



One Year Review

February 2010 – May 2011

Foresight Project: Land Use Futures

Foresight Horizon Scanning Centre, Government Office for Science

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Executive Summary

The Foresight Land Use Futures (LUF) Project published its findings as the report *Land Use Futures: Making the most of land in the 21st century* (the Report) on 26 February 2010. This one-year review (the Review) sets out the Report's impact in government and other organisations' policy development and strategic thinking, the work of the research community and in business. The main body of the Review includes statements from the stakeholder organisations themselves.

Foresight has set aside resource to disseminate its reports and to help ensure that their evidence bases and key messages are used to achieve impact. This Review is not intended as a comprehensive record. Rather, it highlights the wide range of the initiatives that have been informed by the Project.

Land use covers a broad spectrum of issues from transport and energy supply to biodiversity and water quality. LUF identifies the most important challenges and opportunities for land use over the next 50 years and sets out what can be done to use and manage land more sustainably and to unlock greater value for people and the economy, now and in the future.

The Project demonstrates how, between all of the different uses of land, there are deep-rooted interactions, many of which are not well understood. The Report sets out the strong case for improving our knowledge of these relationships and using it to inform the development and implementation of cross-cutting policy. In carrying out the LUF Project, Foresight brought together a wide range of disciplinary expertise, which included biological, social and economic sciences. This multidisciplinary approach was essential for the analysis of the diverse elements which comprised the Project's overarching perspective.

Demands on land will grow over the next 50 years. By 2050, the UK's population is projected to rise by 15 million. New houses, roads and recreation facilities will be required to satisfy the increase in demand. Alongside this, there are likely to be increases in the amount of land needed for energy supply, forestry and managing flood risk. In the future, it will become more important to identify ways in which land can deliver multiple benefits, such as appropriately locating forests so they can provide recreation, store carbon and supply timber simultaneously. Through a greater understanding of how the landscape is configured and what it provides, our use of land has the capacity to deliver far greater returns than at present.

This Review starts with an overview of the LUF Project, including its background, aim, process and its principal outputs. It then sets out the wide-ranging impact it has had in the year or so since publication. The Review focuses on impact in government departments, the academic and research communities and the wider stakeholder community. These examples of impact have been contributed by project stakeholders.

Government

The Report was one of the core documents that the Department for Environment, Food and Rural Affairs (Defra) used to establish the evidence base of the **Natural Environment White Paper, *The Natural Choice: securing the value of nature*** (Cm8082, June 2011). The evidence set out in the Report was seen as supporting and complementing that in other recent studies, such as the Lawton report, ***Making Space for Nature*** (2010), the **National Ecosystem Assessment** (2011), and **The Economics of Ecosystems and Biodiversity** study (2010). Commonality between these pieces of work was particularly evident in the identification of major factors driving change (e.g. demography, climate change, economic growth, changing societal expectations) and in the need to assess the value of land comprehensively (including through innovative forms of economic and non-economic valuation).

The Report's clear emphasis on achieving a wider range of sustainable benefits from land, for example, by promoting its multifunctional use and through action at the landscape scale was particularly striking. These Foresight messages were supported in workshops and numerous discussions that Defra held with stakeholders. In producing the White Paper, Defra also consulted the team working on the Scottish Government's emerging land use strategy, ***Getting the best from our land*** (March 2011), which shares many of the same assumptions. The election of the coalition Government in May 2010 altered the political context within which the Foresight project's final report was produced. Nevertheless, the philosophy of the Natural Environment White Paper is rooted in the sort of evidential analysis framed by the Foresight project, and many of its individual proposals have now been adopted.

For the Department for **Communities and Local Government** (CLG), the Report provides a valuable baseline on how land is used in England, which has been helpful in deciding planning policy priorities. The Report recognises that a strategic approach for land use needs to strike the right balance between national and local powers. CLG's reforms of the planning system, set out in the **Localism Bill**, reflect the decentralised framework outlined in the Report. This framework, comprising a national framework consisting of broad principles informing a common approach to decision making, with the detail of implementation being the responsibility of local decision-making bodies and civil society, influenced by market processes, is mirrored in the new planning system set out in the Localism Bill and supported by the new **National Planning Policy Framework**.

Devolved Administrations

Both the Report's interim and final findings have contributed to an appropriate and timely evidence base on which the **Welsh Assembly Government's** future policies can be developed. The Report's emphasis on a strategic and multifunctional approach to land use change, together with the importance of

sustainable behaviours, aligns with a range of Welsh Assembly Government initiatives such as the **Natural Environment Framework**, the **Land Use Climate Change Report Implementation Plan** and the **Food Strategy for Wales 2010–2020**.

The NEA and the Report will have major impacts on the **Northern Ireland Assembly's** policy work, helping it to bring a more integrated and proactive approach to how land is managed through agricultural policy, protected areas, renewable energy, linkage of heritage to tourism and promotion of a sustainable approach to legislation. All of these areas are active interests of the Northern Ireland Assembly, and it hopes that by the end of this term (2015) it will have embedded the concept and practice of integrated land use into legislation and practical action.

Research

The most striking aspect of the Report on land use was the emphasis it gave to dealing with trade-offs between different land use types. This raised a number of issues about what information was available to decision makers who needed to deal with such trade-offs, how new knowledge about ecosystem services would help in this and how new approaches to delivering and valuing ecosystem services would affect the way society viewed land use in future. **Natural Environment Research Council** (NERC)-funded researchers at universities and research centres are already using or producing a range of new knowledge and relevant tools, including those arising from the last Countryside Survey. This effort directly addresses issues raised in the Foresight report. In addition, much of NERC's research on water, and in particular new joint working between the **British Geological Survey** and the **Centre for Ecology and Hydrology**, examines issues such as flood, drought and soil–water relationships that interact with land use. Such integrated approaches will lead to the more sustainable land-use decisions that the Report was seeking to inform.

Other NERC actions relevant to the Report fall into two categories: **Living With Environmental Change** (LWEC), and research programmes. The Report was highlighted in discussion with the National Science Foundation when LWEC visited the USA in 2010, and there have been more detailed interchanges subsequently, for example on urban land use. LWEC has worked with its partners and other bodies to discuss *Measuring Change in the Countryside* and has used the Report as background material. The Report influenced the NERC's input to the NEA, which has done much to help value the services delivered by a range of habitats found on various land use types and which Ministers are referring to as a paradigm shift in thinking about the links between people and environmental resources.

NERC research programmes have been designed with the Foresight report inputs and findings in mind. These include **Land-based Renewables**, **Valuing Nature Network** and an **Environmental Virtual Observatory**. Others include the **Insect Pollinators Initiative** where land use patterns are a

major factor in determining the delivery of pollinator services and the health of pollinators.

UK Stakeholders

The Report impacted on a wide range of UK stakeholders. For example, the **Natural Capital Initiative** believes that the LUF Project has been part, and in some contexts a pioneer, of a shift in thinking which acknowledges the multiple benefits for humans that flow from the environment, and that it is an important cornerstone in this thinking. Furthermore, the Report provides robust guiding concepts and contributes to the rationale for specific projects.

The **Royal Geographical Society (with IBG)** (RGS) has promoted the Report's findings through the policy pages of its website, highlighting the key involvement of geographers and a geographical perspective. The findings have informed RGS policy discussions held as part of the **Water2010 Conference** of the **All Party Parliamentary Water Group** (APPWG), with an audience comprising industry, academics, local government, non-governmental organisations and other policy makers, on 'land use and future water security' on 13 July 2010.

As a body whose primary interest is in land use, the **Campaign to Protect Rural England** (CPRE) has made extensive use of the LUF analysis and findings in its policy and campaigning work over the past year or so. While not agreeing with every aspect of the approach taken by the study, notably its narrow analysis of the housing market and transport costs, it has used some of the evidence and ideas it contains to inform its own approach to four key areas of policy development. Also, CPRE has used the Report's analysis of multifunctional land use to inform its understanding of the appropriate development of energy infrastructure, particularly land-extensive renewables and grid infrastructure, in scenarios for renewables development to 2020 and 2050. As a result, we are particularly pleased to see that land use is now part of the Department of Energy and Climate Change's (DECC)'s **2050 energy calculator** and plan to ensure that future energy scenarios include an assessment of their implications for sustainable land use.

International Stakeholders

Foresight and the **UK Foreign and Commonwealth Office's Science and Innovation Network** hosted a workshop entitled *Incentives for the delivery of Ecosystem Services: international perspectives and opportunities*. The workshop brought together key policy makers and academics from the international community who have a particular interest in the evidence to support schemes to incentivise and reward the development and delivery of ecosystem services.

Against the backdrop of the LUF Report, the workshop (a) reviewed the scientific evidence for the value and benefits of ecosystem services and what might be done to incentivise their provision; (b) identified gaps in our knowledge base and what we might do to bridge them; (c) reviewed innovative, evidence-based policy development and implementation and identify and share good practices and explored how to overcome barriers to progress; and (d) identified and explored potential synergies and opportunities for future international collaboration.

In summary, the Report has had wide-ranging impacts across its broad stakeholder community, which includes government departments, research and academic institutions and civil society. Furthermore, although the Report was published shortly before the 2010 election, the study's key findings and rich evidence base continue to resonate with the change in ministerial priorities.

I. Introduction

This Review records the impact of the Land Use Futures (LUF) Report in the year following its publication in February 2010. The Report has informed and influenced government and other stakeholder initiatives in the area of land use by providing a robust and comprehensive evidence base.

Foresight has set aside resource to disseminate its reports and to facilitate impact. This 'Follow-up Team' works with government and other organisations, particularly in the year following the publication of a report, to help ensure that its evidence base and key messages are used to inform policy making, strategic thinking, research and investment in technology development. This Review is a record of those activities and impact. The Review is not intended to be comprehensive, recognising that some impact will be indirect or intangible and not clearly attributable to the Foresight study.

Impact has been achieved in a number of ways, although there was an initial delay due to the change in government during the months immediately following the Project's launch. Since then, a wide range of stakeholder organisations spanning government, research bodies and non-governmental organisations (NGOs) have been influenced by the findings from the Report.

This Review records the progress of initiatives set in motion by the publication of LUF. These stakeholders were invited to submit summaries of findings of impact that, using the contributors' text for the main part, have been drawn together to form the main body of this document. It is important to note that the LUF Report does not make policy recommendations as such; rather, it seeks to develop the evidence to inform them, as do all Foresight reports.

This Review begins with an overview of the LUF Project, including its background, aim, process and principal outputs in Chapters 2 and 3. Chapter 4 sets out its impact in the year since publication, in particular within government departments, the academic and research communities and other organisations. Information on the dissemination of the Report is set out in Chapter 5.

2. Project Overview

2.1. Background

The LUF Project (the Project) published its findings on 26 February 2010 under the title *Land Use Futures: Making the most of land in the 21st Century* (the Report). The culmination of two years' work, the Report brought together over 300 experts in subjects ranging from ecology and economics to planning and geography.

Commissioned by the then Government Chief Scientific Adviser, Professor Sir David King, and continued by his successor, Professor Sir John Beddington, LUF was co-sponsored by the Department for Environment, Food and Rural Affairs (Defra) and the department for Communities and Local Government (CLG), which co-chaired the Project's High Level Stakeholder Group (HLSG). The Report was overseen by a Lead Expert Group, chaired by Professor David Newbery, which provided the best available scientific scrutiny for the Project.

Since the launch of the Project, there has been a change in government. Foresight is continuing to work with the new government to provide independent and evidence-based advice on UK land use to 2060.

2.2. Aim

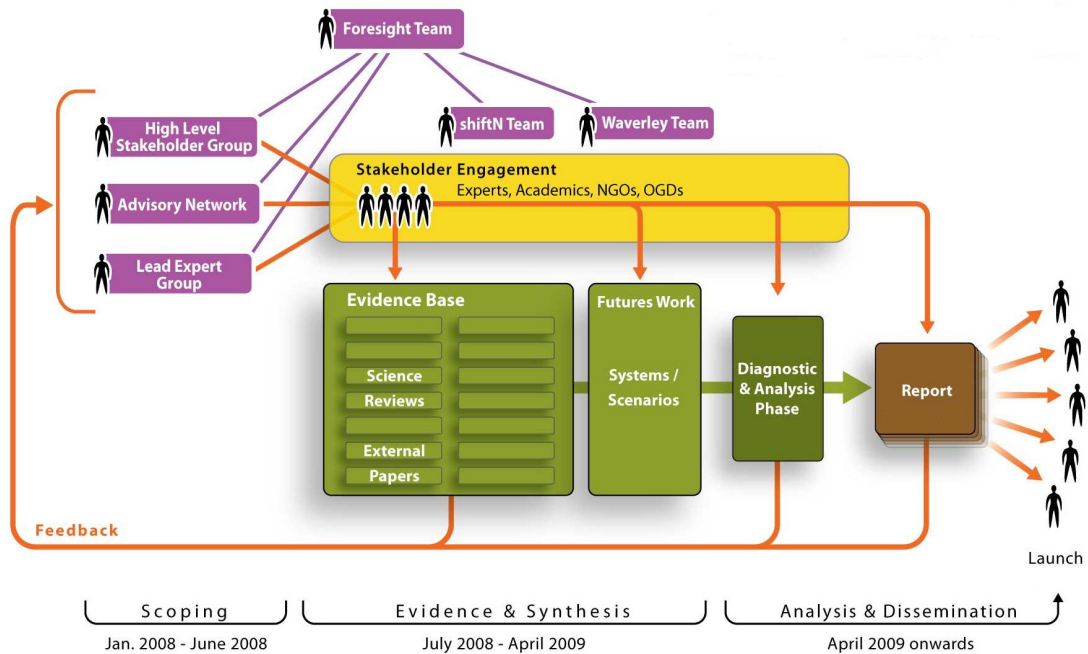
The Project aimed to use the best available scientific and other evidence to take a broad look at:

- the most important challenges and opportunities for land use in the UK over the next 50 years – particularly those that merit decisive action; and
- what can be done to use and manage land more sustainably and to unlock greater value for people and the economy – now and in the future.

The Project also sought to identify where incremental change would be desirable, and where a more strategic shift is needed.

2.3. Structure

Figure 2.1: Project structure



The overall structure of the Report is outlined in Figure 2.1, demonstrating the relationship between the various teams, individuals and working groups put in place by the Project. This is a similar process to that undertaken by most Foresight projects, and allows for continual feedback between the contributors to ensure their most effective input.

3. Project Outputs

3.1. Project Report

The Project Report represented the main body of output from LUF, representing a synthesis of the evidence reviews, futures work and systems analysis.

The Report first gave an overview of past and present patterns of land use, before considering how land use is valued, looking at both monetary and non-monetary measures. It then examined nine individual land use sectors, considering the future challenges the UK may face in these areas, as well as how they relate to other land uses. The nine sectors were water resource management; conservation; agriculture; woodlands and forestry; managing flood risk; energy production; residential and commercial development; transport infrastructure; and recreation. The final part of the Report focused on synthesising the evidence outlined in the previous chapters, suggesting options for policy makers.

The Report shows that land is a versatile national asset playing a crucial role in fostering people's physical and mental wellbeing, and supporting prosperity. However, the land system will come under increasing pressure over the next 50 years as a result of:

- a growing and ageing population with more people living alone;
- the rise of the low carbon agenda; and
- rising expectations associated with growing incomes, such as the demand for more space for living and better transport.

The Report concludes that it will become more important to identify how land can deliver multiple benefits. In particular, it sets out how, through a greater understanding of the spatial variation in the capacity of land to deliver such benefits, we can develop appropriate, sustainable and targeted options to address future pressures.

The Report demonstrates that how land is used can provide a wide range of costs as well as benefits. These regularly extend beyond the immediate users of the land and need to be taken into account to provide the 'true cost' of land in different uses, leading to more sustainable land use decisions.

3.2. Evidence Reviews

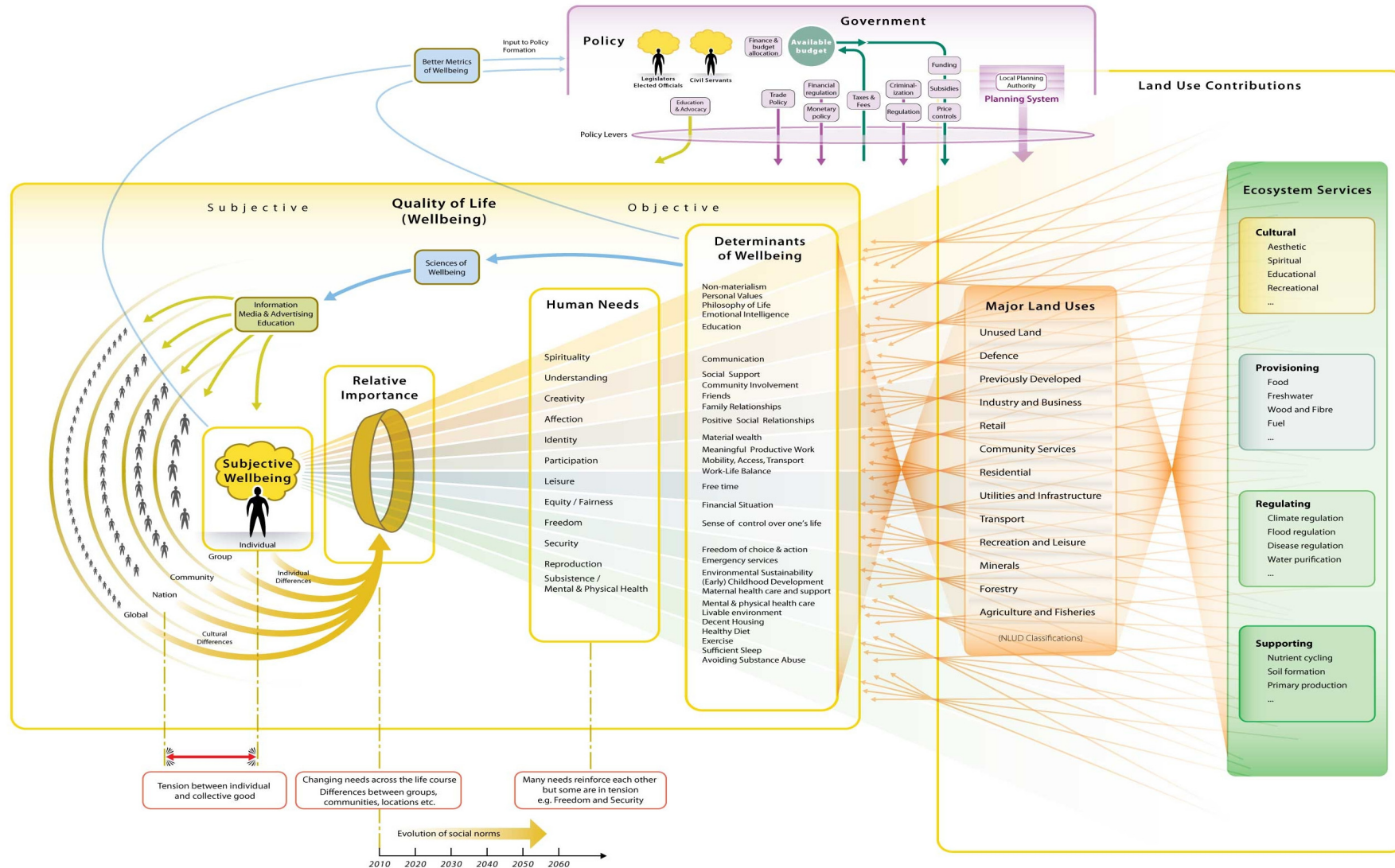
To underline the Project's scientific rigour, Foresight commissioned over 40 evidence reviews on a range of key issues affecting UK land use over the next 50 years, many of which were subsequently published in a special edition of

the journal *Land Use Policy*. These reviews set out the current policy scope in areas where it was felt the science could be better understood.

These evidence reviews covered a spectrum of issues including an overview of land use issues, including trends and international perspectives; the relationship between people and land; the role of planning and governance; the impact of land use on the natural environment; and the importance of resources and services.

3.3. System Mapping

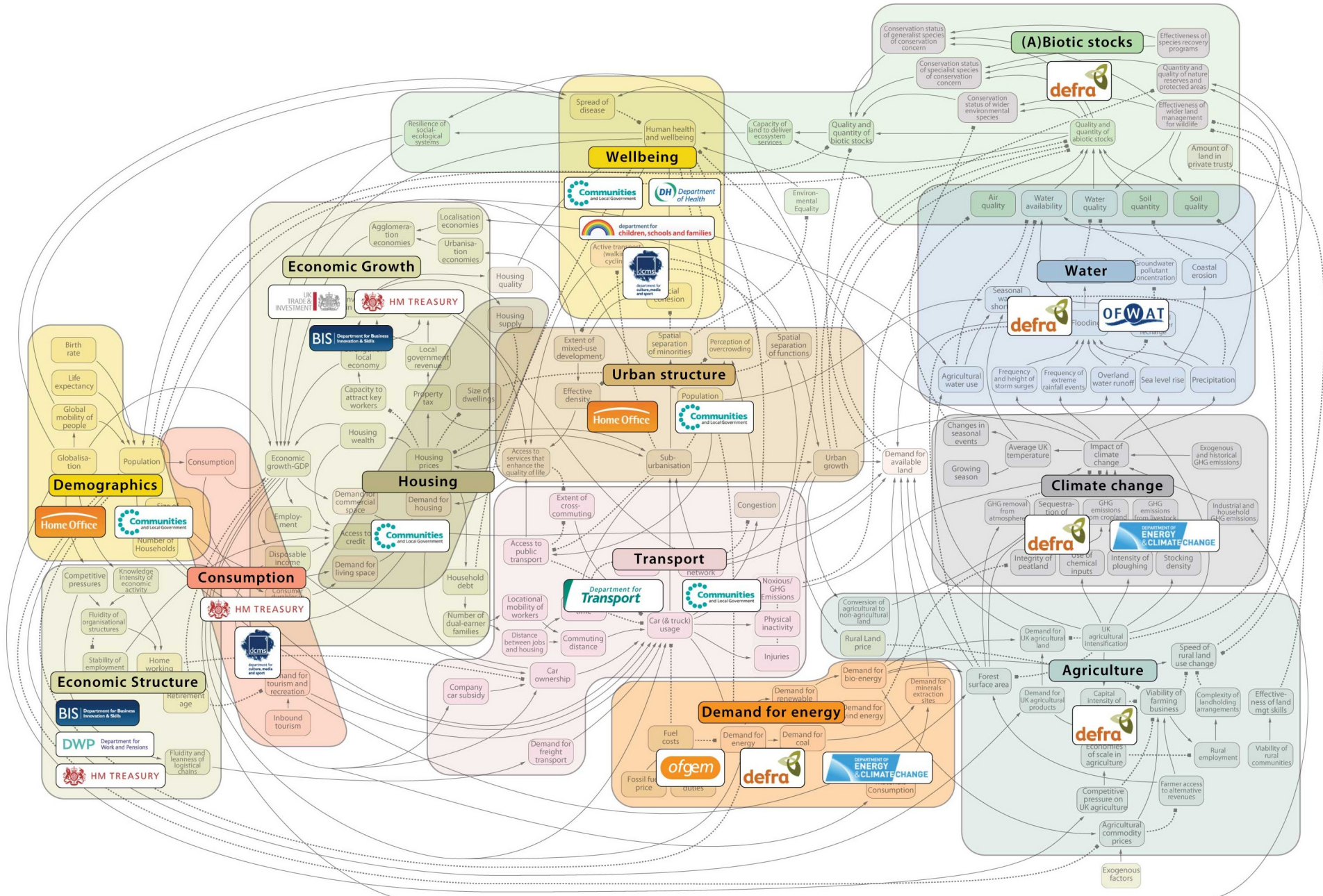
Figure 3.1: Land use and wellbeing



To help visualise the complicated interrelationship between diverse land uses, Foresight commissioned a number of system maps relating to a variety of different land uses. Figures 3.1 and 3.2 demonstrate examples of the links between the land, which influence the system and wellbeing, and the interrelationship between factors on the land system, respectively. In a project supported by a wide range of professional backgrounds, from geographers to economists, demonstration of how different fields overlap is an important feature of creating mutual understanding of the issue.

As well as being used as a visual tool in the main Report, and aiding discussion throughout the Project, all of the system maps were also published separately.

Figure 3.2: The land system – clustered influence diagram by government department.



3.4. Scenarios

As with most Foresight projects, LUF included an exploration of future uncertainty. The principal futures technique used in the Project was the development of three future scenarios.

The scenarios' purpose was not to predict the evolution of how land is used in the UK, nor to suggest policies that might change the future. Instead, all three are designed to be equally plausible. They were used to explore ways in which the challenges associated with land use could evolve in the UK over the next 50 years. They are also a tool that stakeholders can use to assess the robustness of possible choices and interventions against future uncertainty.

The scenarios for 2060 were formed around three 'critical uncertainties': concentration of people and economic activity, adaption to environmental change and resistance to change.

The scenarios were named 'Leading the Way', 'Valued Service' and 'Competition Rules'. Further details of all three can be found in Appendix E of the Report.

4. Impact

4.1. Government departments

4.1.1 Department for Environment, Food and Rural Affairs

The Report was one of the core documents that Defra used to establish the evidence base of the Natural Environment White Paper (NEWP), *The Natural Choice: securing the value of nature* (Cm8082, June 2011). The evidence set out in the Report was seen as supporting and complementing that in other recent studies, such as the Lawton report, *Making Space for Nature* (2010), the **National Ecosystem Assessment** (2011) and **The Economics of Ecosystems and Biodiversity** study (2010). Commonality between these pieces of work was particularly evident in the identification of major factors driving change (e.g. demography, climate change, economic growth, changing societal expectations) and in the need to assess the value of land comprehensively (including through innovative forms of economic and non-economic valuation).

Defra was particularly struck by the Foresight project's clear emphasis on achieving a wider range of sustainable benefits from land, for example by promoting its multifunctional use and through action at the landscape scale. These Foresight messages were supported in workshops and numerous discussions that Defra held with stakeholders. In producing the White Paper, Defra also consulted the team working on the Scottish Government's emerging land use strategy, *Getting the best from our land* (March 2011), which shares many of the same assumptions.

The election of the coalition Government in May 2010 obviously altered the political context within which the Foresight project's final report was produced. Nevertheless, the philosophy of the NEWP is rooted in the sort of evidential analysis framed by the Foresight project, and many of its individual proposals have now been adopted. In particular:

- The creation of a new institutional framework. Local Nature Partnerships will be established to work at a strategic scale to improve the range of benefits and services we get from a healthy natural environment.
- The establishment of Nature Improvement Areas to restore and connect nature on a significant scale (a direct response to the Lawton review's proposal for 'ecological restoration zones' and a recognition of the Foresight project's identification of gaps in the existing network of designations).
- Recognition of the importance of the planning system to achieve the integrated and informed decision making that is needed to support sustainable land use within a decentralised and locally led framework (the

Government will consult on a draft of the National Planning Policy Framework later in the summer).

- The establishment and piloting of a new voluntary approach to biodiversity offsetting, so that biodiversity loss is compensated by habitat expansion or restoration elsewhere.
- Production of an action plan to expand schemes in which the providers of ecosystem services are paid by their beneficiaries; as part of this work, Defra will introduce a new research fund targeted at these schemes.
- Bringing together government, industry and environmental partners to reconcile how Defra will achieve its goals of improving the environment and increasing food production.
- Carrying out a full review of how Defra uses advice and incentives for farmers and land managers, to create a more integrated, streamlined and efficient approach that is clearer for farmers and land managers.
- Establishing catchment-level partnerships to develop and implement plans for creating and maintaining healthy water bodies, which will establish the right level of spatial targeting to address sources of water pollution, and how best to achieve integrated, multiple environmental outcomes.
- A strong acknowledgement of the need to reconnect people with the land, including through a new Green Areas Designation.

Together with the other measures contained in the White Paper, Defra believes that these initiatives move us a considerable way towards achieving, across its policy portfolio, the sort of integrated, coherent and consistent approach to the use and management of land advocated by the Foresight project.

4.1.2 Communities and Local Government

The Report provides a valuable baseline on how land is used in England, which has been helpful in deciding planning policy priorities.

The Report recognises that a strategic approach for land use needs to strike the right balance between national and local powers. CLG's reforms of the planning system, set out in the **Localism Bill**, reflect the decentralised framework outlined in the Report. This framework, comprising a national framework consisting of broad principles informing a common approach to decision making, with the detail of implementation being the responsibility of local decision-making bodies and civil society, influenced by market processes, is mirrored in the new planning system set out in the Localism Bill and supported by the new National Planning Policy Framework (NPPF).

Many of the priorities for action in the Report are being taken forward in the Natural Environment White Paper. The White Paper sets out how we will protect natural value through the planning system because planning has a key role in securing a sustainable future. The NPPF is central to CLG's planning reforms. This will set out CLG's environmental, social and economic objectives for the planning system, and explain how they relate to each other, in one succinct document that CLG will publish in draft in July 2011.

4.1.3 Department for Business, Innovation and Skills

The **Technology Strategy Board** (TSB) welcomed the publication of the Report, with its wide-ranging insights on a topic that can only grow in importance in future decades. The report brings together a distillation of interesting perspectives on several themes of direct relevance to TSB's work, most notably in agriculture, water, energy and transport. The Report amplifies in a helpful way TSB's own view that new technology and approaches will be necessary to increase food production whilst reducing environment impact. On the topic of water, it brings out some of the critical issues for the sector, such as scarcity and flooding, and connects them to other land use issues, such as farming practices and planning consents. Particularly useful are the data that underpin the analysis throughout.

In a follow-up to the Report, the Department for Business, Innovation and Skills (BIS) and an Arup consultant undertook a project to look more closely at regional infrastructure priorities, and what this could tell policy makers about future infrastructure policy priorities in government. This work, and the underlying analysis behind it as to the relationship between infrastructure development and economic growth, continues to form the basis of BIS and government policy development on infrastructure, for example as a part of the **Infrastructure Growth Review**, which was initiated in May 2011.

4.1.4 Department for Energy and Climate Change

The Department for Energy and Climate Change (DECC) used the Report to help inform the agriculture and land use trajectories it put together in the original release of the **Energy Calculator** in July 2010. The LUF Report is described as providing 'a good summary of drivers, as well as suggesting an approach to effective long-term land use management'. DECC published an updated version of the Calculator in March 2011 and will be looking at future analytical updates in 2012.

4.1.5 Environment Agency

The Report's conclusions support many of the Environment Agency's (EA) corporate aims, and have provided data and information which give the EA a more global viewpoint on the issues and impacts of land use changes. The Report also highlights the complex interactions between different drivers for land use.

The Report has added value to the EA's existing work by improving its ability to cross-link issues and gain a perspective of the bigger picture within which the EA's work fits. Aspects of the Report have been used to inform and improve work as identified below. It has reiterated to the EA the range of pressures from land use change and how these may vary in the future.

General points

- It has helped shape the EA's messages regarding its role in addressing diffuse pollution, improving soil and water management; and the role that soil and water (quantity and quality) has in underpinning food security.
- It is helping the EA to consider land and water management in the wider context, taking account of the long term, and recognising how issues that are external to our geographical and regulatory remit can affect approaches in England and Wales.
- It is helping the EA to identify approaches that are resilient to future pressures, such as climate change, demographic changes or changes in global economies.
- It is helping the EA with its thinking on developing a strategic approach to addressing diffuse pollution.
- As an organisation, the EA has supported the use of future scenarios in its strategic thinking, and has used them effectively in several instances – for example, its water resources strategy.

Specific areas where the Report has informed the EA's work

Flood and Coastal Risk Management

It is helping develop the EA's approach to:

- steering development away from high-risk flood areas and areas vulnerable to coastal change;
- providing strategic and site-specific technical flood risk advice;

- optimising opportunities to design flood-resilient land uses and incorporate floodplain restoration and sustainable surface water management within new developments;
- integrating aspirations of local partners for present and future land uses; and
- developing sustainable solutions to local flooding issues, such as sustainable urban drainage systems (SuDS) and river and coastal flood plain restoration.

Ecosystem Services Approach

It is helping the EA's development of:

- adopting an ecosystem services approach to decision making;
- appraising flood and coastal risk management schemes to ensure that they include the ecosystem services approach; and
- using the ecosystem services approach to ensure that it provides advice to government on policies such as the Common Agricultural Policy to help improve the environment.

4.1.6 Parliamentary Office of Science and Technology

The Parliamentary Office of Science and Technology (POST) is an office of the two Houses of Parliament (Commons and Lords), charged with providing balanced and independent analyses of science- and technology-based issues relevant to Parliament. POST regularly publishes short briefing papers (POSTnotes) and longer reports to give Parliamentarians a broad overview of an issue and an analysis of the policy implications (see [POST's website](#) for example publications). POST also works closely with a wide range of select committees in both Houses.

POST has maintained strong links with the Government Office for Science over a number of years in order to inform its own output, particularly with regard to Foresight activities. POST has regularly hosted the Parliamentary launches of Foresight reports to raise awareness among Parliamentarians of their conclusions, including the LUF Report on 3 March 2010. Since the launch of the Report, a number of POST activities have encompassed areas it deals with and used its findings. These included POST Report 370, **Living with Environmental Limits**; POSTnote 377, **The Ecosystem Approach**; POSTnote 378, **Ecosystem Service Valuation**; POSTnote 380, **Landscapes of the Future**; and a POST seminar on Landscapes of the Future on 8 June 2011, at which one of the Report's lead authors, Professor Joe Morris, was a speaker.

4.2. Devolved Administrations and Regional Initiatives

4.2.1 Welsh Assembly Government

The Welsh Assembly Government has welcomed the opportunity to actively engage with the Project as part of the High-Level Stakeholder group. Both the interim and final findings have contributed to an appropriate and timely evidence base on which future policies can be developed.

The emphasis in the Report for a strategic and multifunctional approach to land use change, together with the importance of sustainable behaviours, aligns with a range of Welsh Assembly Government initiatives such as the **Natural Environment Framework (NEF)**, the **Land Use Climate Change Report Implementation Plan** and the **Food Strategy for Wales 2010–2020**.

Agriculture – Land Use for Conservation

Given the challenges identified in the Foresight report, it is clear that a multidisciplinary and sustainable approach to land use will need to be adopted in the future to meet growing demands. The NEF aims to define how biodiversity and wider environmental outcomes can be achieved under the central organising principle of sustainable development. The NEF, which seeks to embed an ecosystem services approach, will draw on principles contained in the **Wales Environment Strategy, Biodiversity Framework** and the sustainable development scheme *One Wales: One Planet* and will draw on data from the Project.

The Welsh Assembly Government's approach to the NEF is to look at the environment as a whole and act to secure a more integrated approach to managing the natural environment that improves the health of ecosystems and helps to optimise social, economic and environmental benefits. The NEF programme has an Economics and Valuation work stream, which is drawing heavily from both the UK National Ecosystem Assessment (NEA) and The Economics of Ecosystems and Biodiversity (TEEB) to build up a suite of valuation approaches that could be applied through NEF.

Agriculture – supply of food

Supporting food production is a core objective of the Welsh Assembly Government's *Farming, Food & Countryside – Building a Secure Future Strategy*. The support available to help farmers to improve their competitiveness and viability ranges from advice and guidance from the Farming Connect services through to direct grant assistance through the Rural Development Plan's dedicated grant schemes.

The Food Strategy for Wales – *Food for Wales, Food from Wales 2010–2020* acknowledges the issues surrounding the improvement of food security, and encourages research into the future challenges facing the food system. Our

policies for food will utilise data from both the LUF and Global Food and Farming projects.

Climate Change

In alignment with the Report, the Welsh Assembly Government recognises the potential role that land use can have in both mitigating and adapting to climate change, and has an Implementation Plan based on the recommendations in the March 2010 report of the independent Land Use Climate Change Group. The report is an assessment of the science relating to greenhouse gas emissions from the agriculture, land use and food sectors in Wales and outlines a 'direction of travel' that can be taken for these sectors to achieve significant reductions in emissions by 2040. The Group adopted an integrated approach based on assessing the trade-offs between benefits and disbenefits in delivering ecosystem services. As a basic principle it recognises the importance of grassland-based farming systems to the range of ecosystem services (including food production) that are delivered in Wales.

Social Preferences and Attitudes

Such activity is underpinned by the recognition of the importance of social behaviours, and the Welsh Assembly Government, in conjunction with Defra and DECC, is developing research to address this as part of a shared England and Wales evidence budget.

4.2.2 Northern Ireland Assembly

Developing policies that will have impacts for decades to come is always difficult for politicians; none of us can predict the future. However, the best we can do is use approaches such as those set out in the Report to look at what impacts current policies might have in the future and use those to inform what we need to do today. Prediction can never be an exact science, but by using the best information available and applying well-considered analysis we can make the best estimates possible on what we must do now if we are to have functioning ecosystems that deliver many benefits for citizens in the future. This is vital work that must be used to inform government policy now.

The NEA and LUF work will have major impacts on the Northern Ireland Assembly's (NIA) policy work, helping it to bring a more integrated and proactive approach to how land is managed through agricultural policy, protected areas, renewable energy, linkage of heritage to tourism and promoting a sustainable approach to legislation. All of these areas are active interests of the NIA over its current term, and it hopes that by the end of this term (2015) it will have embedded the concept and practice of integrated land use into the work of the Assembly with solid outputs in terms of both legislation and practical action (regulations, funding, Common Agricultural Policy reform).

4.2.3 Scottish Government

The range of outputs from the LUF Project provide an evidence base that will continue to be valuable to the Scottish Government into the future, supporting analytical work across a number of issues related to land use in Scotland. As the final project report acknowledges, the project outputs are focused primarily on England. Nevertheless, several are of wider relevance, and the efforts made by the project team to keep the Scottish Government informed of progress and to communicate findings were valuable. For example, the LUF project team visited the Scottish Government to present and discuss the findings following the launch of the final project report, and this provided a useful basis for thoughts during what were the early stages of development of the Scottish Government's Land Use Strategy. During the lifetime of the project, the LUF project team was also in regular communication with the manager of the Scottish Government's Rural Land Use Study, which helped to ensure that the two projects were complementary, and this worked well from our perspective.

4.2.4 Government Office for the East of England

The Report has played a major role in helping the Government Office for the East of England (GO East) continue to lead the way in the practical application of the Ecosystems Services Approach (ESA).

Valuing Ecosystems Services in the East of England (VEsSiEE) is a multipartner project that looked at valuing some of the key ecosystems services in the East of England. The aim of the project was to see if, and how, an ESA could be implemented at regional and local level. An ESA is used to place a value against the services, goods and processes provided by the natural environment so they can be used in decision-making processes and assessed as part of sustainable development.

The Report's launch was very timely for VEsSiEE as it was just about to embark on its second phase, which would test the ESA methodology developed in phase one through a range of real-life local pilots. The information provided by the Foresight report eliminated the need for pieces of planned work enabling us to maximise our resources to achieve more.

Two local pilots, focusing on the application of ESAs on land use, were developed and aimed to address the Report's recommendations, in particular the increasing need to promote and reward the multiple roles of agriculture; the promotion of multifunctional land use (the use of one parcel of land to provide multiple services); promoting a system which takes full account of public attitudes and preferences and encourages active participation by local communities in decision making; and use of the ecosystem services as a tool in valuing land uses.

The two pilots benefited from data and information produced by Foresight and from the input from members of the LUF lead experts. The pilots reported at the end of March 2011 and one of the key outputs included toolkits which can be used to engage local people and experts in making decisions on future land use. The pilots will also feed into Defra's Natural Value Programme.

Foresight also provided opportunities to build relationships with international organisations that have also been exploring ESA through an event they jointly hosted with the Foreign and Commonwealth Office's Science and Innovation Network, enabling best practice to be shared and securing international cooperation on future work.

4.3. Research and Academia

4.3.1 Natural Environmental Research Council

The most striking aspect of the Foresight report on land use was the emphasis it gave to dealing with trade-offs between different land-use types. This raised a number of issues about what information was available to decision makers who needed to deal with such trade-offs, how new knowledge about ecosystem services would help in this and how new approaches to delivering and valuing ecosystem services would affect the way society looked at land use in future. **Natural Environmental Research Council** (NERC)-funded researchers at universities and research centres are already using or producing a range of new knowledge and relevant tools, including those arising from the last Countryside Survey. These include a new field-by-field land-cover map and a new perspective on analysing land use in terms of ecosystem service delivery and approaches to 'land-sharing' or 'land-sparing'. This effort directly addresses issues raised in the Report. In addition, much of NERC's research on water, and in particular new joint working between the **British Geological Survey** and the **Centre for Ecology and Hydrology** (CEH), examines issues such as flood and drought and soil-water relationships that interact with land use. Such integrated approaches will lead to the more sustainable land use decisions that the Report was seeking.

A number of the Government's high-level initiatives on the 'Big Society', localism and human wellbeing will all need decisions to be informed by good land use evidence, and much of this will need to be derived from NERC research, observation and monitoring.

Although not directly relevant to the Foresight report, UK under-sea territory also needs management involving many trade-offs, and NERC-funded bodies and researchers are active in marine mapping, resource assessment and developing deeper process understanding.

Other NERC actions relevant to the Report fall into two categories: Living With Environmental Change (LWEC) and research programmes.

Living With Environmental Change

There has already been one Foresight–LWEC workshop on the data and modelling requirements that might underpin future land use option analysis and decision making, and researchers and staff linked with LWEC have attended a number of other Foresight meetings that have looked at land use nationally and internationally. The study was highlighted in discussion with the National Science Foundation when Andrew Watkinson and Dan Osborn visited the USA towards the end of 2010, and there have been more detailed interchanges subsequently, for example on urban land use.

A number of LWEC partners and other bodies asked LWEC to organise a discussion on **Measuring Change in the Countryside**, and one workshop, which used the Foresight study as background material, has already been held. The outcomes from these discussions will influence what NERC and other agencies do in future to measure rates and magnitudes of change.

The report influenced the NERC input to the UK NEA, which has done much to help value the services delivered by a range of habitats found on various land use types and which Ministers are referring to as a paradigm shift in thinking about the links between people and environmental resources. The assessment made use of many facets of land use in developing its future scenarios, and the Foresight study was influential here.

Research Programmes

Several programmes have been designed with the Report inputs and findings in mind. These include:

- *Land-based renewables*: examining a number of alternative renewables strategies for land use in various parts of the UK and ways of coping with environmental variables that are partly dependent on land use or determine it.
- *Valuing Nature Network*: a project that complements the UK NEA, and which is looking at the value of biodiversity in a range of habitats and land uses.
- *Environmental Virtual Observatory*: this pilot project is developing e-Science approaches to manipulating and modelling data on many aspects of land use. These approaches may prove to be of central importance to land use management at catchment or landscape scales.

A number of other programmes will have relevant outputs and outcomes, including the *Insect Pollinators Initiative*, where land use patterns are a major factor in determining the delivery of pollinator services and the health of pollinators. Other programmes influenced by the Report include those on Macronutrients, the Changing Water Cycle and Biodiversity and Ecosystem Service Sustainability.

4.3.2 British Geological Survey

There have been a number of drivers in the last 12 months impacting strategic delivery of geoscience from the British Geological Survey (BGS). Two of these drivers are of direct relevance to findings within the Report:

- The growing need for a better understanding of our ‘natural capital’ (an integrated assessment of the value of our landscape); and
- The demand for, and growth of online public data (and the tools with which to share and compare them).

The NERC has put in place a new national capability strategy to deliver more integrated research between its research centres, principally BGS, the CEH, National Oceanographic Centre (NOC) and the British Antarctic Survey (BAS). The objective is to generate more integrated, informed and informative assessment of a wide range of environmental issues. In the case of BGS and CEH this is to have a clear focus on the ‘natural capital’ of our landscape and the status of potential changes within, and threats to, our environment as it responds to the demands we place upon it, particularly as we change our use of it or develop multiple uses for it. The integrated approach will enable the BGS to report on, and attempt to balance, the relative value of the ecosystem services we receive and the potential for us to use our environment more sustainably/effectively.

Two core strands of research are now under way:

- Strand 1 is concerned with water resources, and BGS is integrating its groundwater and surface water models to assess future water security as economic, demographic and climate change impacts develop. Water infiltration and storm run-off models will also be jointly developed by BGS for the purpose of pluvial flooding analysis and assessment of the role of sustainable urban drainage systems. A longer-term project will study controls and environmental-change impacts on ecosystem functioning in groundwater-dependent wetlands that are particularly sensitive to change.
- Strand 2 concerns UK soil resources and the wide and varied role they play in the provision of key ecosystem services. Projects within this research area are looking at how we can assess carbon stock and flux, anthropogenic and geogenic contaminants, and biodiversity and ecosystem mapping at a national scale. Additional research is focused on threats to soils nationally by erosion. BGS and CEH will also continue progress already made in making more soil information available via the NERC Soil Portal.

Both strands of research require BGS and CEH to address issues of data integration and dissemination (as highlighted in the Foresight *Data challenges review*), building on the considerable collaboration already instigated within

the last 12 months (e.g. the [Informatec](#) project and the [NERC Soil Portal](#)), as well as enhanced development of open-modelling systems (e.g. the [Data and Research for Environmental Applications and models](#)).

Progression of web technologies and the significant uptake of the BGS [Opengeoscience](#) service have also guided policy and strategy for openness and delivery of our public data. The challenge of improving availability and access to our data is being fully addressed by a new NERC information strategy, with many new datasets becoming available in the last 12 months via online tools or web mapping services (e.g. borehole scans, geochemistry and soils). Greater stakeholder participation is being sought with projects addressing 'crowdsourcing' opportunities (e.g. the [Landslide database project](#)), and specific new outputs have been developed for strategic growth areas such as London (e.g. [London Earth](#) and [Future Thames](#)) and Glasgow (e.g. [Clyde Urban Super Project](#)). Many of our online data systems have had significant upgrades in terms of functionality and content. Longer-term development for greater interoperability of BGS data is being progressed by research of semantic webs and a move towards 'data linking' for our digital data outputs. Our early engagement with the development of INSPIRE annex II and III data specifications is now entering a phase of commenting and reviewing (commencing 20 June 2011) and will provide a robust structure for us to roll out information to users.

The state of science review of [mining and quarrying in the UK and their impact on future land use](#), which was commissioned from BGS by the LUF Project, has been extremely useful in helping BGS to develop its thinking on security of supply issues related to indigenous minerals. This, in turn, has informed (amongst other things) research carried out for Defra on the [future of aggregate mineral supply in England](#), advice given to the Office of Fair Trading during its recent inquiry into [competition issues in the aggregates industry](#), and in evidence submitted to the recent House of Commons Science and Technology Committee inquiry into ['Strategically important metals'](#).

4.4. UK Stakeholders

4.4.1 Natural Capital Initiative

The LUF Project has been part, and in some contexts a pioneer, of a shift in thinking which acknowledges the multiple benefits for humans that flow from the environment. This has gained pace over the last few years, with the UK **NEA**, **TEEB** and many other European and international initiatives. The LUF Report is an important cornerstone in this thinking, but it is also difficult to tease apart the individual influence of each initiative.

Provision of robust guiding concepts

The LUF Report is useful in portraying land use as a tangible interface between people and the natural environment. As a result, it helps us see that land use planning is a crucial means of delivering improved strategic environmental management. We now recognise that some of the most fruitful dialogue about safeguarding and enhancing ecosystem services will come when the environmental scientists and environmental economists begin to work more closely with planners. In this context, the Report also challenges the traditional divide between rural and urban planning.

The focus of the LUF Report on land use and landscapes will help to ensure that environmental policy issues such as biodiversity and water resource protection are addressed as a single package. Natural Capital Initiative (NCI) responded to this by holding a workshop in December 2010 on the extension of biodiversity offsetting to account for ecosystem service provision. The report on this workshop¹ informed a Defra consultation on proposals for biodiversity offsetting.

Within the networks that NCI operates, it is apparent that the Report has led to wider acceptance of the notion of multifunctional land use. This is particularly helpful given the level of interest in ecosystem service provision by government and academia. Once people begin to recognise the diversity of services that could potentially be provided by any one unit of land area, they will be able to identify the synergies and address the trade-offs that need to be made when deciding how to allocate resources to enhancing overall ecosystem service provision.

The Report also continues to guard against rural affairs being divorced from urban issues. This is helpful given that urban areas can be seen by ecologists as a habitat in their own right (e.g. as in the UK NEA). The Report recognises the importance of social and cultural factors in determining how land is valued (see, for example Figure 3.1 on p. 83). This provided a strong motivation for the NCI accepting the invitation to work with *Sciencewise ERC* on an evaluation of public dialogue projects relating to ecosystem services and land-use futures.² This is also likely to lead to NCI being involved in further transdisciplinary projects that explore the enhancement of social capital alongside natural capital.

Contributing to the rationale for specific projects

The NCI is planning a focused multistakeholder dialogue on the prioritisation and valuation of ecosystem services within a river catchment, starting in late 2011. The decision to focus this dialogue on a particular geographical area was informed in part by the idea (captured in the Report) that ecosystem service values are context specific.

1

http://www.naturalcapitalinitiative.org.uk/files/Workshop_3_report_FINAL_230211.pdf

² <http://www.sciencewise-erc.org.uk/>

4.4.2 Royal Geographical Society

The Royal Geographical Society (with IBG)'s (RGS) involvement as a stakeholder on the Project began early in the process, nominating Society Fellow Professor John Goddard, who became a member of the Lead Expert Group. The Society was also represented, through our Policy and Public Affairs manager, in the scenario development workshops of early 2009.

The LUF study, including the final published report, has informed a number of areas of RGS' work, principally its policy and public engagement activities.

First, RGS sought to promote the Report's findings through the policy pages of our website, highlighting the key involvement of geographers and a geographical perspective. The work went on to inform an hour-long policy discussion held by the Society, as part of the *Water2010 conference of the All Party Parliamentary Water Group (APPWG)*, on *Land use and future water security* on 13 July 2010. The Head of Foresight, Professor Sandy Thomas, chaired this meeting, with another Lead Expert Group member and geographer, Professor Louise Heathwaite, on the panel in front of an audience comprising academics, representatives from industry, local government and NGOs, and other policy makers.

The report also informed RGS' own events programme and on 25 October 2010 Professor John Goddard gave a lecture on the Report to some 400 Society Fellows, members and guests. This presentation, *What future for our land of Britain*, was part of the RGS popular Monday Night Lecture Series, which features expert and well-known speakers discussing geographically focused topical, educational and inspirational subjects. RGS' wider work on public engagement has also been influenced as a direct result of RGS' involvement with Foresight. The commentaries accompanying a number of the images in our *Britain from the Air* street gallery exhibition highlight the issues and challenges of the way in which Britain's land is used in the future. Launched in Bath in September 2010, the exhibition has already been viewed *in situ* by up to four million visitors, with many more online and through the national media.

4.4.3 Campaign to Protect Rural England

As a body whose primary interest is in land use, Campaign to Protect Rural England (CPRE) has made extensive use of the analysis and findings of the Project in its policy and campaigning work over the past year or so. While not agreeing with every aspect of the approach taken by the study, notably its narrow analysis of the housing market and transport costs, CPRE has used some of the evidence and ideas it contains to inform its own approach to policy development in four key areas in particular. First, the study has informed CPRE's approach to valuing the natural environment and our engagement in the development of the Government's recently published

White Paper on the natural environment, *The Natural Choice: securing the value of nature*. The White Paper and the accompanying NEA carry forward some of the useful thinking on the value of land addressed in the Foresight study. Second, CPRE has used the study to inform its work on the Government's current review of the planning system, particularly in connection with the emerging NPPF. CPRE's work on the latter has, in particular, used the Project's approach to land use governance as a basis for developing its thinking on planning reform. Third, CPRE's approach to agricultural policy has been informed by the analysis set out in the Foresight study. CPRE will shortly be promoting its own vision for the future of farming, which will address many of the challenges identified in the study, and CPRE hopes its vision will in turn inform policy development nationally and internationally.

Finally, CPRE has used the Report's analysis of multifunctional land use to inform its understanding of the appropriate development of energy infrastructure, particularly land-extensive renewables and grid infrastructure, in scenarios for renewables development to 2020 and 2050. As a result, CPRE is particularly pleased to see that land use is now part of DECC's 2050 Energy Calculator and plans to ensure that future energy scenarios include an assessment of their implications for sustainable land use.

4.4.4. Natural England

The Report was a welcome contribution to the debate on land use. It provided a helpful collation of much key information and analysis, and Natural England (NE) endorsed the emphasis on the land as a system and the need for a focus on multifunctional land use and on ecosystem services. Overall, the Report helped reinforce NE's strategic direction, set out in its **Corporate Plan 2011 to 2015**, and helped NE make its inputs to the development of the **Natural Environment White Paper**. It also helped to inform our thinking on 'Big Society' and 'Localism', and resonated well with NE's 'All Landscape Matters' approach. From a 'futures' perspective, NE worked well with the Foresight team in developing our respective scenarios, sharing data and insights and ensuring that the two pieces of work were complementary.

The Report has helped NE to consider its thinking on sustainable land use, prompting a literature review of sustainable settlement patterns and the natural environment, and some further thinking on the challenge of the transition to low-carbon energy solutions on the natural environment.

4.4.5. Home Builders Federation

It is vital that we continue to look at important issues, such as future land use, over the long term rather than limiting ourselves to the short-term approach of individual development projects or, often, even the planning system as a whole. The Project is, therefore, an important contribution to the wider debate over the needs and demands of existing and future populations and their requirements and use of land.

All too often, as a society, we spend our time being concerned about minutiae, whether with regard to planning policy, current economic concerns or short-term environmental impacts of development. What is actually required is an understanding that most of these small issues are a tiny part of the much bigger drivers of land use and land-use change, as so clearly demonstrated by the Foresight study.

Much of the work of the Home Builders Federation is about drawing attention to the 'big picture' behind the concept of sustainable development. Projects such as Land Use Futures assist us greatly in demonstrating that a long-term vision is much more than a series of short-term strategies or policy initiatives.

4.4.6 Royal Institute of British Architects

Futures Fair 10 was a one-day conference supported by BIS through the Foresight Programme and Crystal CG, chaired by Peter Murray, which gathered together built environment professionals with people leading innovation in other fields in an event that planted the seeds for new ways of working and fresh collaborations. The fast-paced day included presentations from challenging speakers, including Professor Marcial Echenique of Cambridge University, who was one of the Report's lead experts, representing five key themes, one of which was landscape resilience.

The event concluded that there is a need to think strategically over longer timescales. There is also a need to find a better system for resolving conflict between competing land uses, and we should future-proof decisions, for example on the release of open land.

4.4.7 English Heritage

English Heritage (EH) welcomed recognition in the Report of the relevance of land-use policy and practice to conservation and enhancement of the historic environment and also the contribution that historical understanding of land use can make to decisions on its future.

EH particularly welcomed the following two statements:

In the UK, as elsewhere, few landscapes remain natural. Nevertheless, many of our distinctive semi-natural habitats and cultural landscapes are valued in terms of their importance to the country's identity and heritage, protecting wildlife, and for the contribution they make to people's wellbeing and prosperity.

Tourism and recreation are heavily dependent on public goods in providing the basic resource that draws people to visit places. This is especially true of rural recreation where primary land uses such as agriculture and forestry create the landscapes, habitats for wildlife and historic environments that are the main attractions for visitors. The same is also true of urban areas where the built environment, historical heritage and landscape setting provide the primary motivation for visits. Tourism and recreation are therefore effectively free-riding on other land uses. Landowners and managers often do not have the means to gain income from this use of the land resource.

While officials within EH have read the Report with great interest, as yet it has had little direct influence on EH's work. EH attributes this to two factors:

First, EH corporate priorities in the period since publication have been dictated by the change of government, significant changes to land use planning policy and reductions in public expenditure.

Second, the main emphasis of the Report in relation to conservation was focused on biodiversity and ecosystem services, not the historic environment.

EH has, nevertheless, continued to undertake work that – by virtue of its intention to better integrate thinking and practice in relation to landscape, cultural heritage and the natural environment – supports the main recommendation of the Report pertaining to the historic environment:

Biodiversity, landscape and historic environments are currently governed by separate systems, although there can be overlaps. There is a case to reconsider this sectoral approach, as the interactions between these different perspectives on the value that society attaches to land become clearer. The ecosystem services approach, supported by the NEA, provides a valuable way of dealing with this issue.

This work has focused, *inter alia*, on approaches to mapping, analysing and characterising rural built heritage features in relation to the National Landscape Character Areas; on correlating historic environment data with flood and coastal erosion risk mapping; and on consideration of the relationship between the Ecosystems Approach and cultural heritage. This direction of travel was, however, well established before publication of the Report and – though informed by it – cannot be considered to have been initiated by it.

EH also considers that the recommendation was unduly influenced by differences in sectoral approaches to designation (which we regard as inevitable) and lacked an understanding of the close cooperative working between the agencies in the Department for Culture, Media and Sport and Defra families that takes place across a far wider range of activities.

4.5. International

Science and Innovation Network

The Foresight Programme and the UK Foreign and Commonwealth Office's Science and Innovation Network hosted a workshop entitled 'Incentives for the delivery of Ecosystem Services: international perspectives and opportunities' in March 2010.

The workshop brought together key policy-makers and academics from the international community who have a particular interest in the evidence to support schemes to incentivise and reward the development and delivery of ecosystem services.

Against the backdrop of the LUF Report, the workshop (a) reviewed the scientific evidence for the value and benefits of ecosystem services and what might be done to incentivise their provision; (b) identified gaps in our knowledge base and what we might do to bridge them; (c) reviewed innovative, evidence-based policy development and implementation, identified and shared good practices, and explored how to overcome barriers to progress; and (d) identified and explored potential synergies and opportunities for future international collaboration.

Common themes which emerged from the discussions were:

- the need to develop a conceptual framework to handle complexity;
- issues concerning scale, both spatial and temporal;
- the need for evaluation over sufficiently long timescales and longer planning horizons;
- the need for an interdisciplinary approach, moving out from specialist fields and vocabulary;
- support is required for decision making and implementation, at local and national level;
- development of technical tools and TEEB valuation work are helping to transfer the concepts;

- TEEB contains good case studies and demonstrations at various levels and it should be possible to use these as tools for teaching and communication; and
- trying to integrate types of decision making, such as planning permission and pollution control. Overall, we all need to make the information we have both more widely available and more useable.

5. Communications

5.1. Media Coverage

A press conference was held on 25 February 2010 at the Science Media Centre in London. The report was launched at a stakeholder reception at the Royal Society by Professor John Beddington, the Government Chief Scientific Adviser. The report received broad media coverage:

- Interview with Professor John Beddington, Government Chief Scientific Adviser
 - *BBC News Channel*
- Land management in UK must change to cope with climate change
 - *The Daily Telegraph*
 - <http://www.telegraph.co.uk/earth/earthnews/7317864/Land-management-in-UK-must-change-to-cope-with-climate-change.html>
- Climate change report sets out an apocalyptic vision of Britain
 - *The Times*
 - <http://www.timesonline.co.uk/tol/news/environment/article7041857.ece>
- Call to update Britain's land use systems
 - *Financial Times*
 - <http://www.ft.com/cms/s/0/c5c9f096-220e-11df-98dd-00144feab49a.html#axzz1QaCF70e8>
- Warning over future of land use
 - *Press Association*
 - <http://www.sundaysun.co.uk/news/uk-world-news/2010/02/26/warning-over-future-of-land-use-84229-25918496/>
- Improving spatial awareness in policy making
 - *Town and Country Planning* journal, November 2010

- <http://www.tcpa.org.uk/resources.php?action=resource&id=979>

5.2. Dissemination events

Date	Event
02/03/2010	SDUK2010
03/03/2010	Parliamentary Office for Science talk, Westminster
19/03/2010	Northern Rural Network
26/03/2010	Northern Way Symposium, Salford
26/03/2010	Agriculture and Horticulture Development Board sector boards meeting
07/04/2010	UK Planning Research Conference 2010, Chelmsford
12/04/2010	Second <i>Freshwater Biology</i> Summit: Achieving ecological outcomes: aquatic ecological responses to catchment management
15/04/2010	Imperial College Innovation Conference
21/04/2010	Country Land and Business Association
28/04/2010	Land Use Futures research presentation, Global Urban Research Unit Seminar, University of Newcastle upon Tyne
07/05/2010	The Yorkshire and Humber Climate Change Partnership Climate Change Land Management

Date	Event
	Forum
09/06/2010	University of Kent open lecture
15/06/2010	Government Response to the Council of Food Policy Advisors Second Report – <i>Food: A recipe for a healthy, sustainable and successful future</i>
16/06/2010	Meeting with Caroline Spellman
30/06/2010	Royal Town Planning Institute: 2010 Planning Convention
12/07/2010	Paper on Foresight and CQuEL Interrelationships and Synergies, for Natural England (<i>Carys Swanwick</i>)
10/08/2010	Urban futures keynote talk, Urban Research Centre, University of Western Sydney
16/08/2010	Land Use Futures, keynote talk, Centre for Environmental Studies, MacQuarrie University, New South Wales
15/09/2010	Wales Biodiversity Conference, Bangor
29/09/2010	Engineering the Future 2050 conference, Imperial College
25/10/2010	RGS 21st Century Challenges
27/10/2010	EPSRC/RELU Strategic Land Use Conference

Date	Event
03/11/2010	Governing London 2060, Seminar presentation to University of Hong Kong
10/11/2010	Governing Land Use Futures, Seminar presentation to Oxford Brookes University
24/11/2010	Land of Promise: Meeting our land use needs, Centre for Environmental and Social Research Annual Lecture 2010, Kingston University
19/01/2011	Land use challenges: towards the resourceful city, Keynote speech to the International Conference on Regional Development and Urbanisation, Henan Province Government, China
17/02/2011	Geographical perspectives on food, water and energy security to 2030, RGS (with IBG) Environment and Society Forum
23/02/2011	Sustainable Futures a strategic perspective, Speech at the International Conference on Sustainable Energy Storage, University of Ulster, Belfast
31/03/2011	Land Of Promise: Future Land Use Challenges, speech to the School of Geography, Environment and Planning, University College Dublin
16/04/2011	Land Use Futures, conference talk at the Geographical Association Conference, University of Surrey

