Anaerobic Digestion Strategy and Action Plan* [online] available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69400/anaerobic-digestion-strat-action-plan.pdf (accessed 09/09/2013)

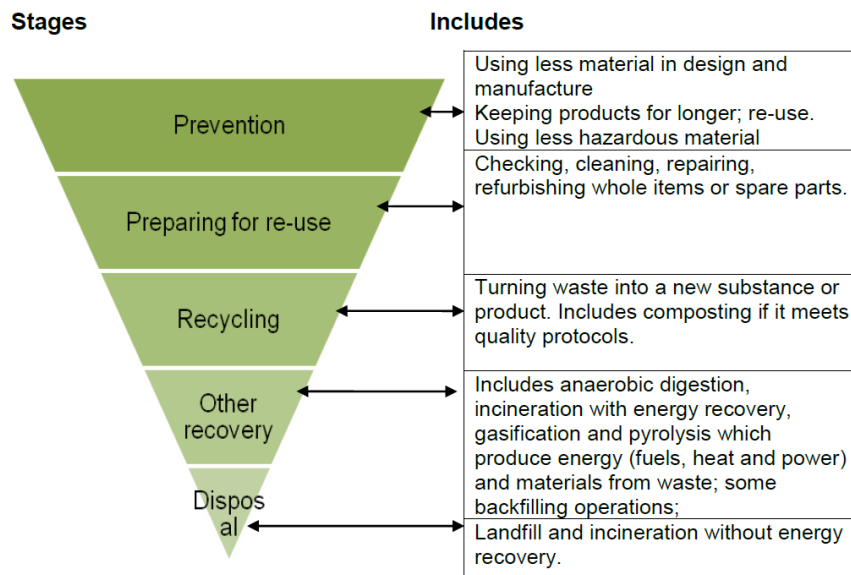


Figure 41: The waste hierarchy

The Local Authority Waste Management Statistics for England (2011/12) produced by Defra presents estimates of the waste collected and managed by local authorities over the last financial year (2011/2012).

The headline results for England are as follows:

- 43% of household waste recycled (the highest % on record but the lowest annual increase in ten years);
- 22.9 million tonnes of household waste generated equal to 431kg of waste per person (continuing the pattern of annual reductions seen since 2007/2008); and
- 10.7 million tonnes of waste collected recycled, composted or reused by local authorities (for the first time on record this figure was greater than the amount landfilled).

Disposal to landfill remains the least desirable option. In practice, the Government is seeking to change the market for waste management by increasing the landfill tax, and therefore make other disposal options more economically attractive. The tax stands, currently, at £72 / tonne for active waste (as distinct from construction waste), and is due to rise by £8 to £80/tonne in 2014.¹⁴⁷ Disposal costs are also rising due to the need to meet increasingly stringent environmental management standards.

¹⁴⁷ HMRC (2013) *A general guide to Landfill Tax* [online] available at: http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&propertyType=document&id=HMCE_CL_000509#P33_2997 (accessed 09/09/2013)

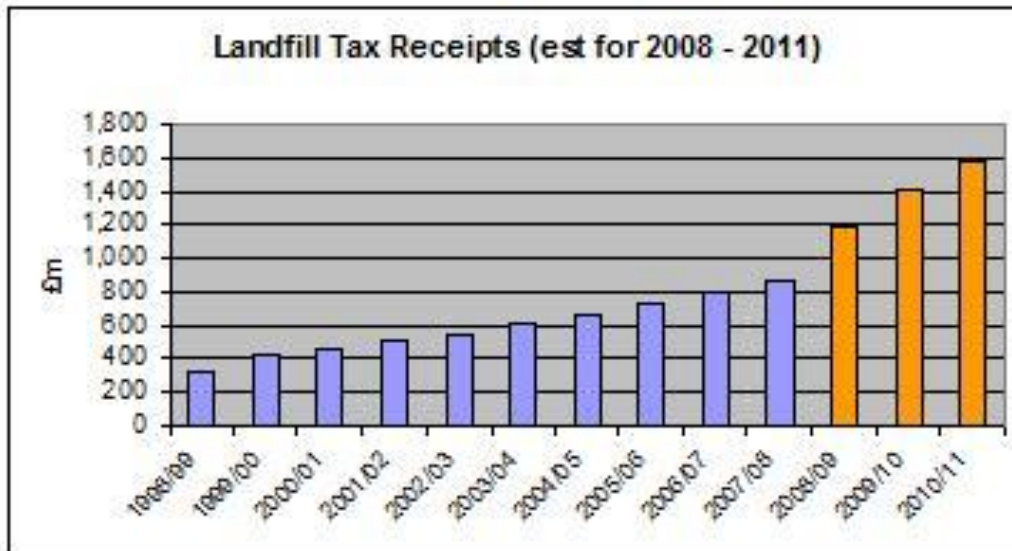


Figure 42: Landfill tax receipts (est. for 2008-2011)

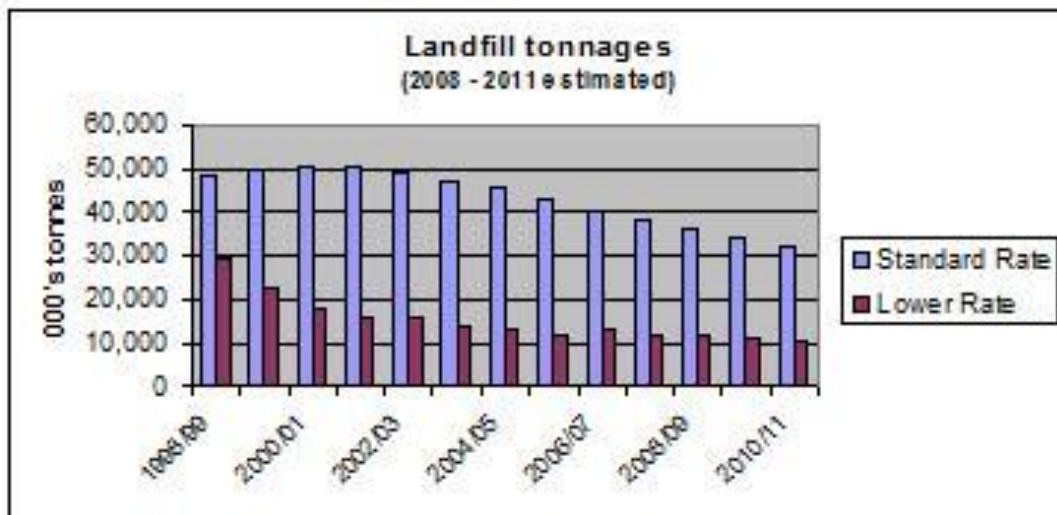


Figure 43: Landfill tonnages (est. 2008-2011)

There are two implications of this. Firstly, the costs of disposal of farm wastes will rise, making a greater focus on their management more economically beneficial, and, secondly, there may therefore be opportunities, at local level, to develop new services based on waste management, particularly of compostable wastes.

Anaerobic digestion

When the Anaerobic Digestion Strategy and Action Plan was prepared in 2011, there were 214 facilities for anaerobic digestion (AD) in the UK with an overall capacity to process more than 5 million tonnes of material per annum and generate more than 170MW of electricity. There were 24 farm-fed AD plants operating in the UK with a capacity to

process around 200k tonnes of feedstock per annum. There are now (September 2013) 49 farm-fed AD plants.¹⁴⁸

Table 14 sets out the anaerobic digestion industry capacity in the UK when the AD Strategy and Action Plan was prepared. The Strategy included an estimate that – if barriers to deployment could be overcome - the potential for AD deployment for electricity may be 3-5 Terawatt hours by 2020.¹⁴⁹

Table 14: Anaerobic digestion industry capacity in the UK in April 2011.

Treatment capacity of existing 54 AD plants (not including sewage sludge treatment facilities)	534,200 tonnes of commercial waste 382,000 tonnes from food and drink manufacture 136,156 tonnes in farm-based plants
Output capacity of existing 54 plants	35 megawatts electrical (MWe)
Treatment capacity of existing 146 sewage sludge treatment AD plants producing energy	1,100,000 dry tonnes of sewage sludge
Output capacity of existing sewage sludge treatment plants	110 MWe
Output capacity of 50 planned AD plants	70 MWe

Future baseline under the business as usual scenario

Tonnages of waste to landfill have decreased since 2008 as the landfill tax receipts and the landfill tax elevator are increasing the cost of disposal of waste in landfills. It is likely therefore that this trend will continue with or without the Rural Development Programme. There is potential for AD to increase and for increased energy from waste to be generated. While this would happen without the programme, the programme may be able to provide further impetus to AD take-up. Furthermore, although, the AD sector is growing in general, take up in terms of agricultural wastes has been slower than for food waste. Defra held a workshop in April 2013 to look at the specific challenges for on-farm AD (particularly small scale AD). Among the issues identified were that AD technology is expensive so access to finance is important. Furthermore, the structure of incentives, particularly the Feed-In Tariffs where reduction of incentives may hinder future growth, was also seen as significant. Defra announced in its response¹⁵⁰ to the Ecosystem Markets Task Force report a range of measures to support on-farm AD. These included extending the AD Loan Fund to farm-scale AD.

¹⁴⁸ Latest information available at <http://biogas-info.co.uk/maps/index2.htm#>

¹⁴⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69400/anaerobic-digestion-strat-action-plan.pdf

¹⁵⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/236879/pb13963-government-response-emptf-report.pdf

What are the key issues that should be the focus of the SEA?

1. Almost all agricultural waste is re-used on farms. Such wastes have high concentrations of phosphates and nitrates, and so have the potential to exacerbate water pollution if not managed properly.
2. Regulation and focus on other solid wastes (plastics, packaging, etc.) is increasing, and the cost of their management is likely to increase accordingly.
3. Waste costs are rising as a result of increased taxation and the need to meet higher standards, and this may create opportunities for waste minimisation and waste management services in rural areas.

SEA Framework questions - will the Rural Development Programme?

- Help ensure that rural activities adhere to the waste hierarchy?
 - Encourage waste minimisation / reuse?
 - Ensure the safe management of agricultural waste?
 - Encourage energy from waste practices?

Water management

This section sets out the policy context and the environmental baseline with respect to water management. It is important to note that water management has significant inter-relationships with other topics, in particular biodiversity and nature conservation, human health and climate change adaptation. Critically, water management and the purification and detoxification of water are 'regulating' services delivering final goods in terms of pollution control.

What's the policy 'context'?

Internationally established objectives

The **Water Framework Directive** sets out a river basin management planning process. Nine river basin districts have been defined in England and Wales, and two more cross the border between England and Scotland. For each river basin district (RBD) a river basin management plan (RBMP) will be prepared, implemented and reviewed on a six year cycle. River Basin Characterisation required by Article 5 of the Directive is an important early part of this process which for each RBD, requires:

- an analysis of its characteristics;
- a review of the impact of human activity on the status of the water bodies within the RBD; and
- an economic analysis of water use.

The initial Characterisation phase, conducted by the Environment Agency, has now been completed and published. It involved the identification of River Basin Districts, water bodies and the assigning of typologies. A pressures and impact analysis has also been undertaken for each water body to assess the risk of failing to meet the environmental objectives of the Directive by 2015. The results of pressures and impacts analysis, summarised in **Table 15** indicates the overall risk that waterbodies may not achieve WFD objectives by 2015, and the main contributory pressures relating to that risk. The importance of diffuse pollution, of which agriculture is the major source, is clearly evident.

The Directive drives a catchment-based approach to water management (see **Figure 44**). In England and Wales there are 100 water catchments and it is Defra's intention is to establish a 'framework for integrated catchment management' across England by the end of 2013. The Environment Agency is currently seeking to establish 'Significant Water Management Issues' within catchments with a view to presenting second River Basin Management Plans to ministers in 2015. The Plans will seek to deliver the objectives of the Water Framework Directive namely:

- enhance the status and prevent the further deterioration of aquatic ecosystems and associated wetlands which depend on aquatic ecosystems;
- promote the sustainable use of water;

- reduce the pollution of water, especially by ‘priority’ and ‘priority hazardous’ substances; and
- ensure the progressive reduction of groundwater pollution.

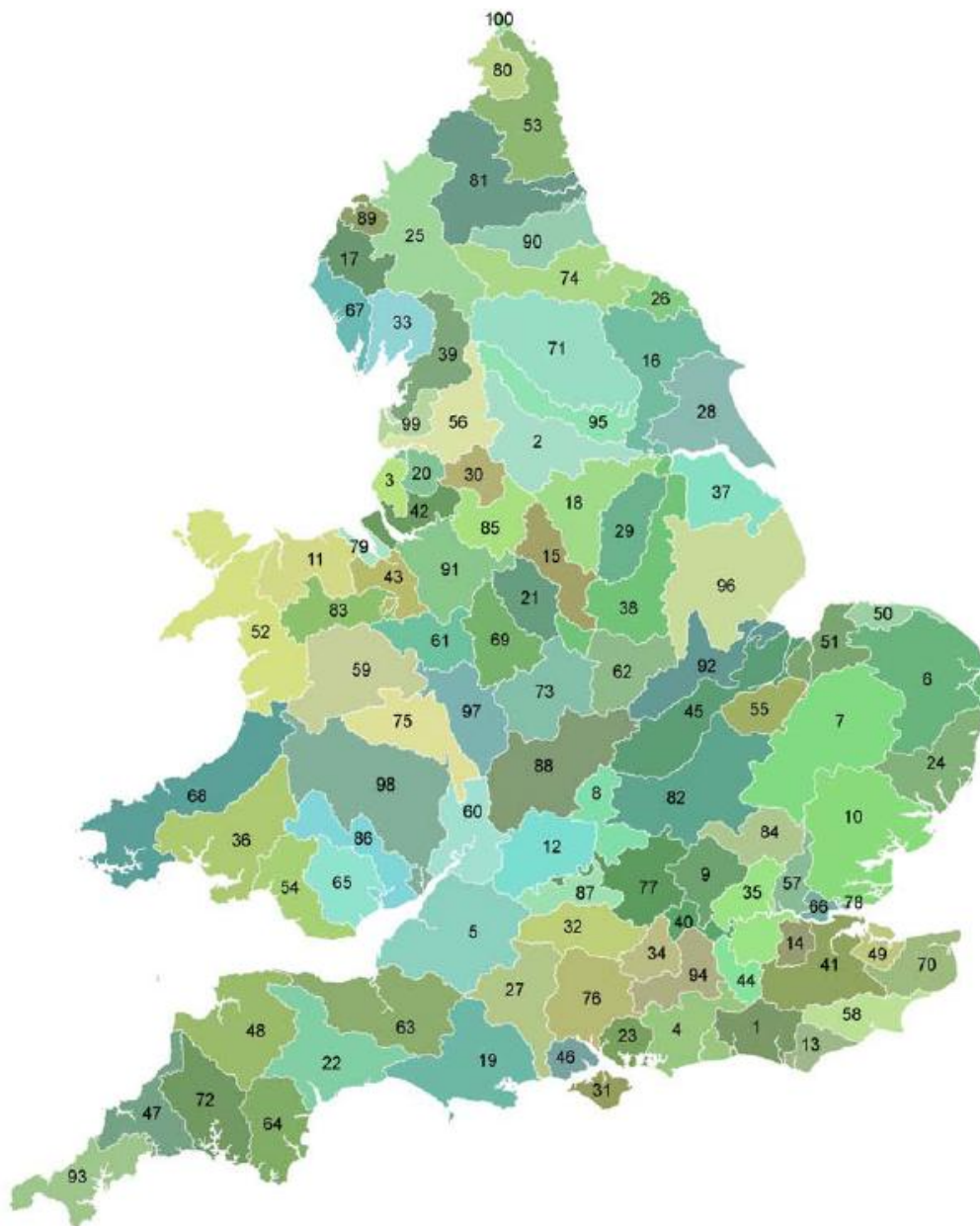


Figure 44: WFD catchment areas (note the colours in the figure serve to differentiated the catchment areas only)¹⁵¹

The Environment Agency believes that achieving good status in all water bodies by 2027 (the target of the Water Framework Directive) will not be possible using only current

¹⁵¹ Environment Agency (2011) *Water Framework Directive Management Catchments* [online] available at: http://www.environment-agency.gov.uk/static/documents/Research/Water_Framework_Directive_Management_Catchments.pdf (accessed 09/09/2013)

approaches. In fact, achieving 75 per cent good status will require marked changes in land use and water infrastructure.

The EU's '**Blueprint to Safeguard Europe's Water Resources**'¹⁵² highlights the need for Member States to reduce pressure on water resources, for instance by using green infrastructure such as wetlands, floodplains and buffer strips along water courses. This would also reduce the EU's vulnerability to floods and droughts. It also emphasises the role water efficiency can play in reducing scarcity and water stress.

Nationally established objectives

The **Flood and Water Management Act**¹⁵³ highlights alternatives to traditional engineering approaches to flood risk management. These include:

- Incorporating greater resilience measures into the design of new buildings, and retro-fitting at risk properties (including historic buildings);
- Utilising the environment, such as management of the land to reduce runoff and harnessing the ability of wetlands to store water;
- Identifying areas suitable for inundation and water storage to reduce the risk of flooding elsewhere;
- Planning to roll back development in coastal areas to avoid damage from flooding or coastal erosion ; and
- Sustainable drainage systems (SuDS)¹⁵⁴.

GP3: Groundwater Protection: Policy and Practice¹⁵⁵ (2012) implements the requirements of the WFD and Environmental Permitting Regulations, protecting and enhancing water quality in both surface water and ground water and managing the sustainable supply of water as a resource. Principles are set out to ensure wise resource use and bring benefits to land, wildlife, flood risk management and communities. The Environment Agency's core groundwater policy is to protect and manage groundwater resources for present and future generations in ways that are appropriate for identified risks such as pollution and climate change. To achieve this the Environment Agency seek to:

- Meet the needs of the environment and people;
- Manage surface water and groundwater as an integrated whole;
- Use robust measures to prevent the pollution of groundwater; and
- Achieve the environmental objectives of the Water Framework Directive.

¹⁵² European Commission (2012) *A Blueprint to Safeguard Europe's Water Resources* [online] available at http://ec.europa.eu/environment/water/blueprint/pdf/COM-2012-673final_EN_ACT-cov.pdf (accessed 11/2012)

¹⁵³ Flood & Water Management Act (2010) [online] available at: <http://www.legislation.gov.uk/ukpga/2010/29/contents> (accessed 11/12)

¹⁵⁴ N.B. The government proposes that the provisions of Schedule 3 to the Flood and Water Management Act 2010 will come into force on the 1st of October 2012 and will make it mandatory for any development in England or Wales to incorporate SuDs.

¹⁵⁵ Environment Agency (2012) *GP3: Groundwater Protection: Policy and Practice* [online] available at: <http://www.environment-agency.gov.uk/research/library/publications/144346.aspx> [accessed 15/03/2013]

The **Water White Paper**¹⁵⁶ sets out the Government's vision for a more resilient water sector, where water is valued as the precious resource it is. It states the measures that will be taken to tackle issues such as poorly performing ecosystems, and the combined impacts of climate change and population growth on stressed water resources.

Commitments are made in the White Paper to 'encourage and incentivise water efficiency measures' on the demand side. Through these measures and the demand management measures set out in Water Resource Management Plan's for water companies, the Government aspires to reduce average demand to 130 litres per head, per day by 2030.

The avoidance of pollution is also a consideration in the White Paper, leading to a Government consultation on a national strategy on urban diffuse pollution in 2012. The consultation report¹⁵⁷ notes that pollutants affecting failing waterbodies can be broken down into a number of categories including:

- Point Source Pollution: Permitted discharges from factories and wastewater treatment are currently responsible for about 36% of pollution related to failing water bodies.
- Diffuse pollution: Unplanned pollution from urban and rural activity, arising from sources such as industry, commerce, agriculture, and civil functions is responsible for 49% of the pollution related to failing water bodies. Agricultural diffuse pollution is responsible for 33% of failures; non-agricultural for 14%. In highly urbanised areas the contribution of urban diffuse pollution is much higher.

Key messages from the NPPF include -

- Take account of the effects of climate change in the long term, taking into account a range of factors including water supply. Adopt 'proactive strategies' to adaptation and manage risks through adaptation measures including well planned green infrastructure.

¹⁵⁶ Defra (2011) *Water for life (The Water White Paper)* [online] available at <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf> (accessed 11/2012)

¹⁵⁷ Defra (2012) *Tackling water pollution from the urban environment: Consultation on a strategy to address diffuse water pollution from the built environment* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82602/consult-udwp-doc-20121120.pdf (accessed 05/2013)

What's the environmental 'baseline'?

Ecosystems services

The UK NEA synthesis report sets out the relative importance and overall direction of change in service flows since 1990. In the context of water management, water is split into 'water supply' (provisioning services) and 'water quality' (to refer to the regulating service of water detoxification and purification).

Water supply

This service has experienced some deterioration in freshwater, open water, wetland and floodplain habitats. However, enclosed farmland has also experienced some deterioration (although this is classified as a medium-high importance habitat for the delivery of this service).

Water quality

This service has experienced an overall improvement across habitats, specifically with some improvement on semi-natural grasslands (high importance). However, it is noted in the UKNEA that there are a number of habitats that have experienced both improvements and deterioration but that this has occurred in different locations.

Current baseline

There are two broad issues around the management of water which are relevant to agriculture:

- water use (abstraction); and
- diffuse water pollution from agriculture.

Water Use - Abstraction

Water abstraction is important in the context of climate change, since agriculture is likely to require water for irrigation of crops during periods of low rainfall, when supplies are under greater pressure. In general, pressure on water supplies is greater in the South and East of England.

Water use is becoming an increasingly important issue. **Figure 45** shows the recorded quantity of water abstracted from surface and ground water for agricultural use. Agricultural uses accounted for just 0.4% of recorded water abstraction in England and Wales in 2008. Regionally, this varied between less than 0.1% in the North West and Wales and 1.4% in the East of England and can be higher on a daily basis during the summer.

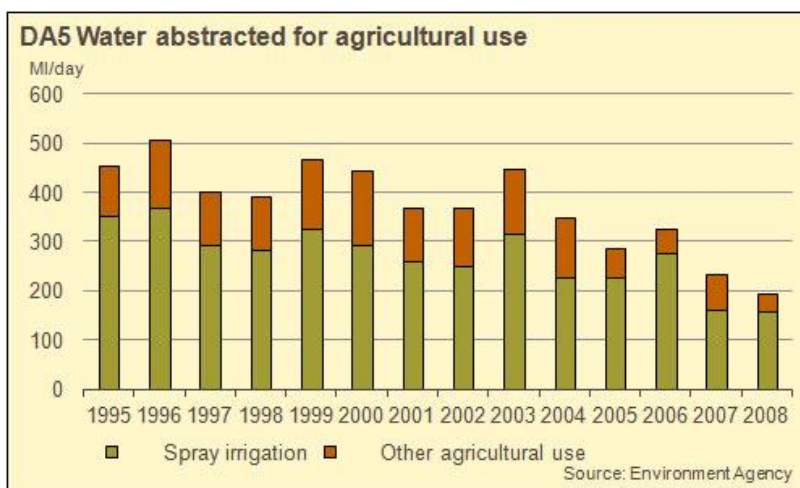


Figure 45: Water abstracted for agricultural use.¹⁵⁸

Spray irrigation is the dominant form of use in agriculture. Just under half of agricultural abstractions are from surface water. In 2008, the recorded agricultural abstraction rate of 194 MI per day was 17% lower than 2007. Part of the apparent reduction between 2004 and 2005 was due to deregulation – abstractions of less than 20 cubic metres per day became exempt from licensing from 1 April 2005. Reported abstractions are somewhat lower than licensed abstractions.

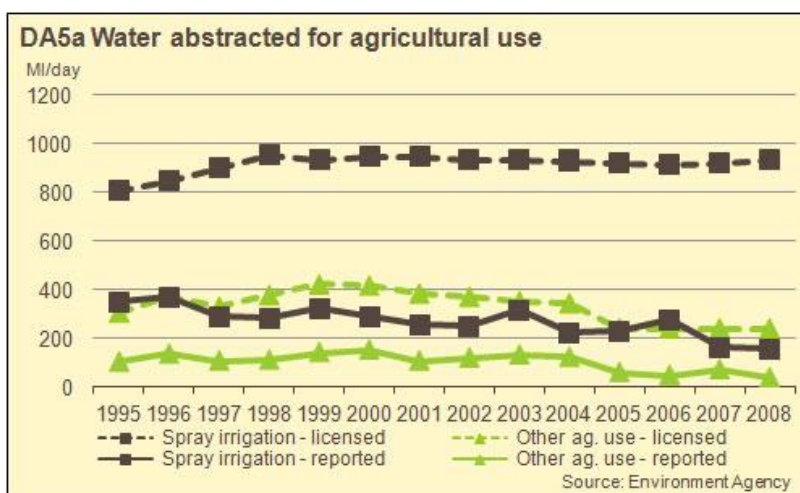


Figure 46: Water abstracted for agricultural use (reported and unreported).

The East of England and East Midlands together account for over 70% of reported abstractions for spray irrigation each year. In 2008, there were decreases in all regions, except the East of England which saw a rise of 4%. Spray irrigation is generally confined to the summer months when weather patterns generally govern the amount abstracted. The 2005 Survey of Irrigation of Outdoor Crops (conducted by Cranfield University) shows

¹⁵⁸ Defra (2010) Observatory monitoring framework – indicator data sheet Environmental impact: Water Indicator DA5: Water abstraction for agriculture [online] available at: http://archive.defra.gov.uk/evidence/statistics/foodfarm/enviro/observatory/indicators/d/da5_data.htm (accessed 09/09/2013)

that potatoes and vegetables accounted for 83% of the volume of water used to irrigate outdoor crops in England. The East Midlands and East of England together account for the majority of these crops. Other agricultural uses will be more evenly distributed across the year.

The map below shows the risk to ecological status from abstraction pressures which was highlighted in the Water White Paper.¹⁵⁹

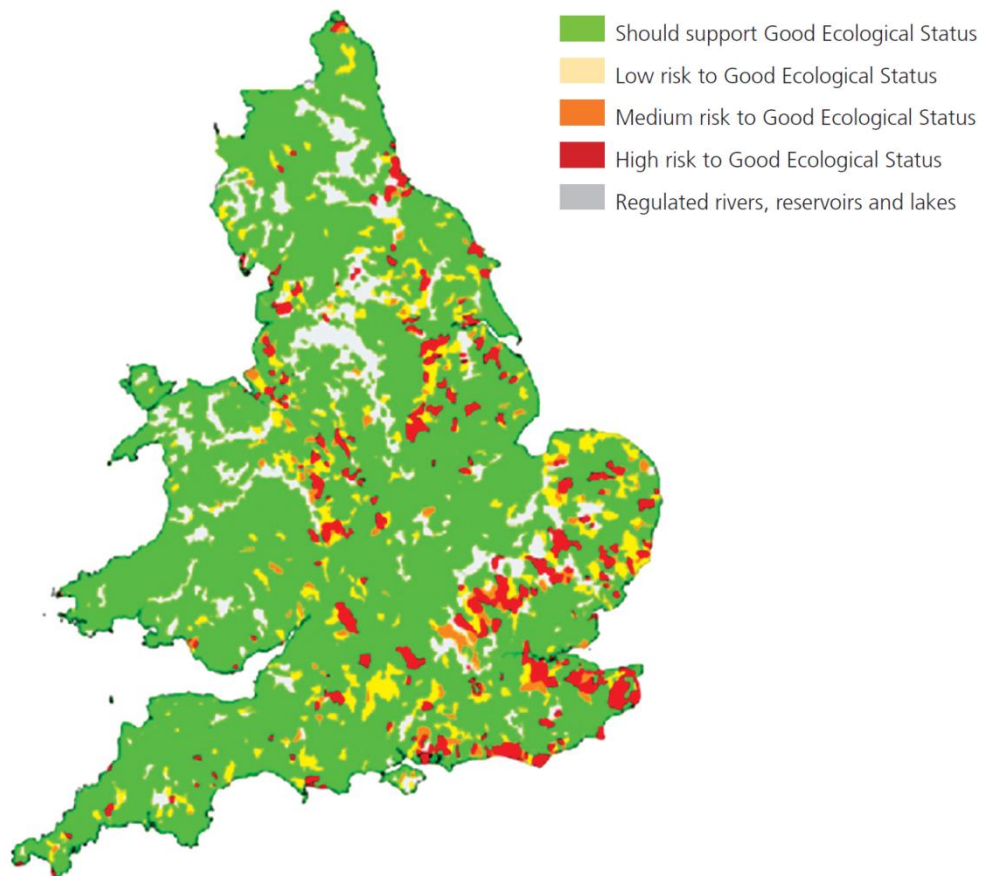


Figure 47: Risk to ecology from current abstraction in England and Wales.

Water Quality

Pollution from agriculture is a key pressure on water quality. Between 1990 and 2004 the percentage of rivers of good biological quality in England rose from 60 to 70 per cent. Over the same period, the proportion of rivers of good chemical quality rose from 43% to 62%. However, the introduction of the Water Framework Directive has changed the basis for measuring water quality status with only 30% of water bodies achieving “good status”.

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Defra (2011) *Water for life (The Water White Paper)* [online] available at <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf> (accessed 09/09/2013)

Pollution from agriculture is related to nutrient loss from fertiliser use, faecal indicator organisms, sediment and pesticides. Nutrients (phosphorus and nitrogen) are naturally found in water, and plants require these nutrients to grow. Elevated levels of phosphorus in water, for example, can lead to eutrophication (excessive algal growth) in freshwater. Levels of nitrate and phosphate use have been declining since 1984. As urban and industrial point source pollution of water has been increasingly controlled, emissions from agriculture have become comparatively more important proportions of the total. It has been estimated that over two thirds of nitrogen emissions to surface and marine waters and one third of phosphorus are present as a result of agricultural activities. Removing diffuse pollutants caused by agriculture is estimated to cost UK water companies (and so water consumers) £211 million a year.

The pollution risk associated with fertiliser application is increased when the timing of application is not matched to the needs of the crop, or when weather conditions increase the risk of run off. The move towards autumn-sown cereals has increased losses because winter rainfall can cause nitrate to leach from soil organic matter, and phosphate to be washed off.

Although the recent pattern shows a decline in phosphate application, this is against a longer term increase. The Environment Agency estimates that there was a 400% increase in phosphorus losses to water between 1931 and 1991. Following the introduction of the Water Framework Directive a programme of measures has been established within River Basin Management Plans (RBMP) to address these issues.

Work by the Environment Agency illustrates the relative importance of different sectors' impact on the water environment and the reasons why water bodies fail to meet "good status" under the Water Framework Directive. The farming sector is a key area identified for improvement, as shown in the table below.

Table 15: Reasons for failure to achieve “good status”

PRESSURE	SECTOR RESPONSIBLE											
	Agriculture and rural land management	Angling and conservation	Coal mining	Forestry	Hydro-power	Industry	Mining and quarrying	Navigation	Non coal mining	Urban and transport	Water industry	Still under investigation
Specific Pollutants	20		17	1		21			267	21	31	78
Priority Hazardous Substances	15		4			18		8	30	67	8	106
BOD and Ammonia	376	1	6		1	88		1	3	340	873	457
Nutrients	1552	3		4		101		4	1	433	1635	653
Hydrology	38	1	1	1	3	12	1	5	1	8	98	718
Morphology	288	5	13	5	3	107	3	38	3	392	170	2725
pH	15			39		5			13	50	3	68
Sediment	396	4	7	8		17	2		9	66	9	50
Groundwater pressures	53		19			6			9	10	12	271
Still under investigation	82	10	16	11		29			2	155	106	656

Table 16: Percentage of water bodies at risk of not achieving WFD objectives

Pressures	Rivers	Lakes	Estuaries	Coastal Waters	Groundwater
Point discharges	23.1	20.1	48.5	18.2	3.9
Diffuse pollution	82.4	53	25	24.2	75.3
Abstraction	10.7	2.1	14	N/A	26.1
Physical changes	48.2	59.3	89.7	77.8	N/A
Alien species	21.1	9.3	36.8	45.5	N/A
Overall % of waterbodies at risk	92.7	84	98.5	84.8	75.3

Pesticides

The overall weight of pesticides applied to arable crops has decreased significantly from 2000 (by about 12,000 tonnes). Conversely, during the period between 1990 and 2011 the area treated with pesticides in the UK increased. This would seem to show a greater efficiency of pesticide application in the UK during this period (note the area of arable crops has stayed much the same from 2000 – 2012).¹⁶⁰

Faecal indicator organisms

Escherichia coli (E. Coli) concentrations in leachate can occur from both point sources and diffuse sources of agricultural activity. Point sources can include:

- runoff from farm hard standings;
- from field heaps;
- farm tracks; and
- roof runoff.

Direct sources can include:

- from grazed grassland; and
- land spreading of solid manure.

Sediment

High levels of sedimentation in rivers leads to physical disruption of the hydraulic characteristics of the channel. This can have serious impacts on navigation through reduction in depth of the channel, and can lead to increased flooding because of reductions in capacity of the river channel to efficiently route water through the drainage basin.¹⁶¹

Salmon and trout, for example, need clean, well aerated, gravel (free from silt) habitats for successful spawning. Such habitats may be present in low-gradient streams where sediment bars locally narrow the channel to increase water velocity over the remaining width, with the resultant cleansing of the bed of silt. Removal of such bars, or constrictions of the lowflow width, potentially leads to a loss of suitable habitat for salmonid fish.¹⁶²

Catchment Sensitive Farming

Catchment Sensitive Farming (CSF) is a joint project between the Environment Agency and Natural England, funded by Defra and the Rural Development Programme for England. The aim of the CSF Programme is to reduce pollution from farming in surface waters, groundwaters, and other aquatic habitats, both in the immediate catchment and further downstream. CSF assistance involves training, information, and advice, as well as a Capital Grants Scheme for priority catchments where evidence suggests that pollution from farming practices impacts significantly on water quality and aquatic habitats.¹⁶³

CSF is currently operating in priority catchments across 46% of the total utilisable agricultural area in England, either with support from Catchment Sensitive Farming Officers (CSFOs) or with support delivered in partnership with local organisations, called strategic partnerships (see **Figure 48**).

¹⁶³ Natural England (2013) *Catchment Sensitive Farming* [online] available at: <https://www.gov.uk/catchment-sensitive-farming> (accessed 09/09/2013)

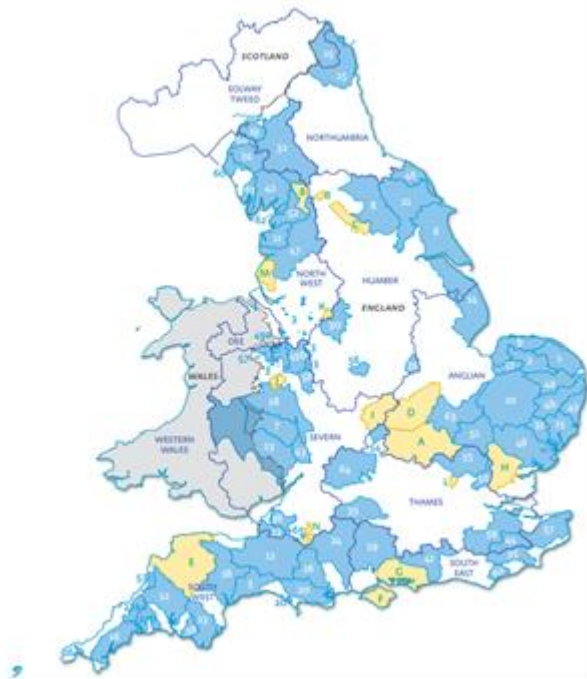


Figure 48: Catchment Sensitive Farming (CSF) Catchments¹⁶⁴

An evaluation of the first six years of CSF shows that advice has been delivered to almost 13,000 holdings covering an area of 1.94m hectares; 57% of holdings have implemented specific recommendations made to reduce water pollution; and monitored pollutant levels have reduced by up to 30%. Since the evaluation in June 2011, further assessments have found:

- CSF delivers a range of benefits that go well beyond the primary objective of improving water quality – these include soil quality, air quality, flood risk, climate regulation and water supply; and
- Signs of ecological improvements amongst freshwater macro-invertebrates in the River Dove (Peak District) following CSF delivery.¹⁶⁵

Uptake of the CSF Programme is increasing and 2013 was the biggest year for applications to the scheme. By the end of July over £11 million of grant awards had been offered to farmers but, with more than twice the number of applications received than in previous years, the grant scheme's budget of £15.5 million has been oversubscribed and grants will be allocated on a competitive basis this year.¹⁶⁶

¹⁶⁴ Natural England (2012) *Catchment Sensitive Farming (CSF) catchments* [online] available at: http://www.naturalengland.org.uk/Images/catchment-map_tcm6-26030.pdf (accessed 09/09/2013)

¹⁶⁵ IBID

¹⁶⁶ Natural England (2013) *Most popular year yet for applications to Catchment Sensitive Farming capital grant scheme* [online] available at: http://www.naturalengland.org.uk/about_us/news/2013/060813.aspx (accessed 09/09/2013)

Future baseline under the business as usual scenario

Whilst water abstraction from agriculture accounts for a relatively small proportion of England's total, it is still an important element. The level of abstraction and agricultural productivity are closely linked to climate change and water scarcity. In areas such as the East and South East of England, the availability of water for agriculture is likely to come into conflict with the availability of water for domestic use as the population increases. This is likely to be exacerbated by any increase in the demand for food, particularly that grown in England i.e. water resources face a joint demand from an increasing population and an increasing demand for food. With or without the programme, this exacerbation is likely to lead to increased unsustainable use of water (although support for water abstraction could help mitigate this).

Similarly, the demand for food and agricultural produce, combined with soil degradation may lead to increased application of fertilisers and a corresponding increase of pollution through run-off resulting in potentially higher levels of water courses and a reduction in water quality.

What are the key issues that should be the focus of the SEA?

1. Agricultural demand for water is comparable to that made by manufacturing industry; changes in water availability as a result of climate change may make this issue increase in importance in the future.
2. Water pollution associated with run-off from agricultural activities has reduced in recent years for some substances, whereas others are less well understood. However, wider improvements in the performance of industry and urban wastewater treatment have been more rapid, and agriculture is now the main factor in water pollution.
3. Agricultural practices such as land management schemes also have an influence on the speed with which rainwater enters rivers and contributes to flooding.

SEA Framework questions - will the Rural Development Programme?

- Ensure adequate water supply and quality?
 - Create businesses resilient to future water scarcity?
 - Encourage water resource efficiency?
 - Reduce rates of abstraction?
 - Reduce water pollution?
 - Promote better environmental practice amongst farmers and land managers?
 - Reduce service water runoff?

Rural economy

This section sets out the policy context and the environmental baseline with respect to the rural economy. It is important to note that the rural economy has important inter-relationships with other topics, in particular tourism and countryside access, biodiversity and nature conservation, human health, woodlands, landscape and cultural heritage and climate change adaptation.

What's the policy 'context'?

Internationally established objectives

In 2010, the European Union published its strategy for achieving growth up until 2020.¹⁶⁷ **Europe 2020: A strategy for smart, sustainable and inclusive growth** sets out a focus for growth across the European Union. It focuses on:

- **smart growth**, through the development of knowledge and innovation;
- **sustainable growth**, based on a greener, more resource efficient and more competitive economy; and
- **inclusive growth**, aimed at strengthening employment, and social and territorial cohesion.

A suite of **European Strategic and Investment Funds** (ESIF) will help deliver this strategy. Delivery will be via a set of programmes and plans at Member State and regional level. As noted in Chapter [], ESIF include **Rural Development Programmes** (EAFRD), alongside the **European Social Fund** (ESF), the **European Regional Development Fund** (ERDF) and the **European Maritime and Fisheries Fund** (EMFF).

Nationally established objectives

The **Local Growth White Paper** notes that Government interventions should support investment that will have a long term impact on growth, working with markets rather than seeking to create artificial and unsustainable growth. In some cases this means focusing investment at areas with long term growth challenges, so that these areas can undergo transition to an economy that responds to a local demand. Places that are currently successful may also wish to prioritise activity to maximise further growth by removing barriers, such as infrastructure constraints. However, the White Paper also emphasises that: 'This does not mean that every place will grow at the same rate or that everywhere

¹⁶⁷ European Commission (2010) Europe 2020: A strategy for smart, sustainable and inclusive growth [online] available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF> (accessed 11/12)

will, or will want to, become an economic powerhouse. Long term economic trends make differences in economic performance inevitable and these can and do change over time’.

The Local Growth White Paper identifies that economic policy should be judged on the degree to which it delivers strong, sustainable and balanced growth of income and employment over the long-term. More specifically, growth should be: broad-based industrially and geographically, ensuring everyone has access to the opportunities that growth brings (including future generations), whilst also focused on businesses that compete with the best internationally.

The **Rural Economy Growth Review**¹⁶⁸ indicated the principle reasons for slow growth in the countryside economy included: lack of business premises; slow internet connections; and the diffuse and fragmented nature of business communities. It identified a number of measures to enable rural businesses to grow and diversify, to support rural tourism, to expand the food and drink sector, to deliver green growth and to reduce regulation on farms.

The **Government’s Rural Statement 2012**¹⁶⁹ set out the Government’s commitment to Rural England. Its vision was set around three key priorities:

- “Economic Growth – we want rural businesses to make a sustainable contribution to national growth;
- Rural Engagement – we want to engage directly with rural communities so that they can see that Government is on their side; and
- Quality of Life – we want rural people to have fair access to public services and to be actively engaged in shaping the places in which they live.”

The **Foresight Report on The Future of Food and Farming** concluded that global food supply must be increased through sustainable intensification, which it defined to mean simultaneously raising yields, increasing the efficiency with which inputs are used and reducing the negative environmental effects of food production.¹⁷⁰

Driving Export Growth in the Farming, Food and Drink Sector: A Plan of Action¹⁷¹ sets out a series of actions, agreed by Government, that aim to drive export growth in the farming industry. The actions will do this by:

- opening markets and removing trade barriers;
- building a business mind-set of exporting as a key route to growth;

¹⁶⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183289/rural-economic-growth-review.pdf

¹⁶⁹ Defra (2012) *Rural Statement 2012* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69597/pb13814-rural-statement.pdf (accessed 09/09/2013)

¹⁷⁰ Foresight. *The Future of Food and Farming* (2011). Final Project Report. The Government Office for Science, London [online] available at: www.bis.gov.uk/assets/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf (accessed 1 July 2013).

¹⁷¹ Defra (2012) *Driving Export Growth in the Farming, Food and Drink Sector: A Plan of Action* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69488/pb13702-food-export-actionplan.pdf (accessed 09/09/2013)

- encouraging more SMEs to explore overseas opportunities and supporting those who already export to do more; and
- shifting the focus of the sector towards the opportunities of emerging economies where there is the greatest future growth potential.

The **UK Strategy for Agricultural Technologies**¹⁷² aims to identify and develop the strengths and opportunities of the agri-tech sector for the first time. The strategy recognises the UK's strengths in basic research and an opportunity to develop products, science and farming practices which could contribute toward the sustainable intensification of agriculture and potentially impact on global markets. However it also recognises that the UK applied research infrastructure and the productivity of UK farming relative to its competitors has declined over the past 30 years. The strategy sets out 14 actions to deliver the vision of the UK becoming a world leader in agricultural technology. The actions aim to address major themes in the agri-tech industry: science base; food and farming supply chain; and access to global markets.

Key messages from the National Planning Policy Framework include -

- Capitalise on 'inherent strengths', and to meet the 'twin challenges of global competition and of a low carbon future'.
- Support new and emerging business sectors, including positively planning for 'clusters or networks of knowledge driven, creative or high technology industries'.
- Support the sustainable growth and expansion of all types of business and enterprise in rural areas and promote the development and diversification of agricultural and other land-based rural businesses.

What's the 'baseline'?

Current baseline

Market failures

There are a wide range of market failures in the rural economy which limit private sector investment in environmental services and infrastructure. A market failure occurs when the market does not allocate scarce resources to generate the greatest social welfare. Common forms of market failure include externalities and the presence of public goods¹⁷³ (i.e., of goods which are non-excludable and non-rival). These will typically introduce a gap between the optimal provision of relevant goods and services and what the market is prepared to deliver at prevailing market prices.

¹⁷² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/227259/9643-BIS-UK_Agri_Tech_Strategy_Accessible.pdf

¹⁷³ In an economic sense public goods are goods that are non-excludable and non-rival. A good is non-rival if the consumption by one person does not diminish the ability of others to consume it. A good is non-excludable if a person cannot be excluded from consuming that good. Public goods that exhibit both characteristics (e.g. a pleasant rural landscape) are pure public goods.

In the case of the Rural Development Programme the overarching market failure is the presence of environmental externalities (both positive and negative) associated with land-based activities. However, market failures can also hamper take up of new technologies, the development of skills and generally hold back the performance of the rural economy. The Rural Development Programme seeks to address these market failures by encouraging land managers to invest more in the provision of environmental (or ecosystem) services and by promoting investments in technology, skills and infrastructure. These actions in turn often have spill over benefits on wider sectors that are important for the rural economy, such as tourism.

Rural growth

Businesses in rural areas make a substantial contribution to the national economy. Gross Valued Added from Predominantly Rural Areas was £211bn in 2010 (19% of the total for England) and rural areas provide around 20% of England's employment. Recent population trends suggest that the importance of rural areas to national growth will continue to grow.

Despite their strong economic performance, the Rural Economy Growth Review¹⁷⁴ identified a remaining gap in productivity between rural and urban areas. One of the fundamental differences is that rural areas tend to be more distant from concentrated economic activity and the associated productivity benefits (or agglomeration economies) for businesses. These benefits include knowledge transfer, thick labour markets, and access to supplier and customer markets. A consequence of being at distance from agglomeration is that knowledge transfer is weaker, labour and skills are more sparsely spread, and upstream and downstream markets are more difficult to access.

Investment in infrastructure (such as accessibility to broadband internet connection) can increase agglomeration economies for rural businesses to a level that is comparable to that enjoyed by businesses located in more densely populated areas. However positive externalities from agglomeration are not factored into market decision, so there is a case in principle for Government support.

Specific market failures can also act as barriers to growth in other sectors of rural development such as tourism. A Deloitte report¹⁷⁵ suggests the 'free rider' problem inhibits growth in the visitor economy. Individual businesses such as hotels in a rural town may consider other accommodation providers as competitors for business, rather than as complementary suppliers to a global market for tourism. As a result, individual accommodation providers are unlikely to invest in marketing a destination (town, region or country) as opposed to their own business within that place and there is little incentive for individual businesses to join-up and market the area for the common good if others can benefit for free from their actions. By contrast support from Destination Management

¹⁷⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/86100/Rural_Economy_Growth_Review.pdf

¹⁷⁵ The Economic Case for the Visitor Economy. Deloitte 2008

Organisations can enable better coordination of marketing activity to advertise what the region offers on the whole and attract more visitors, bringing benefits to the wider sector.

Productivity

Whilst it is clear that urban areas contribute more to the English economy than non-urban (68% to rural 31%) it is still a significant element of the country's Gross Value Added (GVA). In 2010, GVA from Predominantly Rural areas contributed £211bn. This compares with Predominantly Urban areas (£751bn) and 12% from Significant Rural areas (£137bn).¹⁷⁶

Figure 49 shows the split of rural productivity by industry. This shows that finance and information industries are not as well represented in rural areas as they are in urban areas, and that in rural areas, production, as a percentage of GVA, is higher than in urban areas.

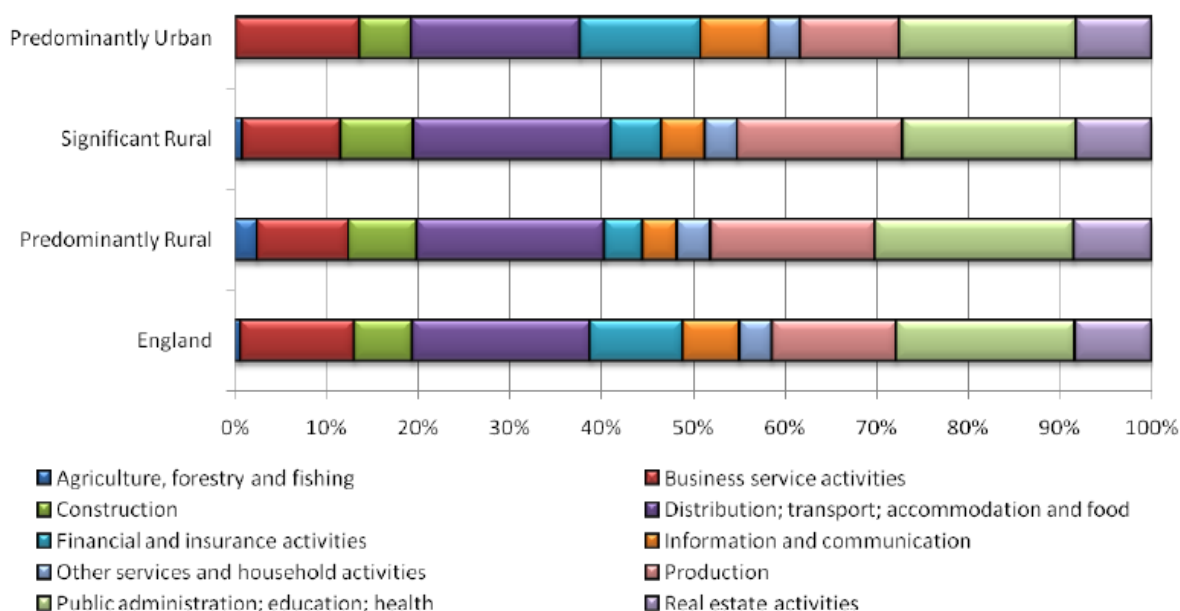


Figure 49: Percentage breakdown of GVA by industry, and by local authority classification in England, 2010

Productivity (GVA per workforce job) in predominantly rural areas has changed little between 2001 and 2010.

¹⁷⁶ Defra (2013) *Rural Productivity* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226750/Productivity_Aug2013.pdf (accessed 09/09/2013)

Enterprise

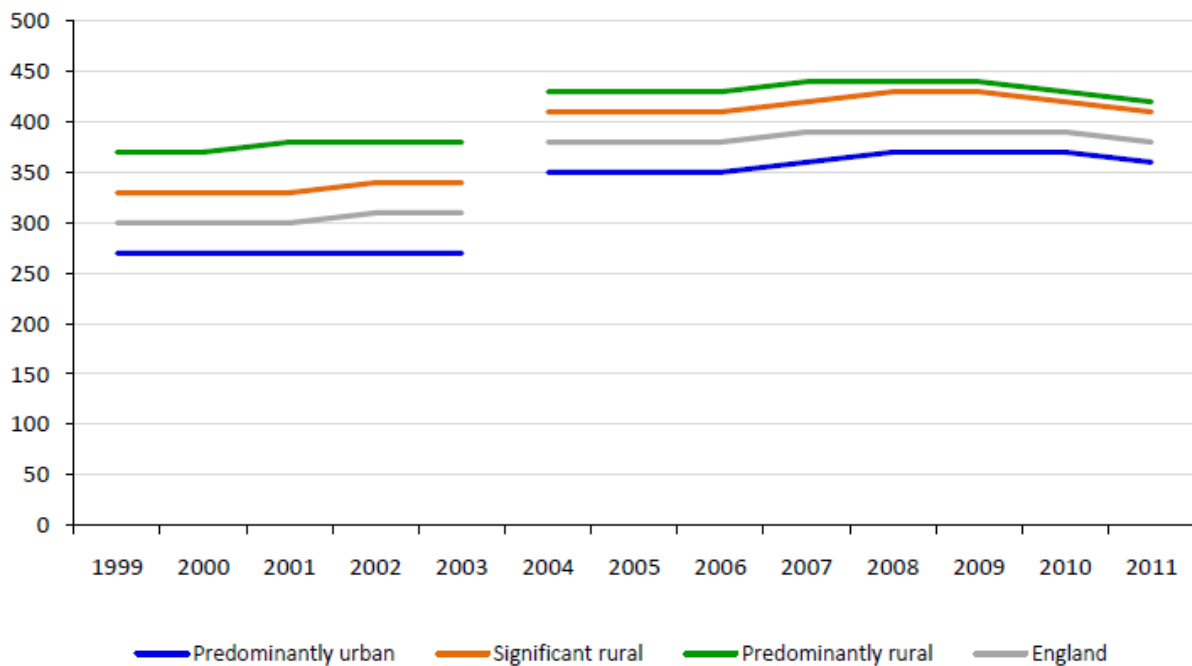


Figure 50: Businesses per 10,000 population, by broad Local Authority Classification in England, 1999 to 2011

Figure 50 illustrates the number of businesses per 10,000 population by Local Authority Classification in England. The number of businesses in significant rural and predominantly rural areas is above both the England and predominantly urban areas (although the gap has got closer in more recent years).¹⁷⁷

In terms of business start-ups, pre 2003 there were more in rural areas (both significant and predominantly rural) than in predominantly urban areas and across England. Subsequent to 2004, this relationship has reversed with predominantly urban areas having a significantly higher rate of business start-ups than rural areas.

¹⁷⁷ Defra (2013) *Rural Enterprise* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/194219/Enterprise_Apr_2013.pdf (accessed 09/09/2013)

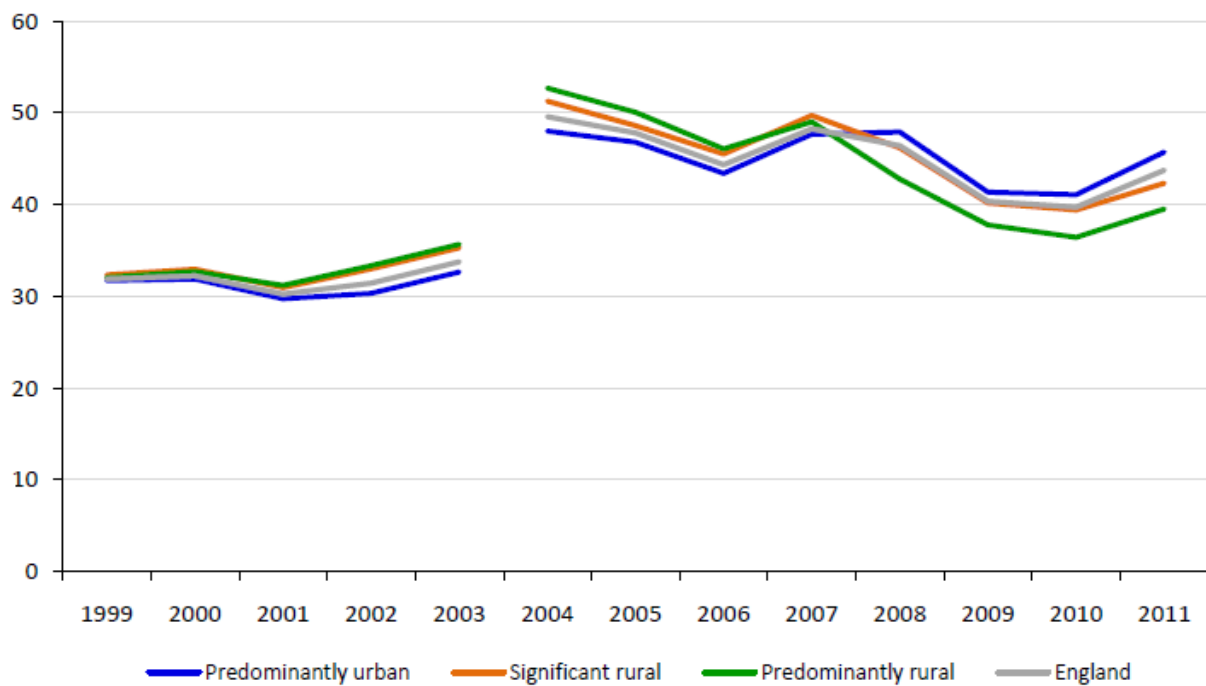


Figure 51: Business Start-Ups per 10,000 population, by broad Local Authority Classification, in England, 1999 to 2011

Agriculture, forestry and fishing accounts for more than half the enterprises in sparse rural hamlets. This proportion generally reduces as the land use becomes more urban. Agriculture, forestry & fishing accounts for 15.9% of businesses in rural areas overall.

Since 2010/11, there has been an increase of 1.3% in the number of businesses in all rural areas, compared with increases of 4.3% in urban areas and 3.5% in England. However, there was decreased of 0.5% in sparse rural town & fringe areas.

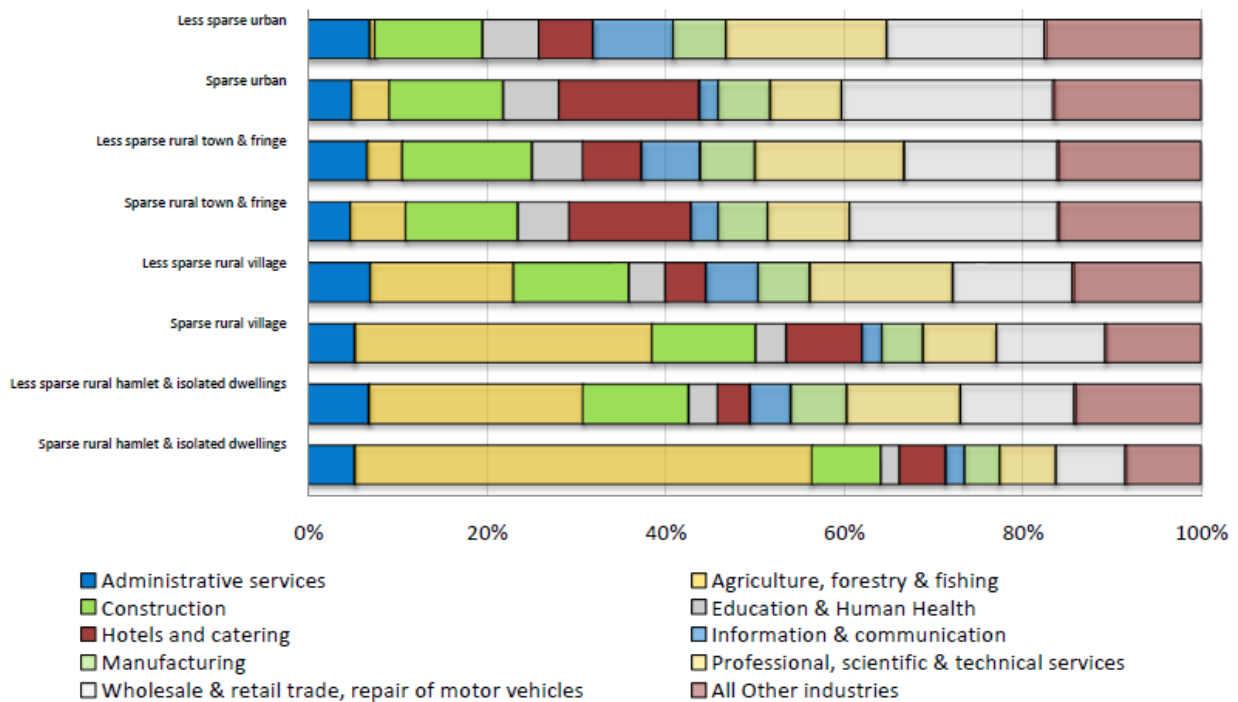


Figure 52: Percentage of Enterprises by Industry, 2011/12

In urban areas around 60% of employees in businesses are employed in large businesses (those with over 250 employees), while only around 12% of employees are employed in micro businesses. In sparse rural areas, more people are employed in micro and small businesses than in large businesses.

Investment

For predominantly rural areas, investment per head was consistently lower than the England average. In 2010 investment was £4.6k per head in London compared with £2.4k in Rural-80 areas.

Outside of London, Capital investment per employee was generally highest in Other Urban areas, and was £3.1k per head in 2010, whilst rural areas and Major Urban areas outside of London saw the lowest investment per employee.

All types of area saw a decrease from 2008 which is likely to reflect the wider economic situation, with less investment during the recession.¹⁷⁸

¹⁷⁸ Defra (2013) *Rural Investment* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/83057/Investment_Jan_2013.pdf (accessed 09/09/2013)

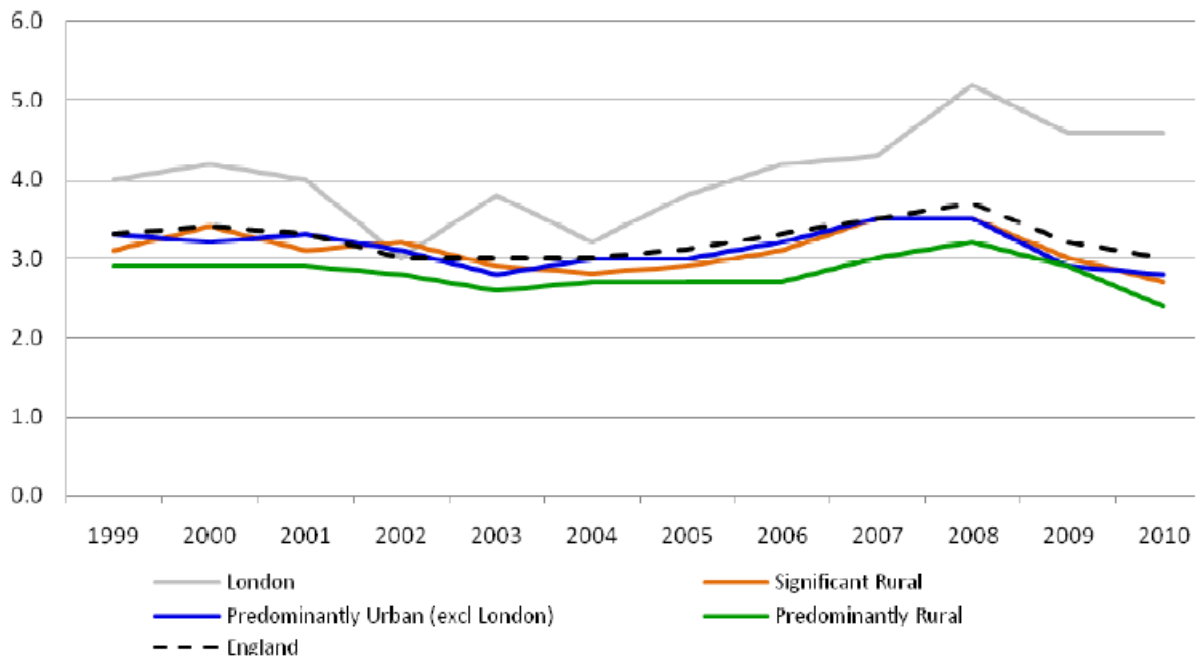


Figure 53: Capital investment per employee (at current prices) (£000), by local authority classification in England, 1999 to 2010

Economic Activity

The employment rate in 2011 was higher in rural areas (74.6%) than in urban areas (69.2%), but has fallen for both in recent years. It was highest in Less Sparse Village and Dispersed areas (75.0%) and lowest in Less Sparse Urban areas (69.2%).

Employment rates have been consistently higher in Less Sparse Rural areas than in Sparse Rural areas.

Employment is crucial for economic growth and social wellbeing and the steady decrease in the employment rate from 2007 can be attributed to the economic downturn.

The latest England employment rate for September to November 2012 was 71.8% up 0.3 percentage point on June to August 2012 and up 1.3 percentage point on a year earlier. It is not yet possible to analyse these later figures in terms of settlement type.¹⁷⁹

¹⁷⁹ Defra (2013) *Rural Economic Activity* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/83024/Economic_Activity_Jan_2013.pdf (accessed 09/09/2013)

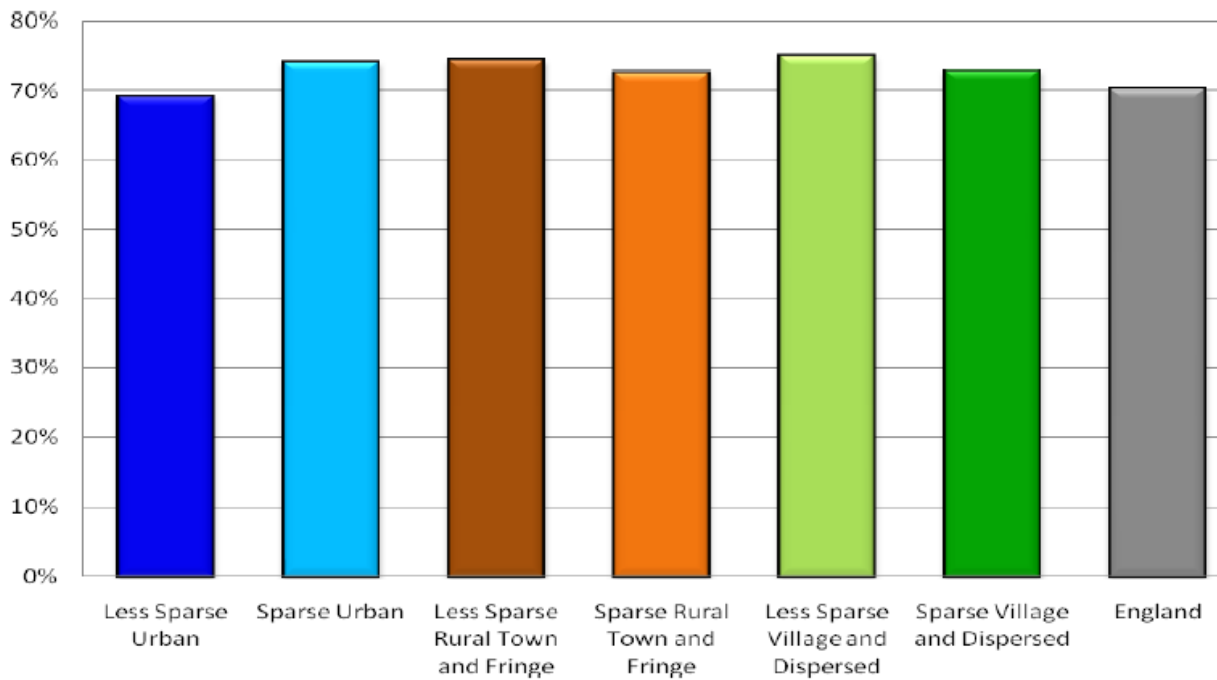


Figure 54: Employment as a percentage of working age population, by settlement type in England, 2011

The unemployment rate in rural areas in 2011 was 5.2%. The unemployment rate has followed a similar pattern in rural and urban areas.

Unemployment is costly to the individual (financially and socially), and also to the public purse (as many benefits payments are linked directly to unemployment or to low income, and there may also be indirect impacts on crime rates). There was a sharp increase in unemployment at the start of the recession between 2007 and 2009, and has since stabilised at around 8% nationally.

The unemployment rate has tended to be highest in urban areas and lowest in Less Sparse Rural Village and Dispersed areas. The trends for sparse areas have fluctuated and this may be owing to the small sample populations rather than genuine changes.

The latest England unemployment rate for September to November 2012 was 7.7% of the economically active population, down 0.1 percentage points on June to August 2012 and down 0.7 percentage points on a year earlier. It is not yet possible to analyse these later figures in terms of settlement type.

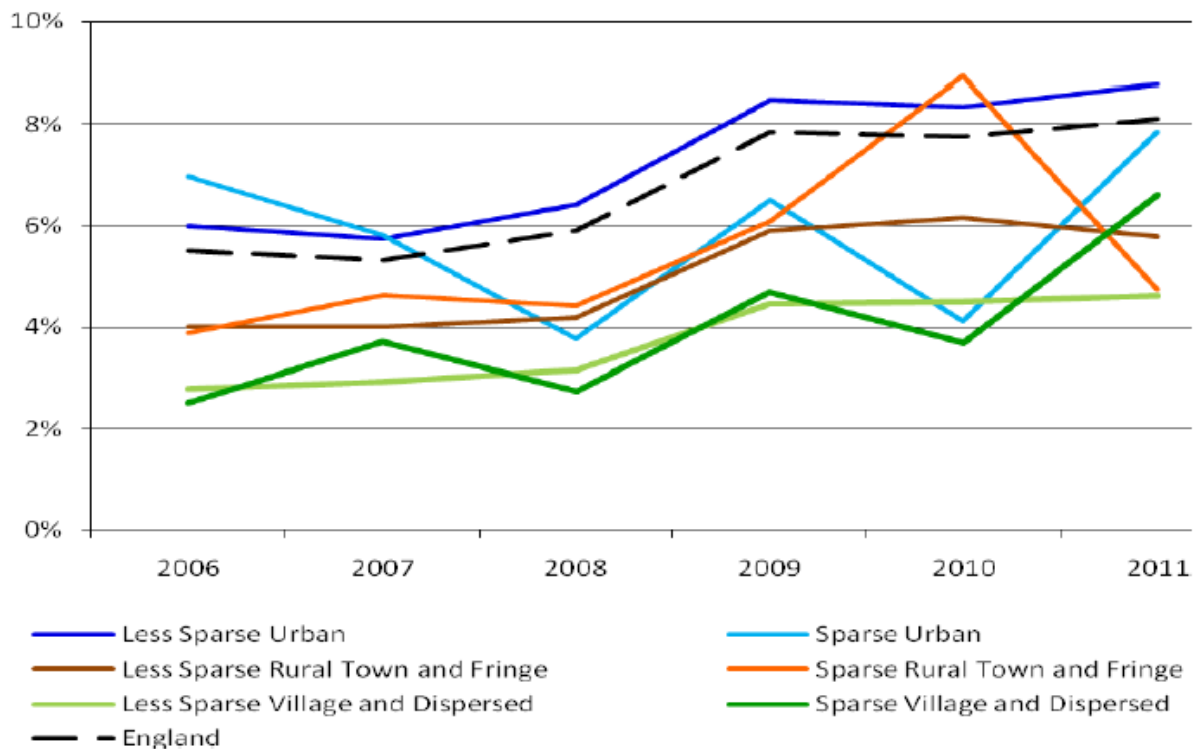


Figure 55: Unemployment as percentage of economically active working age population, by settlement type in England, 2006 to 2011

Access to superfast broadband

Effective, reliable and fast communications are vital for the economic prosperity and social sustainability of rural England¹⁸⁰. The average broadband speeds in rural areas are considerably lower than speeds in urban areas. In 2012 the average broadband speed in *sparse hamlets & isolated dwellings* was 4.4 Mbit/s compared with 14.8 Mbit/s in *less sparse urban areas*.

Rural Community Renewable Energy

According to BIS statistics¹⁸¹, the renewable energy sector is worth £37bn, with the largest part of this being wind power (14bn). The next largest contributors to the UK renewable energy sub-sectors are Geothermal (£10.7bn), Biomass (£5.7bn) and Photovoltaic (£5.3bn). Rural communities, particularly those in remote and upland areas that are not on the mains gas supply and are often dependent on more expensive forms of fuel supply such as bottled gas and heating oil – which can lead to problems of fuel poverty.

A major barrier that restricts the growth in rural community renewable energy projects is access to finance. For example, the costs of the development process for projects of 500KW upwards, particularly pre-planning, can be significant (in the region of £100,000) and the risk that proposals may fail to achieve planning permission means that commercial

¹⁸⁰ The DCMS Strategy for broadband, Britain's Superfast Broadband Future.

¹⁸¹ Low Carbon Environmental Goods and Services (LCEGS) Report for 2010/11 (BIS, 2012)

lenders are reluctant to lend money for individual projects, and other investors may want ownership of the project proposal in return for their investment. The next RDP may provide support to communities in overcoming costs associated with carrying out feasibility studies and securing planning permission.

Skills

The Statistical Digest of Rural England highlights the following key points with regard to skills in rural areas:¹⁸²

- Residence based skills:
 - The proportion of working age population with at least one qualification was consistently highest for people living in rural areas. In 2011, 91.3% of working age people living in predominantly rural areas had at least one qualification.
 - The proportion of working age population with NVQ2 or above was consistently higher for people living in rural households than for those living in urban households. However for those with NVQ4 and above the proportions was similar regardless of where people lived.
- Workplace based skills. When these skill levels are looked at from a workplace based perspective, a higher proportion of people working in predominantly urban have qualifications at NVQ4 or above than those working in Predominantly rural areas. One reason for this is that businesses that can utilise these skills are based in urban areas where they can benefit from better infrastructure and a larger potential workforce.
 - The proportion of working age population with at least one qualification was generally higher for those working in predominantly rural areas than those working in predominantly urban areas, 94.6% and 93.8% respectively.
 - In 2011, the proportion of working age population with NVQ Level 2 or above working in predominantly rural areas was 76.2% and 75.0% respectively, which was lower than predominantly urban areas.
 - In 2011, the proportion of working age population with NVQ Level 4 or above working in predominantly rural areas was 35.8%, which was lower than the 39.8% of people working in predominantly urban areas
 - In 2011, the proportion of employees, self-employed people and trainees who had received on the job training in the previous 4 weeks working in predominantly rural areas was 12.8%.

Innovation

Figure 56 shows the proportion of businesses engaged in innovation related activities between 1st January 2006 and 31st December 2008, split by the rural/urban definition of the head office location. Sparse areas show higher levels of innovation than less sparse

¹⁸² Defra (2013) Statistical Digest of Rural England [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239299/Statistical_Digest_of_Rural_England_2013_September_Update.pdf (accessed 12/09/2013)

areas in each of the rural/urban categories, with Sparse Urban areas having the highest proportion at 73%. Overall, urban areas have slightly higher levels of businesses engaged in innovation than rural areas.¹⁸³

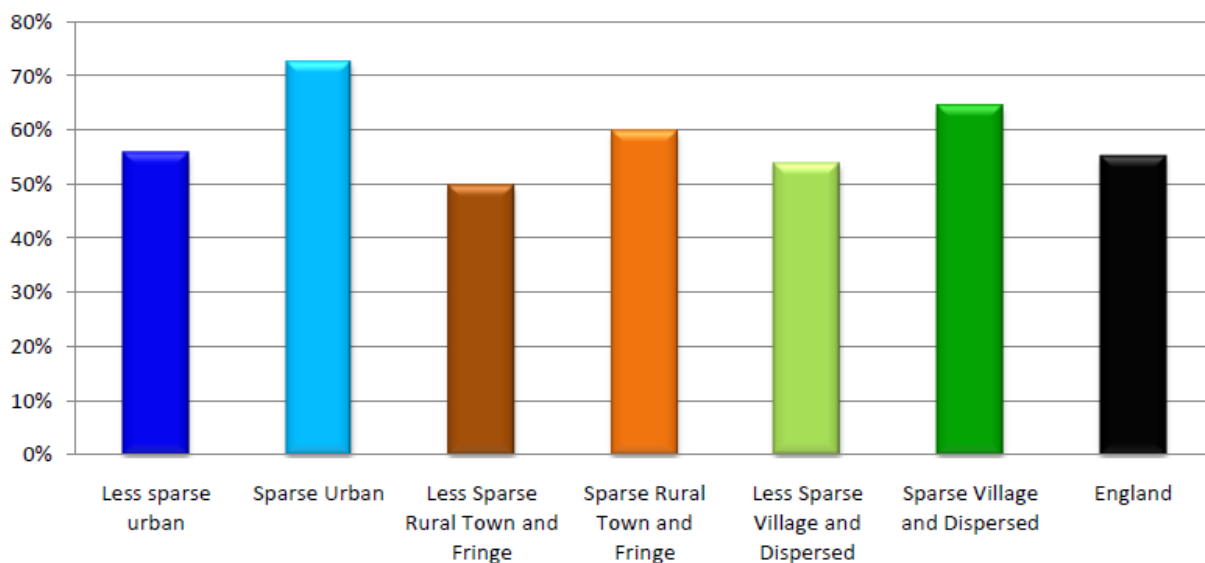


Figure 56: Proportion of Businesses Engaged in Innovation Related Activities, 2006-08

Innovation in the agricultural sector

Innovation is one of the key drivers of productivity growth in agricultural businesses, alongside the adoption of new technologies and cost reductions as a result of economies of scale.¹⁸⁴ In the agricultural sector, UK productivity has been in decline relative to its major competitors for the past three decades, and there is evidence that a lack of expenditure on public research and development is one of the causes for this¹⁸⁵. The Agritech Strategy aims to address this, through an additional £160 million match funded spend on applied and translational research and infrastructure, amongst other measures. Actions through the RDPE could play a supporting role in improving the skills of farmers, supporting the dissemination of new products and processes and bringing together farmers with researchers to make the research agenda more responsive to the needs of farmers.

Future baseline under the business as usual scenario

It is likely that rural areas will continue to experience little change in productivity. Rural areas may continue to decline in terms of businesses per 10,000 population, although it is unlikely that urban areas would pick up the slack i.e. urban areas would also continue to decline. It is also likely that business start-ups will remain lower than in urban areas,

¹⁸³ Defra (2013) *Rural Innovation* [online] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/83053/Innovation.pdf (accessed 09/09/2013)

¹⁸⁴ OECD, *Fostering Competitiveness and Innovation in Agriculture*, 2011

¹⁸⁵ Thirtle and Holding (2004) *Causes and constraints*

reflecting a more recent trend. Whilst there has been an increase in rural businesses as a whole, which is likely to continue, there has been a decrease in sparse rural towns and fringe areas.

A key issue for the SEA will be to consider the extent to which the RDP secures an appropriate balance between the two aspects: sustainability and intensification. In undertaking the assessment, we would take into account the latest thinking on sustainable intensification, including Defra's working paper on the new Sustainable Intensification Research Platform.¹⁸⁶

What are the key issues that should be the focus of the SEA?

1. Rural areas have experienced little change in levels of productivity.
2. Rural areas have worsening levels of enterprise, with declining numbers of businesses and start-ups.
3. Capital investment in rural areas has declined since 1999 levels, particularly in predominantly rural areas.
4. Rural economic growth interventions may impact on the environment – a consideration of the net impact should be undertaken.

SEA Framework questions - will the Rural Development Programme?

- Ensure a vital and vibrant rural economy?
 - Increase rural economic productivity?
 - Increase the number of businesses in rural areas, including start-ups?
 - Increase or safeguard the number of jobs?
 - Increase renewable energy production in rural areas?
 - Increase the level of capital investment to rural areas?
 - Increase the competitiveness of the farming, food and drink sector?
 - Increase levels of innovation in the farming, food and drink sectors and within rural areas?

¹⁸⁶ Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/166323/Sust-Int-platform-working-paper8.pdf.pdf (accessed 1 July 2013).

Tourism & countryside access

This section sets out the policy context and the environmental baseline with respect to tourism and countryside access. It is important to note that to tourism and countryside access has significant inter-relationships with other topics, in particular biodiversity and nature conservation, human health, landscape and cultural heritage and climate change adaptation.

What's the policy 'context'?

Nationally established objectives

The **Rural Tourism Action Plan** sets out Visit England's action plan for maximising "*the potential of the rural tourism offer... in the England tourism market by 2020.*" The plan has three objectives:

1. To diversify and modernise rural tourism products to generate business opportunities suited to local environments and communities and to develop a year round visitor offer.
2. To increase consumer awareness, understanding and enjoyment of the products and experiences available in rural areas.
3. To encourage rural communities and economies to benefit from the value of rural tourism by taking ownership for the development, management, protection and conservation of rural assets and locations.

The 2011 **Natural Environment White Paper**¹⁸⁷ also recognises the importance of access to green space and rural areas and sets commitments to:

- Ensure every child is given the opportunity to experience and learn about the natural environment. The Importance of Teaching policy, for example, aims to remove unnecessary rules and other barriers to learning in the natural environment.
- Improve public health by connecting people with nature such as through employing Directors of Public Health within upper tier and unitary local authorities to influence local services, for example joining up activity on rights of way, countryside access, and green space management.
- Establish mechanisms for formally identifying and protecting urban Quiet Areas, so that people living in cities can benefit from access to areas of relative quiet for relaxation and contemplation.
- Improve and extend the network of well-maintained paths and bridleways to give cyclists, walkers and horse riders' access to the natural environment. For example,

¹⁸⁷ HM Government (2011), '*The Natural Choice: securing the value of nature*'.

through Local Access Forums and Rights of Way Improvement Plans, making it easier for local communities and civil society groups to get involved in developing and maintaining networks of paths and accessible green space, and simplifying and streamlining the processes for recording and making changes to public rights of way.

- Help local transport authorities do more to encourage walking and cycling, improve public transport and make better connections between different forms of sustainable transport through a £560 million Local Sustainable Transport Fund.

What's the environmental 'baseline'?

Current baseline

Tourism

The 2012-13 Monitor of Engagement with the Natural Environment (MENE) survey found that around 41 per cent of the English adult population visited the natural environment during the previous seven days. The most popular activity was dog walking with 1.4bn visits. In total, the 42.4 million adults resident in England took 2.85 billion visits to the natural environment. 47 per cent, or 1.35 billion, of these visits were to places in the countryside, while green spaces within towns or cities accounted for 43 per cent, or 1.22 billion, visits.¹⁸⁸

MENE data also suggests that visit levels have not been static over the past four years; experiencing a peak at 2.86bn in 2009 before falling to 2.49bn and then rising over the last two years.¹⁸⁹ The proportion of visits to the countryside significantly decreased from 52 per cent of all visits in 2011/12 to 47 per cent in 2012/13. Conversely, the proportion of visits to green spaces within towns and cities increased significantly from 38 per cent of all visits in 2011/12 to 43 per cent in 2012/13.¹⁹⁰

A number of studies have highlighted the benefits and monetary value that arise from being able to access environmental settings for recreation, leisure, and tourism. People making leisure trips to the natural environment, for example, make a contribution to the economy from both direct and indirect expenditure associated with the trip. Total spend by visitors to the natural environment between March 2010 and February 2011 was estimated to be £17.2 billion and average spend per person for those visits that incurred spend was

¹⁸⁸ Natural England (2013), 'Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment', Natural England Commissioned Report NECR122. The survey took place between March 2012 and February 2013.

¹⁸⁹ Natural England (2013) *Monitor of Engagement with the Natural Environment : Key findings from the survey* [online] available at: http://www.naturalengland.org.uk/Images/mene-infographic-report-2012-13_tcm6-36346.pdf (accessed 09/09/2013)

¹⁹⁰ Natural England (2013), 'Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment', Natural England Commissioned Report NECR122.

£29.69. Just over a half (53 per cent) was spent on food and drink, with 13 per cent on petrol and diesel, and 15 per cent on admission fees.¹⁹¹

Tourism in rural areas also creates employment and opportunities for business growth where other opportunities may be limited, as well as maintaining and protecting existing jobs, micro businesses and those self-employed in rural areas.

Tourism also provides the ability to supplement the income streams of businesses operating or fixed in rural locations, a good example of this is farm diversification. This can help maintain the environmental and landscape qualities which are valued by visitors, communities and businesses alike. Tourism supports the economic viability of communities. Local services and amenities, such as shops, pubs, restaurants, transport and postal services are all supported and sustained by visitors to rural areas.

It is estimated that visits by UK residents to the countryside and/or villages contribute £5.5 billion annually to the economy in England and the total value to the economy from income generated from expenditure on walking trips (including jobs and services supported) was estimated in 2003 to be between £1.47 billion and £2.76 billion; supporting between 180,500 and 245,500 full-time equivalent jobs.¹⁹²

Access

Access and accessibility are also important.

Allowing people to access and value the landscape increases quality of life and can also be a driver for landscape preservation and change:

- Public rights of way – in England there are some 146,000 km of footpath, 32,000 km of bridleway and 10,000 km of other rights of way.
- Open access - the public currently have access rights over around one million hectares (3,861 square miles), representing about 8% of the country.

According to MENE data, 66 per cent of all visits in 2012-13 were taken within two miles of home and around 45 per cent of visits to seaside/ coastal destinations involved travelling by car, while the majority of countryside and urban visits were taken on foot.

Since 66% of visits taken in England are taken within two miles of the starting point, participation in visits over the previous week by residents of each region is likely to be associated with the amount of locally accessible green space, and the frequency at which visits are taken for routine purposes (for example dog walking).

There is also significant inequality in access to the natural environment. While 53 per cent of the population visit at least once a week, 9 per cent didn't visit at all in the last 12 months. People who visit the natural environment are more likely to be older, affluent, car

¹⁹¹ Natural England (2011), '*Summary of evidence: Access and Engagement*', Draft for consultation Version: First draft March 2010. Reviewed February 2011, November 2011.

¹⁹² Natural England (2011), '*Summary of evidence: Access and Engagement*', Draft for consultation Version: First draft March 2010. Reviewed February 2011, November 2011.

owning, in better health and white than the general population of England. Levels of participation are lower for those aged 65 and over, the Black and Minority Ethnic (BME) population, and members of the D&E social grades¹⁹³. There is also some evidence that the main users of the countryside are a relatively small group of people who visit time and time again.¹⁹⁴

The MENE survey found that the greatest barrier to visiting the outdoors is time, with 24% of people too busy at work and 15% too busy at home. The cost of visiting the outdoors affected 4-7% of visits; indicating that cost could be a barrier to access for a significant number of people. Cost increased in significance as a barrier over the four years of the survey from four per cent of respondents to seven per cent. In 2012/13 there was also a significant increase in the proportion of people citing bad weather, from five per cent in 2011/12 to 11 per cent in 2012/13, as a main reason for not visiting the natural environment.

There are, however, significant variations in the barriers facing particular groups in using the countryside. Amongst people from BME communities, the main factors restricting use of the countryside included the cost of visiting and problems linked to transport, a lack of knowledge of the English countryside and a 'cultural habit' of not visiting the countryside. Disabled people reported barriers such as a lack of knowledge of suitable facilities, as well as a basic lack of provisions for disabled people. Barriers preventing young people from experiencing the outdoors include a 'conceptualisation' by society of young people as a problem and threat, parental concerns and young peoples' concerns about safety. Overall it was found that under-represented groups want to enjoy the benefits of outdoor recreation but have concerns about lack of information, about not being made to feel welcome and about transport.¹⁹⁵

Legislative changes have contributed to improving access to some settings, with the Countryside and Rights of Way Act 2000 providing access to mountain, moor, heath and down and registered common land and the Marine and Coastal Access Act 2009 is enabling the same for access to the coast.¹⁹⁶ The current Environmental Stewardship scheme has also increased access infrastructure. In the last six years the scheme has funded: 2,620 kilometres of permissive routes for walking, horse riding and cycling, and 50 kilometres to improve access for those with reduced mobility; 4,267 hectares of permissive open access; 207 footbridges; and 14,500 gates. The total cost of these access improvements is £25.5 million. In 2008/09 the scheme funded 8,037 school and group visits and supported 100,000 children to visit the natural environment.¹⁹⁷

¹⁹³ 'D' are Semi and unskilled manual workers, 'E' are State pensioners, casual or lowest grade workers, unemployed with state benefits only

¹⁹⁴ Natural England (2011), *Summary of evidence: Access and Engagement*, Draft for consultation Version: First draft March 2010. Reviewed February 2011, November 2011.

¹⁹⁵ Natural England (2011), *Summary of evidence: Access and Engagement*, Draft for consultation Version: First draft March 2010. Reviewed February 2011, November 2011.

¹⁹⁶ UNEP-WCMC (2011) 'Cultural Services', *UK National Ecosystem Assessment*: , , Cambridge.

¹⁹⁷ Natural England (2011), *Summary of evidence: Access and Engagement*, Draft for consultation Version: First draft March 2010. Reviewed February 2011, November 2011.

Paths for Communities is a funding scheme set up to develop and enhance the network of Public Rights of Way (PROW) in England in order to deliver benefits to rural areas. The aim is to encourage and support local communities to work with land owners to make improvements to the network of Public Rights of Way.¹⁹⁸ P4C will operate over 2012 – 2014 with a £2m fund available. As of July 2013 £1.5m had been awarded by P4C. 40 k of Public Rights of Way had been created by the scheme as of Summer 2013.¹⁹⁹

Educational access

Environmental settings are valuable surroundings for outdoor learning and engaging with nature can lead to enhanced connectedness to nature and increased ecological knowledge. The Office for Standards in Education (Ofsted 2008) has recently published guidance on learning outside the classroom claiming that outdoor learning is more than just fieldwork for natural history or geography; it is the notion that learning for all disciplines can take place in outdoor settings. There is evidence that this leads to improved cognitive outcomes, better behaviour in the classroom and at home, and improved working conditions for teachers.²⁰⁰

Findings of the UKNEA suggest that the provision of education outside the classroom and the acquisition of ecological knowledge through green education could be improved. A government assessment of education outside the classroom in 2006 found that teachers involved with these activities, especially in primary schools, saw the objectives as being linked to personal development rather than the acquisition of knowledge. They also discovered that there was inequality of provision in terms of education outside the classroom: pupils from schools with low levels of achievement and in areas of high deprivation had fewer opportunities for visits to local sites away from school. In addition, there were regional inequalities, with teachers in schools in the North and the Midlands less likely to have undertaken such visits with pupils than teachers in the South of England.²⁰¹

Growing recognition of the educational importance of natural areas in documents such as the UK NEA and the Natural Environment White Paper has led to a growth in movements such as forest schools which emerged in the 1990s as a process to offer children, young people, and adults regular opportunities to achieve, develop confidence and self-esteem through hands-on learning experiences in a local woodland environment. The topics studied include the natural environment, the complex ecosystem supported by wilderness, recognition of specific plants and animals, teamwork and problem solving, as well as more abstract concepts such as mathematics and communication. A business plan for the Forest School National Governing Body (NGB) was published in February 2012, showing

¹⁹⁸ Natural England (Date unknown) Paths for Communities [online] available at:

<http://www.naturalengland.org.uk/ourwork/access/rightsofway/p4c.aspx> [accessed 12/09/13]

¹⁹⁹ Natural England (2013) P4C News - The Paths for Communities e-newsletter [online] available at:

http://www.naturalengland.org.uk/Images/p4c-newsletter-summer2013_tcm6-36341.pdf [accessed 12/09/13]

²⁰⁰ UNEP-WCMC (2011) 'Cultural Services', *UK National Ecosystem Assessment*: , , Cambridge.

²⁰¹ UNEP-WCMC (2011) 'Cultural Services', *UK National Ecosystem Assessment*: , , Cambridge.

that at least 9,000 people had been through the forest school training since 1995 and that more local authorities were taking on Forest School.²⁰²

There is also a growing level of interaction with schools and farms. The Access To Farms (ATF) network, for example, is a partnership of national organisations aiming to improve the opportunities and quality of educational access to farms by schools. Set up by the Federation of City Farms & Community Gardens (FCFCG) in 1999, ATF has 15 national partner members and has developed a database of farms providing educational access. The partnership shares information and good practice, arranges joint educational projects, provides training and manages an online database allowing teachers to identify the nearest or most suitable farm to visit.²⁰³

There are now more than 100 School Farms in the UK which aim to provide opportunities for students to increase their awareness and understanding of the countryside as a living, working environment through farming, rural skills and enterprise, and a number of schools are actively engaged in starting a new one. They are situated throughout the UK but with particular concentration in South East England and the West Midlands. The schools are relatively evenly located between rural and urban or semi urban environments, although the urban/sub urban category is marginally better represented (55.2%).²⁰⁴

Active travel

In total, 15% of residents in England walk or cycle at least once per month; a figure which is highest in the South East (18%) and lowest in the West Midlands (12%).²⁰⁵ The proportion of residents who cycle for at least 30 minutes at least once per month for recreational purposes was around 79% in 2011, with the highest proportion of recreational cyclists in the North West (85%) and the lowest in London (61%).²⁰⁶

The MENE survey data revealed that walking is the predominant method of transport to the countryside, with 62 per cent of visits to the countryside involved walking, 33 per cent using a car or van, one per cent using public transport, and five per cent using other forms of transport (including cycling). The vast majority of visits involving a journey of less than one mile were taken on foot. However, as the travel distance increased, the use of cars or vans increased, with 76 per cent of visits for journeys of five miles or more using a car or van. Use of other forms of transport such as cycling also increased with distance, reaching 9% of visits over 5 miles.²⁰⁷

²⁰² Forest Schools Association (2012) *History of Forest School* [online] available at:

<http://www.forestschoollassociation.org/history-of-forest-school/> (accessed 09/09/2013)

²⁰³ Federation of City Farms and Community Gardens (undated) *Education and Schools* [online] available at: <http://www.farmgarden.org.uk/education> (accessed 09/09/2013)

²⁰⁴ Saunders et al. (2011), 'The Living Classroom School Farms in the UK: a mapping survey'.

²⁰⁵ <https://www.gov.uk/government/statistical-data-sets/cw010-proportion-of-residents-walking-or-cycling-at-least-once-a-month>

²⁰⁶ <https://www.gov.uk/government/statistical-data-sets/cw080-proportion-of-people-usually-always-cycling-walking-doing-so-for-utility-recreation>

²⁰⁷ Natural England (2013), 'Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment', Natural England Commissioned Report NECR122.

Groups most reliant on local green spaces included those in the lower socio-economic groups with 48 per cent of visits taken by the D & E social grades taking place within one mile of the starting point, and people with no access to a car, 49 per cent of whom took visits within a one mile radius.

Future baseline under the business as usual scenario

Trips to the countryside appear to be on an upwards trend. This could in part be due to the current economic climate and the rise of 'staycation' tourism or through advertising and other publicity of the English countryside. Either way, we can assume that with increases in population, there will be an increased demand for tourism in rural areas. The continuing of existing agri-environment agreements should insure that permissive agreements continue whilst the agreements are in place.

What are the key issues that should be the focus of the SEA?

1. Tourism is a more significant generator of employment in rural areas than the agricultural sector.
2. Rural tourism is based to a very large extent on the quality of the landscape, and on the availability of activities in the countryside, including tranquillity, scenery, open space, fresh air, and plants and wildlife.
3. Recreational visits to the countryside have been increasing, and this increase is expected to continue.

SEA Framework questions - will the Rural Development Programme?

- Enable increased access to the countryside?
- Maintain, diversify and increase rural tourism?
- Enable communities to plan and manage their tourism assets?

4. Visits to cultural attractions are also increasing.
5. Access to the countryside is often linked to access to a motor vehicle. Therefore increased access to the countryside may have implications with regard to air quality.
6. Access provision enables people to enjoy the ecosystem services provide by the natural environment.

Woodland

This section sets out the policy context and the environmental baseline with respect to woodlands. It is important to note that woodlands have important inter-relationships with other topics, in particular biodiversity and nature conservation, human health, landscape and cultural heritage and climate change adaptation.

What's the policy 'context'?

Nationally established objectives

The government published its Forestry and Woodlands Policy Statement, which incorporated its response to the Independent Panel on Forestry's Final Report, in January 2013. This stated the government's agreement with the Panel on "*[t]he need to bring more woodland into active management and increase the extent of woodland cover in England*".²⁰⁸ With respect to woodland management, the government suggested that a 'shared woodland management programme', undertaken by the whole forestry sector, including government, could bring around two-thirds of woodland into active management over the next five years, with this figure eventually rising to 80% on the assumption that markets for wood products continue to develop. With regard to woodland creation, the government anticipated that "*closer and more effective joint working between Government and the [forestry] sector can deliver 12% woodland cover by 2060*". These aspirations represent a step change in levels of both management and creation and a key issue for the SEA will be to gauge the extent to which the Rural Development Programme is likely to deliver these ambitions.

²⁰⁸ Defra (2013). Government Forestry and Woodlands Policy Statement, Incorporating the Government's Response to the Independent Panel on Forestry's Final Report [online] available at: www.gov.uk/government/publications/government-forestry-policy-statement (accessed 03/09/2013).

What's the environmental 'baseline'?

Ecosystems services

The NEA emphasises that UK's woodlands provide an important range of ecosystem services and associated goods and benefits. These include:

- trees for timber;
- trees for bio/woodfuel;
- wooded catchments especially in the uplands provide important water supplies for major urban areas;
- carbon sequestration;
- soil protection;
- flood protection;
- water quality benefits;
- air quality benefits;
- noise reduction;
- habitat for wildlife; and
- recreation, education and cultural benefits.

Current baseline

The area of woodland in England at 31 March 2012 was estimated to be 1,295 thousand hectares – see **Table 16**. This equates to 9.9 % of England's total land area. ²⁰⁹

²⁰⁹ Forestry Commission (2012). Forestry Statistics 2012 - Woodland Areas and Planting [online] available at: www.forestry.gov.uk/website/forstats2012.nsf/LUContents/061E41873F94CC788025735D0034F33B (accessed 05/09/2013).

Table 16: Area of woodland by ownership & forest type at 31 March 2012. ²¹⁰

Ownership	England (Thousand hectares)
Conifers	
FC woodland	154
Non-FC woodland	180
Total	334
Broadleaves	
FC woodland	60
Non-FC woodland	900
Total	961
Total	
FC woodland	214
Non-FC woodland	1,081
Total	1,295

Figure 57 shows the distribution of woodland across England.

²¹⁰ Forestry Commission (2012). Forestry Statistics 2012 - Woodland Areas and Planting [online] available at: www.forestry.gov.uk/website/forstats2012.nsf/LUContents/061E41873F94CC788025735D0034F33B (accessed 05/09/2013).



Figure 57: Distribution of woodland 0.5ha and over in England²¹¹

The extent of woodland cover across England has almost doubled in the last hundred years – see **Table 17**.

²¹¹ Available at: [www.forestry.gov.uk/pdf/England_Map.pdf/\\$FILE/England_Map.pdf](http://www.forestry.gov.uk/pdf/England_Map.pdf/$FILE/England_Map.pdf) (accessed 05/09/2013).

Table 17: Woodland area in the United Kingdom²¹²

Year	England	
	(000 ha)	% ²¹³
1086	..	~15
c1350	..	~10
17thC	..	~8
1905	681	5.2
1924	660	5.1
1947	755	5.8
1965	886	6.8
1980	948	7.3
1995-99	1,097	8.4
2012 ²¹⁴	1,295	9.9

The type and density of woodland vary considerably across England. The high density of woodland in the South East includes large numbers of small broadleaved woods, whereas the large forests in the North East are predominantly coniferous. Large expanses of broadleaved woodland can also be found, for example, in the New Forest and the Forest of Dean. There are also estimated to be around 123 million trees outside of woodland in Great Britain.²¹⁵

Ancient woodland is defined as woodland that has been in continuous existence since 1600 while semi-natural woodland refers to woodland with natural characteristics (predominantly native species of trees, ground plants and animals) where wood production is not a primary objective.²¹⁶ According to the Forestry Commission, ancient semi-natural woodland (ASNW) tends to be richer in plants and animals than other woodland areas;²¹⁷ however, according to the NEA, before 1985 ASNW declined due to losses to agriculture and, to a lesser extent, development and through conversion to plantations of non-native

²¹² Forestry Commission (2012). Forestry Statistics 2012 - Woodland Areas and Planting [online] available at: www.forestry.gov.uk/website/forstats2012.nsf/LUContents/061E41873F94CC788025735D0034F33B (accessed 05/09/2013).

²¹³ Percentage of the total surface area excluding inland water. The total surface areas, excluding inland water, are taken from the UK Standard Area Measurements (published by the Office for National Statistics).

²¹⁴ Figures are based on data obtained from the National Forest Inventory (NFI) and adjusted for new planting, but at present no adjustment is made for woodland recently converted to another land use.

²¹⁵ Woodland Trust (2011). The State of the UK's Forests, Woods and Trees: Perspectives from the sector [online] available at: www.woodlandtrust.org.uk/en/about-us/publications/Documents/state-of-the-uks-forest-report-4865.pdf (accessed 05/09/2013).

²¹⁶ Forestry Commission (2012). Forestry Statistics 2012 - Environment [online] available at: <http://www.forestry.gov.uk/website/forstats2012.nsf/LUContents/1874A4D10670E9948025734C0048DAA5> (accessed 05/09/2013).

²¹⁷ Forestry Commission (2012). Forestry Statistics 2012 - Environment [online] available at: <http://www.forestry.gov.uk/website/forstats2012.nsf/LUContents/1874A4D10670E9948025734C0048DAA5> (accessed 05/09/2013).

species, particularly conifers.²¹⁸ Since 1985 there has been a steady restoration of plantations to native species. The South East is home to 40% of England's ancient woodland.²¹⁹ Although ancient woodland is important for biodiversity, less than 15% of ancient woodland in England is designated as SSSI.²²⁰

Woodlands are home to significant biodiversity: a quarter of all UK Biodiversity Action Plan priority species are associated with trees and woods.²²¹ With respect to woodland birds, in 2010, breeding woodland birds populations were about 20 per cent lower than their 1970 level. Having said this, the greatest decline in woodland birds occurred from the late eighties until the mid-nineties and the index has been relatively stable since 2000 – see **Figure 9**. According to Defra, the decline in woodland birds has 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.²²² The NEA highlights the increasing interest in the extent to which woodlands are functionally connected, and whether new woodland has contributed to, or could make a further contribution to, reducing the isolation of fragments of biodiversity.²²³

The National Ecosystem Assessment indicates that carbon sequestration is one of the most important regulating services provided by woodlands. The total carbon (C) stock in UK forests (including soils) is around 800 megatonnes (Mt) of carbon (2,900 Mt of carbon dioxide (CO₂) equivalent), and is estimated to be a further 80 Mt C in timber and wood products.²²⁴

²¹⁸ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²¹⁹ Natural England (2012). Standing Advice for ancient woodland [online] available at: www.naturalengland.org.uk/Images/standing-advice-ancient-woodland_tcm6-32633.pdf (accessed 09/09/2013).

²²⁰ Pryor, S. N., and Peterken, G. F. (2001) Prepared for WWF and the Forestry Commission by the Oxford Forestry Institute. Protected forest areas in the UK, available at: [http://www.forestry.gov.uk/pdf/ProtectedForest_AreaReport.pdf/\\$file/ProtectedForest_AreaReport.pdf](http://www.forestry.gov.uk/pdf/ProtectedForest_AreaReport.pdf/$file/ProtectedForest_AreaReport.pdf) (accessed 11/09/2013).

²²¹ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²²² Defra (2013). Sustainable Development Indicators [online] available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/223992/0_SDIs_final_2_.pdf (accessed 06/09/2013).

²²³ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²²⁴ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

Woodlands are highly valued by people for social and cultural services; there are approximately 250–300 million day visits to UK woodlands per year.²²⁵ However, only 55% of the UK population has access to woods larger than 20 ha within 4 km of their home.²²⁶

The NEA identifies a range of threats to semi-natural woodland including overgrazing, habitat fragmentation and isolation, invasion by non-native species, unsympathetic forestry practices, lack of appropriate management, air pollution and new pests and diseases. In addition, more localised pressures include losses to built development (including quarries), inappropriate game management, recreational pressures and drainage or water quality issues.²²⁷

In order that the Rural Development Programme contributes to resilient woodlands in the future, it might be advisable to consider that the impact of climate change on regeneration may mean that the classification of ‘native’, either at the species or provenance level, will need to be reconsidered; species currently restricted to southern Britain may be accepted further north, along with species from the near continent (such as sycamore, *Acer pseudoplatanus*) that are currently often treated as undesirable elements of semi-natural woods from a biodiversity perspective.²²⁸

Increasing levels of woodland management is a key Government aim. While there has been a steady increase in the proportion of woodlands in England under active management in recent decades, the figure currently stands at only just over half (52%)²²⁹ (this equates to the area of woodland managed to the UK Forestry Standard, an accepted proxy for active management²³⁰). This managed area includes 100% of Forestry Commission woodlands and 36% of other woodlands²³¹; efforts to increase the area of woodland under management must therefore be focused on privately owned woodlands. Furthermore, less than half the timber that grows each year is harvested – 52% of which comes from the Public Forest Estate, which accounts for only 18% of the total woodland

²²⁵ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²²⁶ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National

Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²²⁷ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National

Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²²⁸ Quine, C. Cahalan, C., Hester, A., Humphrey, J., Kirby, K., Moffat, A. and Valatin, G. (2011). Woodlands In: The UK National

Ecosystem Assessment Technical Report. UK National Ecosystem Assessment, UNEP-WCMC, Cambridge.

²²⁹ Forestry Commission England (2012). Corporate Plan 2012-13 [online] available at:

[www.forestry.gov.uk/pdf/FCE-CorporatePlan-2012_13.pdf/\\$file/FCE-CorporatePlan-2012_13.pdf](http://www.forestry.gov.uk/pdf/FCE-CorporatePlan-2012_13.pdf/$file/FCE-CorporatePlan-2012_13.pdf) (accessed 03/09/2013).

²³⁰ The Independent Panel on Forestry’s Final Report stated “*What is clear is that wherever and whenever management takes place, it must conform to the guidance in the UK Forestry Standard as a minimum*”.

²³¹ Forestry Commission (2011). Personal Communication to the Independent Panel on Forestry Secretariat.

resource.²³² As such, there is a concerted effort underway to promote supply chains for both timber and woodfuel. Relevant initiatives include the Grown in Britain initiative, which has its origins in a recommendation put forward by the Independent Panel on Forestry²³³, and 'A Woodfuel Strategy for England'²³⁴ and the later Woodfuel Implementation Plan 2011 – 2014.²³⁵ In A Woodfuel Strategy for England, Forestry Commission England argued that bringing additional biomass to market would provide an opportunity to reverse the decline in woodland biodiversity by increasing the number of sustainably managed woodlands. (The Strategy was supported by the Wildlife and Countryside Link representing 13 conservation organisations.²³⁶ This reflects the fact that modest woodland management will have a positive effect on public good outputs, including carbon, landscape, biodiversity and recreation, although increasing intensity of management is likely to reduce public good outputs as trade-offs occur).²³⁷

The Government is also keen to increase the total amount of woodland cover across England. New woodland provides a range of ecosystem services, not least carbon sequestration. The 'Read report' was commissioned by the Forestry Commission to examine the potential of the UK's trees and woodlands to mitigate and adapt to our changing climate and highlighted the cost-effectiveness of woodland creation as a mitigation measure for the UK (not just England).²³⁸ The Read report suggested that woodlands planted since 1990, coupled with an enhanced woodland creation programme

²³² Forestry Commission England (2012). Corporate Plan 2012-13 [online] available at: [www.forestry.gov.uk/pdf/FCE-CorporatePlan-2012_13.pdf/\\$file/FCE-CorporatePlan-2012_13.pdf](http://www.forestry.gov.uk/pdf/FCE-CorporatePlan-2012_13.pdf/$file/FCE-CorporatePlan-2012_13.pdf) (accessed 03/09/2013).

²³³ See www.growninbritain.org/page.jsp?id=2 (accessed 03/09/2013). The Independent Panel on Forestry's Final Report urged "Government, woodland owners and businesses to seize the opportunity provided by woodlands to grow our green economy, by strengthening the supply chain, and promoting the use of wood more widely across our society and economy. These and other actions should be set out in a Wood Industry Action Plan". The Grown in Britain initiative has three aims: (1) to create a new and stronger market pull for the array of products derived from our woodlands and forests; (2) to develop private sector funding that supports the planting and management of woodland and forests through funding from corporates as part of their corporate social responsibility; and (3) to connect together and harness the positive energy and feelings towards our woodlands and forests that many in our society share to create a strong wood culture. A wood culture that captures personal health and fitness, well-being, community and encourages the use of more wood and forest product.

²³⁴ Forestry Commission England (2006). *A Woodfuel Strategy for England* [online] available at: [www.forestry.gov.uk/pdf/fce-woodfuel-strategy.pdf/\\$file/fce-woodfuel-strategy.pdf](http://www.forestry.gov.uk/pdf/fce-woodfuel-strategy.pdf/$file/fce-woodfuel-strategy.pdf) (accessed 03/09/2013).

²³⁵ Forestry Commission England (2011). Woodfuel Implementation Plan 2011 – 2014 [online] available at: [www.forestry.gov.uk/pdf/FCE_WIP_Web.pdf/\\$file/FCE_WIP_Web.pdf?bcsi_scan_E956BCBE8ADBC89F=0&bcsi_scan_filename=FCE_WIP_Web.pdf](http://www.forestry.gov.uk/pdf/FCE_WIP_Web.pdf/$file/FCE_WIP_Web.pdf?bcsi_scan_E956BCBE8ADBC89F=0&bcsi_scan_filename=FCE_WIP_Web.pdf) (accessed 03/09/2013).

²³⁶ Wildlife and Countryside Link (2009). Position Statement by Wildlife and Countryside Link on the Forestry Commission's Woodfuel Strategy for England [online] available at: http://www.wcl.org.uk/docs/2009/Link_position_statement_Woodfuel_Strategy_03Jul09.pdf (accessed 03/09/2013).

²³⁷ Slee, B., Urquhart, J. and Taylor, D. (2006). Woodland Management for Timber and Wood Products: The Impact on Public Good Outputs. A report to the Forestry Commission and Defra. Countryside and Community Research Unit, University of Gloucestershire [online] available at: [www.forestry.gov.uk/pdf/woodland-management.pdf/\\$FILE/woodland-management.pdf](http://www.forestry.gov.uk/pdf/woodland-management.pdf/$FILE/woodland-management.pdf) (accessed 03/09/2013)

²³⁸ Read, D.J., Freer-Smith, P.H., Morison, J.I.L., Hanley, N., West, C.C. and Snowdon, P. (eds). (2009). Combating climate change – a role for UK forests. An assessment of the potential of the UK's trees and woodlands to mitigate and adapt to climate change. The synthesis report. The Stationery Office, Edinburgh.

of 23,000 ha per year over the next 40 years, could, by the 2050s, be delivering, on an annual basis, emissions abatement equivalent to 10% of total GHG emissions at that time.

Future baseline under the business as usual scenario

In the absence of intervention through the Rural Development Programme, rates of woodland creation and woodland management are unlikely to increase in line with the Government's aspirations. For example, new woodland planting has only averaged 2,600 ha per year over the last few years and 2,500 in 2010/11²³⁹ whereas the Government estimates that an average planting rate of 5,000 hectares a year will be necessary to achieve 12% woodland cover by 2060.²⁴⁰ With respect to woodland management, just over half of English woodlands are in active management (52%)²⁴¹ against a Government ambition of 80%.²⁴²

What are the key issues that should be the focus of the SEA?

1. The Government has set an aspiration to increase woodland cover to 12% of England's land area by 2060.
2. The Government has set an aspiration to bring around two-thirds of woodland into active management over the next five years, with this figure eventually rising to 80% on the assumption that markets for wood products continue to develop.
3. Ancient and semi-natural woodlands, which have the greatest value for nature conservation, have declined in extent due to losses to agriculture and, to a lesser extent, development and through conversion to plantations of non-native species, particularly conifers.

²³⁹ Smith, S., Crabtree, R., Glynn, M., Quick, T., Quine, C and Rowcroft, P. (2012) Evidence on Woodland Economy, Woodland Creation and Woodland Management in England. Final Report to the Independent Panel on Forestry. URS, London.

²⁴⁰ Defra (2013). Government Forestry and Woodlands Policy Statement, Incorporating the Government's Response to the Independent Panel on Forestry's Final Report [online] available at: www.gov.uk/government/publications/government-forestry-policy-statement (accessed 09/09/2013).

²⁴¹ Forestry Commission England (2012). Corporate Plan 2012-13 [online] available at: [www.forestry.gov.uk/pdf/FCE-CorporatePlan-2012_13.pdf/\\$file/FCE-CorporatePlan-2012_13.pdf](http://www.forestry.gov.uk/pdf/FCE-CorporatePlan-2012_13.pdf/$file/FCE-CorporatePlan-2012_13.pdf) (accessed 03/09/2013).

²⁴² Defra (2013). Government Forestry and Woodlands Policy Statement, Incorporating the Government's Response to the Independent Panel on Forestry's Final Report [online] available at: www.gov.uk/government/publications/government-forestry-policy-statement (accessed 09/09/2013).

SEA Framework questions - will the Rural Development Programme?

- promote a significant level of new woodland creation?
- effectively encourage private woodland owners to increase levels of management?
- promote the restoration of ancient and semi-natural woodlands?

The SEA Framework

In order to undertake the SEA of the Rural Development Programme, the evidence base (that is the context review and the baseline) can be translated into key questions and criteria which can be used to identify and evaluate the significant effects of the Rural Development Programme and reasonable alternatives. The draft framework we propose to use for assessing the Rural Development Programme is set out in Table 18.

Table 18: Draft SEA Framework

SEA Framework	
Topic	Would the Rural Development Programme...
Air Quality	<p>Improve air quality?</p> <ul style="list-style-type: none"> - Increase / decrease levels of air pollutants (PM₁₀ and PM_{2.5}, ozone, ammonia and NOx [both concentration and deposition])? - Increase / decrease car journeys? - Expose new receptors to potential air pollution including odour?
Biodiversity and Nature Conservation	<p>Protect and enhance biodiversity?</p> <ul style="list-style-type: none"> - Increase levels of farmland birds? - Improve SSSI condition on agricultural land? - Reverse long-term declines in loss of habitats? - Help create a connected biodiversity resource i.e. address the historic fragmentation of habitats?
Climate Change Mitigation	<p>Reduce the emissions of greenhouse gases?</p> <p>Increase energy efficiency?</p> <p>Encourage the use / development of zero / low carbon energy?</p> <ul style="list-style-type: none"> - Reduce emissions to a similar extent to those from other sources? - Help create an environment whereby energy efficiency and low carbon development / practices are enabled?
Climate Change Adaptation	<p>Help reduce the risk of flooding?</p> <ul style="list-style-type: none"> - Help reduce the risk of flooding to dwellings, infrastructure, farmlands and habitats? <p>Encourage a resilient agricultural base?</p> <ul style="list-style-type: none"> - Help create a rural economy resilient to the effects of climate change?
Landscape and Cultural Heritage	<p>Help reduce the erosion of landscape character?</p> <p>Protect and enhance cultural heritage in rural areas?</p> <ul style="list-style-type: none"> - Minimise the potential for field enclosures and removal of linear or other characteristic features?

	<ul style="list-style-type: none"> - Reduce the potential for farm activities to damage archaeological assets? - Retain regional distinctiveness?
Population and Human Health	<p>Help support the health and well-being of rural populations?</p> <ul style="list-style-type: none"> - Increase levels of economic activity? - Help support and promote the production of healthy food and drink? - Support a better quality of life for rural populations, including for an increasingly ageing population? - Encourage a redistribution of age ranges in rural areas?
Soil Management	<p>Help ensure the quality of agricultural soil?</p> <p>Encourage the retention, protection and utilisation of high quality agricultural soil?</p>
Waste	<p>Help ensure that rural activities adhere to the waste hierarchy?</p> <ul style="list-style-type: none"> - Encourage waste minimisation / reuse? - Ensure the safe management of agricultural waste? - Encourage energy from waste practices?
Water Management	<p>Ensure adequate water supply and quality?</p> <ul style="list-style-type: none"> - Create businesses resilient to future water scarcity? - Encourage water resource efficiency? - Reduce rates of abstraction? - Reduce water pollution? - Promote better environmental practice amongst farmers and land managers? - Reduce service water runoff?
Rural Economy	<p>Ensure a vital and vibrant rural economy?</p> <ul style="list-style-type: none"> - Increase rural economic productivity? - Increase the number of businesses in rural areas, including start-ups? - Increase or safeguard the number of jobs? - Increase renewable energy production in rural areas? - Increase the level of capital investment in rural areas? - Increase the competitiveness of the farming, food and drink sector? - Increase levels of innovation in the farming, food and drink sectors and within rural areas?
Tourism & Countryside Access	<p>Enable increased access to the countryside?</p> <p>Maintain, diversify and increase rural tourism?</p> <p>Enable communities to plan and manage their tourism assets?</p>
Woodland	<p>Promote a significant level of new woodland creation?</p> <p>Effectively encourage private woodland owners to increase levels of management?</p> <p>Promote the restoration of ancient and semi-natural woodlands?</p>

Approach to alternatives

The draft Rural Development Programme has considered a set of nine high level options for taking forward the Rural Development Programme from 2014. It is intended that these will be the subject of the assessment of reasonable alternatives. These options have been summarised below (note that the development of the programme is iterative and there may be further / fewer options presented in the Environment Report.

Each scenario reflects a different proportion of the overall budget spent on particular priorities or different level of modulation from Pillar 1 to Pillar 2:

- Option 0 – “Do minimum” baseline.
- Option 1 – “Balance of spend as now” (9% transfer)
- Option 2 – “Agri-Environment focus” (9% transfer)
- Option 3 – “Farming and forestry productivity focus” (9% transfer)
- Option 4 – “Rural growth focus” (9% transfer)
- Option 5 – “Balance of spend as now” (15% transfer)
- Option 6 – “Agri-environment focus” (15% transfer)
- Option 7 – “Farming and forestry productivity focus” (15% transfer)
- Option 8 – “Rural growth focus” (15% transfer)

Next steps

This Scoping Report will be subject to a five week consultation period as required under the SEA Regulations. A series of questions have been included in **Annex C** to assist consultees in commenting on the report. Once the consultation responses have been received, they will be reviewed and changes made to the scope as appropriate.

The next stage in the SEA process (Stage 2) will involve assessing reasonable alternatives for a range of programme issues and feeding back findings to Defra so that they might be taken into account in preparing the draft Rural Development Programme.

Environmental Report

Once the draft Rural Development Programme has been prepared it will be subjected to SEA and an Environmental Report will be prepared for consultation.

The Environmental Report must contain a range of specified information, essentially:

- an assessment of the draft Rural Development Programme and reasonable alternatives,
- 'outline reasons for selecting the alternatives dealt with'; and
- other elements, including a summary of the SEA scope and a description of 'measures envisaged for monitoring'.

The purpose of consulting on the Environmental Report is to inform interested parties of the proposed environmental impact of the draft Rural Development Programme and the alternatives that Defra has considered, and for Defra to take into account any views they may have on this assessment.

SEA Statement

Subsequent to consultation on the Environmental Report, the programme will be finalised and submitted to the European Commission. Once the EC and Defra have agreed on a final form of the programme, an 'SEA Statement' will be prepared.

The role of the SEA Statement is essentially twofold:

1. It must bring the story of the development of the programme / SEA up to date. Whereas the Environmental Report must only explain the reasons behind selecting the draft Rural Development Programme approach subsequent to a consideration of alternatives, the SEA Statement must also explain the reasons behind decisions taken subsequent to the consultation on the Environmental Report.
2. It must present 'measures decided concerning monitoring' (as opposed to the Environmental Report, which must present only 'measures envisaged concerning monitoring').

Annex A: Agri-environment schemes

Agri-environment schemes form the main focus of the current Rural Development Programme for England 2007-2013, so it is appropriate to provide more detailed background information on their implementation as part of the evidence base.

History of Agri-Environment Schemes in England

Under the 2000 and 2006 England Rural Development Programme, there were two main targeted agri-environment schemes available to farmers. These are collectively known as 'Classic' schemes:

- the **Countryside Stewardship Scheme** (CSS) which provide financial incentives for positive changes in management; and
- the **Environmentally Sensitive Areas Scheme** (ESA) which encouraged farmers to safeguard and enhance areas with particularly valuable landscape, wildlife or history.

In 2005, the new Environmental Stewardship (ES) scheme was launched, to replace CSS and ESA payments. Learning from past experience, the new scheme rewards farmers for undertaking good environmental practices. It operates on two levels.

Firstly, there is an extensive **Entry Level Scheme** (ELS) which is available to all farmers in return for a basic level of environmental management (which nonetheless goes beyond that required by GAEC).

Secondly, a **Higher Level Scheme** (HLS) is targeted at priority areas. Entry to the Higher Level Scheme is discretionary, and requires production of a Farm Environment Plan, and discussion with locally-based advisors.

Environmental Stewardship has five main aims, and a further two subsidiary aims:

- Conserve wildlife (biodiversity)
- Maintain and enhance landscape quality and character
- Protect the historic environment and natural resources
- Promote public access and understanding of the countryside
- Natural resource protection

Secondary objectives are:

- Genetic conservation
- Flood management

The baseline data clearly shows the long-term decline in both biodiversity and extent of historic landscape features. Evidence has shown that previous agri-environment expenditure has been effective at reversing these declines. The area of ‘sympathetically-managed land’ required to significantly reverse such declines is likely to be considerable, and this was the rationale behind the policy aim of expanding the agri-environment ELS to make it available to all farms.

Uptake of agri-environment schemes

The data in the figures below show the uptake of agri-environment schemes in England.

There was a rapid increase in the take up of **Environmentally Sensitive Area** and **Countryside Stewardship Schemes** from their introductions. Both were oversubscribed, indicating that there remained considerable unmet demand from farmers seeking support to improve the environmental impact of their holdings. In 2004, the final year in which new entrants were accepted, there were 28,180 agreements, covering a total of 1.66m hectares in England.

- Environmentally Sensitive Area and Countryside Stewardship schemes closed to new entrants in 2004. Agreements for both schemes were for 10 year periods. Existing agreements will continue until the agreement period ends.
- The ESA scheme was introduced in 1987 for land within the 22 ESAs. In 2009 there were around 7,100 agreement holders managing 462,000 hectares.
- The Countryside Stewardship was introduced in 1991 for areas outside ESAs. In 2009 there were about 10,600 agreement holders managing 372,000 hectares.

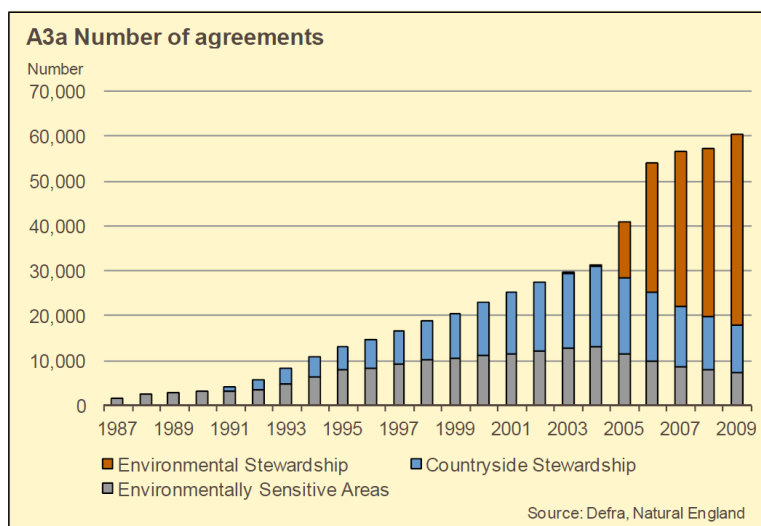


Figure A-1: Number of environmental stewardship and countryside stewardship agreements from 1987 to 2009.

In 2004 there were a limited number of new agreements to both the CS and ESA schemes prior to the roll out of Environmental Stewardship.

- ELS was piloted to a small number of farms in 2003 and 2004.

- Environmental Stewardship was rolled out to all farms in 2005. By the end of 2009 there were some 42,500 agreement holders managing 5.6 million hectares under the Entry Level Scheme.

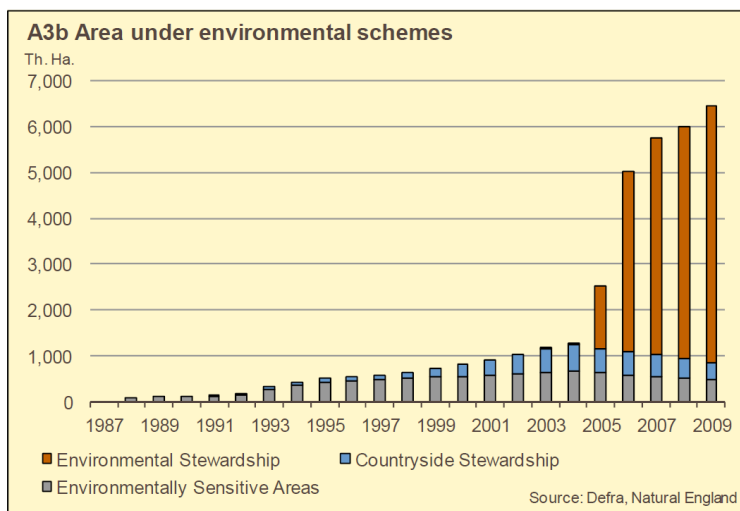


Figure A-2: Area under environmental schemes from 1987 to 2009.

- The first Higher Level Scheme agreements went live in February 2006. By the end of 2009 there were some 4,300 agreement holders covering 453 thousand hectares of land.
- Almost all HLS agreements also have ELS agreements. At the end of January 2010, there were 537 standalone HLS agreements covering 69 thousand hectares.

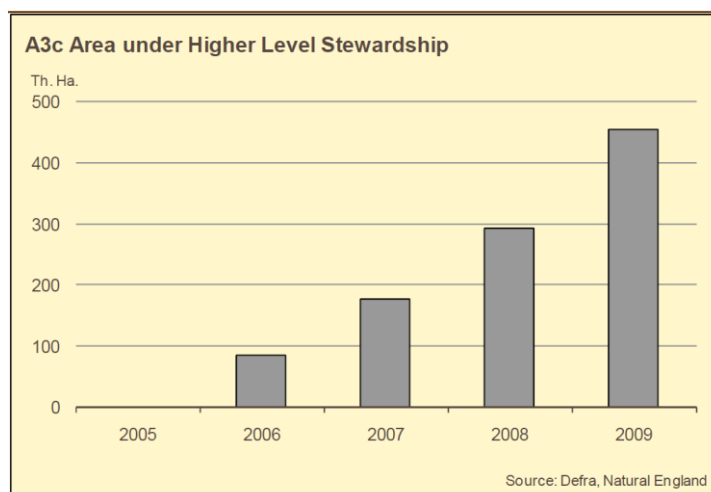


Figure A-3: Area under higher level stewardship from 2005 to 2009.

A map of regional uptake of the Entry Level Scheme (including the Organic Entry Level Scheme) shows that the greatest uptake is in the Eastern side of the country. The lowest uptake is in the Peak District, Dartmoor and the Cumbria High Fells, regions where holdings may still have ESA agreements.

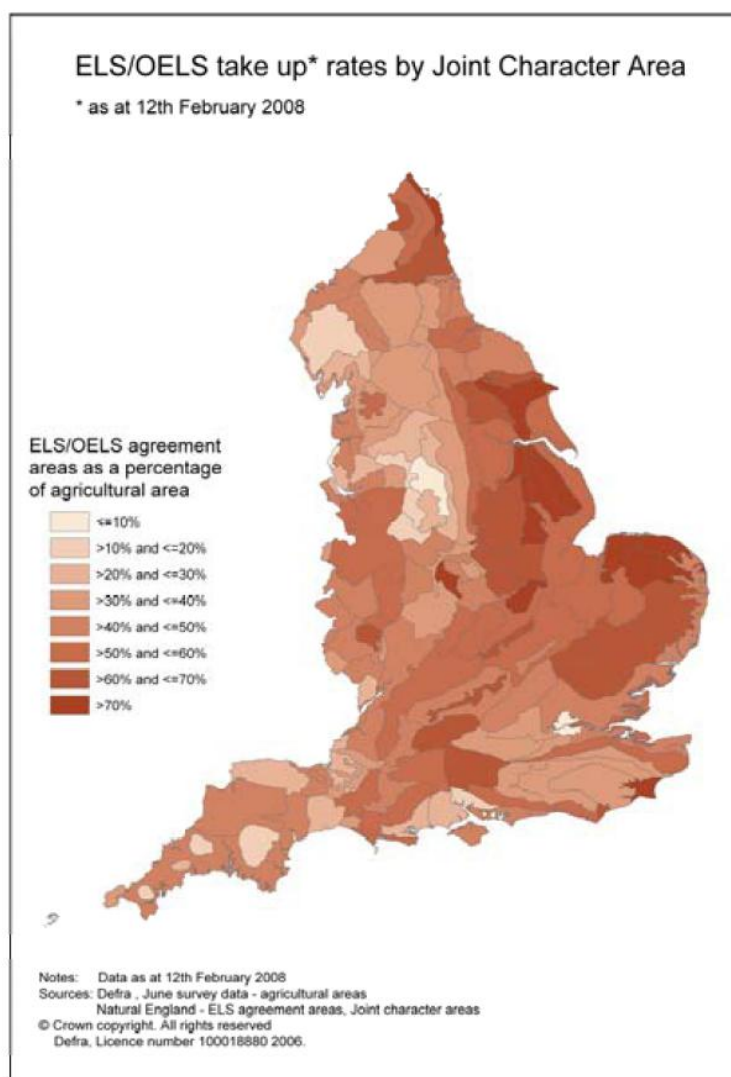


Figure A-4: Agri-environment schemes; area under agreements

Table A-1: Area organically farmed 2007 to 2011.

Thousand Hectares	as at 31 December				
	2007	2008	2009	2010	2011
England					
Organic Farming Scheme	25	13	1	-	-
Countryside Stewardship Scheme	474	442	372	268	172
Environmentally Sensitive Areas Scheme	546	503	462	417	341
Environmental Stewardship Scheme					
Entry Level Scheme (a)	4 725	5 024	5 322	5 611	5 607
Higher Level Scheme	175	291	442	809	882

Annex B: Defining rural areas

Wherever possible, the 2011 Rural-Urban Classification is used to distinguish rural and urban areas. The Classification defines areas as rural if they fall outside of settlements with more than 10,000 resident population.²⁴³

Census Output Areas - the smallest areas for which data are available from the 2001 and 2011 Censuses - are assigned to one of four urban or six rural categories:

- Urban: Major Conurbation
- Urban: Minor Conurbation
- Urban: City and Town
- Urban: City and Town in a sparse setting

- Rural: Town and Fringe
- Rural: Town and Fringe in a sparse setting
- Rural: Village
- Rural: Village in a sparse setting
- Rural: Hamlets and Isolated Dwellings
- Rural: Hamlets and Isolated Dwellings in a sparse setting

Those described as “in a sparse setting” reflect where the wider area is remotely populated.

In many instances, it has not yet been possible to update statistics using the new 2011 Rural-Urban Classification and so the rural-urban analysis will be still based on the 2001-based classification. In the previous classification the terms ‘less sparse’ and ‘sparse’ were using to distinguish areas not in a sparse setting and areas in a sparse setting.

When data are not available at a small enough geographical scale, it may be possible to apply the Rural-Urban Local Authority Classification. This classification categorises districts and unitary authorities on a six point scale from rural to urban. It is underpinned by rural and urban populations as defined by the Classification. It should be noted, however, that the Local Authority Classification is currently based on the 2001 Census and Rural-Urban definition, and will be updated to reflect the 2011 Census populations and Classification in due course.

²⁴³ Defra (2013) Statistical Digest of Rural England 2013 [online]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/227006/Statistical_Digest_of_Rural_England_Aug_2013.pdf Accessed 11/09/13

The 2001 Local Authority Classification also considers some urban areas as Large Market Towns. These towns serve a wider rural hinterland and their populations are therefore treated as rural for the purposes of the Classification. The Market Towns have populations between 10,000 and 30,000 and meet various service criteria. The categories of the Classification are:

- Major urban (MU) – districts with either 100,000 people or 50 per cent of their population living in urban areas with a population of more than 750,000.
- Large urban (LU) – districts with either 50,000 people or 50 per cent of their population living in one of 17 urban areas with a population between 250,000 and 750,000.
- Other urban (OU) – districts with less than 26 per cent of their population living in rural settlements and larger market towns.
- Significant rural (SR) – districts with between 26 and 50 per cent of their population living in rural settlements and larger market towns.
- Rural-50 (R50) – districts with at least 50 per cent but less than 80 per cent of their population living in rural settlements and larger market towns, and
- Rural-80 (R80) – districts with at least 80 per cent of their population living in rural settlements and larger market towns.

When categories of the six-way classification are combined to produce overall rural and urban estimates, *Rural-80 and Rural-50* areas are combined to produce “Predominantly rural” areas. *major urban, large urban and other urban* areas are grouped together under “Predominantly urban”. *Significant rural* areas remain the same, and separate from the other two categories. This is because the areas do not have a majority (predominantly) rural population, but they are seen as having a substantial enough proportion of their population in rural areas to be considered separately from the *predominantly urban* group.

- Predominantly rural: areas with more than 50% of their population living in rural areas or large market towns
- Significant rural: areas with between 26 and 50 per cent of their population living in rural settlements and larger market towns.
- Predominantly urban: areas with less than 25% of their population living in rural areas or large market towns.

More information on how to define rural areas can be found at

www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/rural-urban-definition

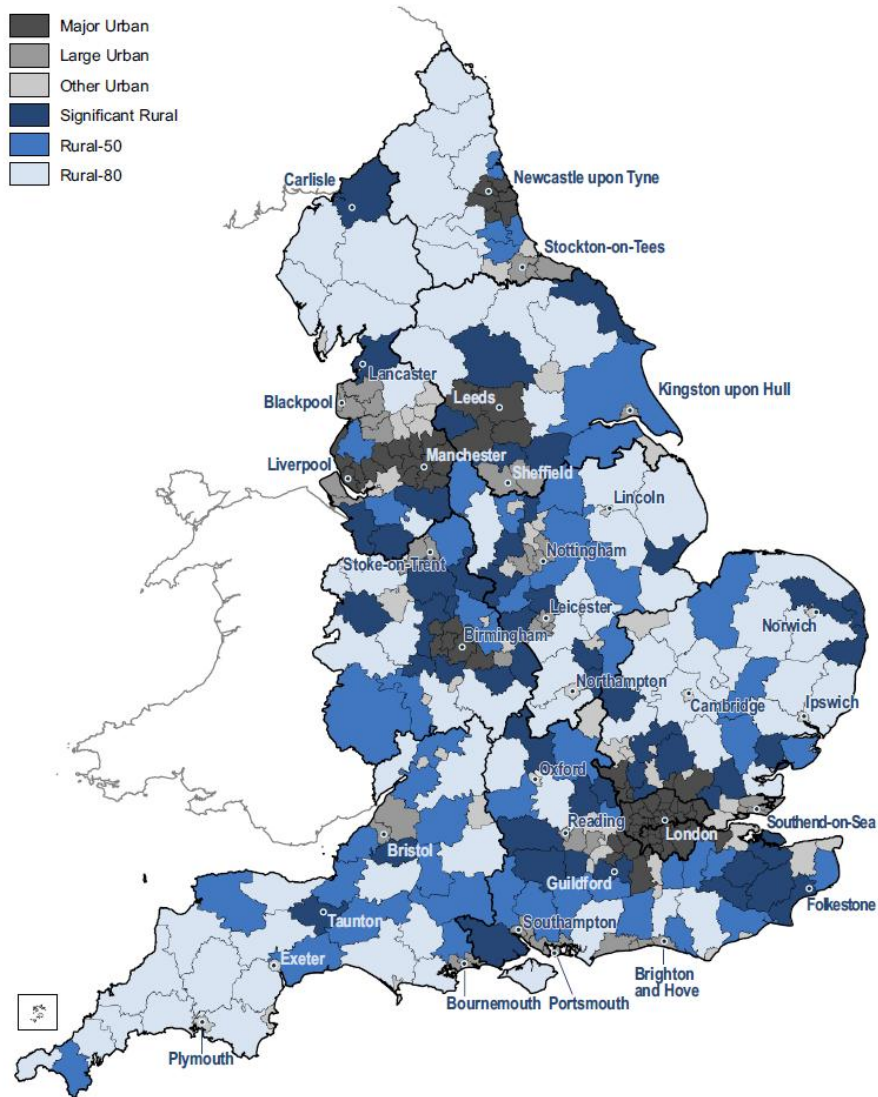


Figure B1: 2001-based Rural-Urban Local Authority Classification²⁴⁴

²⁴⁴ ONS (2011) Rural and urban areas: comparing lives using rural/urban classifications [online] available at: <http://www.ons.gov.uk/ons/rel/regional-trends/regional-trends/no--43--2011-edition/rural-and-urban-areas--comparing-lives-using-rural-urban-classifications.pdf> (accessed 09/09/2013)

Annex C: Consultation questions

Q1. Are there other policies, plans and strategies or relevant legislation or regulation that you feel may be relevant to the SEA of the Rural Development Programme?

Q2. Do you agree that the key environmental issues affecting rural England that are relevant to the Rural Development Programme have been identified? If not, are there others which you think should be included?

Q3. Do you agree that the draft SEA objectives put forward provide an appropriate framework for assessing the environmental effects of the Rural Development Programme?

Q4. Are the number, focus and level of detail of the proposed objectives and sub-objectives appropriate and proportionate given the aims, geographical scope and likely influence of the Rural Development Programme?

Q5. Do you agree with the broad approach outlined above for considering reasonable alternatives?

Q6. Do you agree with integrating elements of an ecosystem services approach where appropriate as part of the SEA methodology?