GHK

Incentive Measures and Biodiversity – A Rapid Review and Guidance Development

Volume 1: Overall findings

Defra

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A report submitted by GHK
in association with

the Institute for European Environmental Policy

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1 Introduction

As a signatory of the Convention on Biological Diversity (CBD), the UK is committed to develop positive incentive measures that promote the conservation of biodiversity, and to take steps to identify, reform or phase out subsidies and other incentives that have harmful effects on biodiversity.

A recent CBD Decision (X/44) on Incentive Measures[1] encourages Parties to the Convention to adopt a range of policy measures and regulations designed to promote positive incentives and phase out perverse incentives, as well as to account for the value of biodiversity and ecosystem services in decision making. The UK and other Parties are invited to report to the CBD on progress and experience in this area.

GHK Consulting Ltd (GHK), in collaboration with the Institute for European Environmental Policy (IEEP), was commissioned by Defra to review current and planned policy in the UK that addresses Decision X/44 on Incentive Measures for Biodiversity of the Convention on Biological Diversity and to develop guidance and recommendations for future policy in this area.

The work involved two main elements:

1. **A rapid review of incentives for biodiversity in the UK**. Based on a document and web review and a series of interviews with staff in Defra and the devolved administrations, this task summarised and reviewed progress in the UK in relation to seven key themes addressed by Decision X/44:

   - Developing positive incentive measures for biodiversity;
   - Addressing perverse incentives that impact on biodiversity;
   - Assessing the value of biodiversity and ecosystem services;
   - Taking account of the value of biodiversity and ecosystem services in decision making;
   - Promoting sustainable consumption and production ;
   - Business engagement on biodiversity;
   - Promoting understanding of incentive measures internationally.

   For each theme, the review summarises key activities taking place at UK level and within the different countries of the UK (England, Northern Ireland, Scotland and Wales). It highlights progress and achievements, discusses some of the main barriers and challenges encountered and how they have been addressed, and identifies the lessons that can be learnt from experience in the UK to date.

   The review was submitted by Defra to the CBD in January 2012 as the basis for the UK's input to the progress review on activities related to Decision X/44

2. **The development of guidance for the identification and reform of incentives harmful to biodiversity**. Adapting existing international guidance for the identification and reform of environmentally harmful subsidies, a tool was developed to assist the assessment and reform of incentives harmful to biodiversity. The guidance tool is intended to be relevant both in the UK and internationally. The application of the guidance is illustrated with reference to three UK case studies examining the CAP Single Farm Payment, water abstraction licensing and incentives for renewable energy.

This final report presents the outputs and conclusions from the assignment. It is structured in three volumes:

- Volume 1 summarises the overall findings from the study and identifies implications for future policy;

[1] CBD (2010) The Conference of the Parties Decision X/44: Incentive Measures

- Volume 2 presents the findings of the rapid review of biodiversity incentives in the UK; and
- Volume 3 presents the guidance tool for the identification and reform of incentives harmful to biodiversity.

This document forms Volume 1 of the final report and presents the overall findings from the assignment. It summarises the main results from the two main elements of the work, and presents our overall conclusions and recommendations regarding incentive measures for biodiversity in the UK.

This volume is structured as follows:

- **Section 2** presents a summary of UK action with respect to incentive measures for biodiversity, outlining progress and achievements, barriers and challenges and lessons learned. The summary presents the main findings from Volume 2 and is structured according to the following themes:
  - Positive incentives for biodiversity in the UK;
  - UK action to address incentives harmful to biodiversity;
  - UK action to assess the value of biodiversity and ecosystem services;
  - UK action to take account of the value of biodiversity and ecosystem services in decision making;
  - UK action to promote sustainable consumption and production;
  - UK action to engage business with biodiversity;
  - Sharing experience and building capacity internationally.
- **Section 3** presents a summary of the guidance tool designed to help the UK and other countries to identify, phase out and reform incentives harmful to biodiversity, and draws general conclusions on its application. The tool is presented in full in Volume 3;
- **Section 4** presents overall conclusions from the assignment, and considers the implications for future policy with respect to biodiversity incentives.

2 Review of UK action with respect to biodiversity incentives

2.1 Positive incentives for biodiversity in the UK

The UK has implemented a range of positive incentive measures for biodiversity. The largest of these is the **agri-environment programme**, which provides funding for habitat management, restoration and re-creation on a large scale. Other significant incentive programmes include **grants and incentives for woodland** creation, restoration and maintenance, environmental **cross compliance** measures under the CAP, grants and incentives for the **water environment**, compensatory measures through the **planning system**, and **National Lottery funding** for biodiversity projects. The UK is also investigating the development of new incentive measures such as biodiversity offsets and payments for ecosystem services. The UK also supports **international incentive programmes**, such as REDD+, the Overseas Territories Environment Programme, the Darwin Initiative and the Flagship Species Fund, and is a signatory of the Nagoya Protocol on Access and Benefit Sharing.

There has been a large increase in funding for incentive measures for biodiversity and ecosystems in the last 20 years. Defra has estimated that the financial support given to biodiversity and conservation initiatives by the UK government increased by 126% from around £250 million in 2000/01 to £560 million in 2009/10. A large proportion of this has come through expansion of the agri-environment programme, which is co-funded through the Common Agricultural Policy (CAP) budget.

UK experience highlights a number of significant barriers and challenges:

- **Mobilising resources for biodiversity conservation** remains an ongoing challenge, despite recent increases in funding. **Funding for action outside the agricultural sector** is comparatively limited, especially in the current economic climate.
- **Co-ordinating the delivery** of biodiversity conservation activity, to enhance the coherence of the UK's ecological networks, is a **significant challenge.** Evidence suggests that the provision of incentives to individual farmers is insufficient to maximise biodiversity benefits, and that greater co-ordination to deliver landscape scale conservation benefits is needed;
- **Variations in rates of uptake** of conservation measures are evident, and limit the effectiveness of some schemes;
- **A changing policy landscape and uncertain market conditions** affect the responses of land managers to incentive structures;
- **Moving beyond publicly funded incentive schemes** has proved to be a particular challenge in the UK. A range of barriers have been identified to wider adoption of PES schemes, including knowledge gaps, regulatory and institutional structures, and transactions costs.

A number of lessons have been learned from the UK's experience of biodiversity incentive schemes to date. These include that:

- Biodiversity action requires **level of resource mobilised (including financial, human and technological)**, particularly in a densely populated and intensively managed country with many potentially competing land use and land management priorities;
- Incentives are important in influencing land management, but need to be accompanied by **other supporting measures**, particularly advice and training, which enhance their effectiveness;
- The **location, targeting and pattern of uptake** of incentive measures play an important role in influencing their effect on biodiversity and ecosystems. Having extended the availability of incentives to large numbers of farmers and land managers, UK authorities are now increasingly looking to improve the co-ordination of delivery to enhance the coherence of ecological networks and the delivery of ecosystem services.

- **Targeted programmes** can play an important role in filling the gaps left by mainstream incentive schemes and regulatory requirements;
- An appropriate balance needs to be struck between **"top-down" and "bottom-up"** approaches to the delivery of incentives. "Top-down" approaches based on common frameworks can help to enhance the coherence of incentive structures, bring economies of scale in policy design and delivery, and encourage sharing of knowledge and experience. However, bottom-up approaches, involving local partnerships and addressing local priorities, can often enhance the effectiveness of delivery.
- **Monitoring and evaluation** are important in enhancing the effectiveness of incentives over time.

2.2 UK action to address incentives harmful to biodiversity

The UK's work to address perverse incentives that adversely affect biodiversity includes initiatives:

- At the national level – on issues such as water pricing and energy incentives; and
- At the EU level – where the UK continues to advocate further reform of major subsidy programmes such as the Common Agricultural and Common Fisheries Policy.

The UK has played a central role in debates about reform of the CAP, and has been a pioneer of agri-environment policies, since the introduction of the Environmentally Sensitive Areas scheme in 1987. Successive CAP reforms have made considerable progress in decoupling subsidies from production and reducing their impacts on biodiversity and the environment. Positive incentives for wildlife and the environment have also increased, although the UK has called for a greater shift in the balance of subsidies.

Defra has also advocated radical reform of the Common Fisheries Policy, arguing that the current policy is broken and has not delivered its key objective of an economically viable fishing industry which minimises impacts on marine ecosystems. In July 2011, the UK welcomed proposals from the European Commission as a vital first step, and promised to work with the EU and other Member States to deliver the radical reforms that the marine environment and fishermen need and the public expects.

Proposals are also being developed to reform the water abstraction system in England and Wales, which under-prices water and impacts negatively on aquatic ecosystems. A new regime is anticipated in the mid to late 2020s, along with immediate changes to reduce the impact of abstractions will be made within the current system. The slow pace of reform reflects the complexity of the system, the high number of abstractors affected and the need to tailor a new system to the differing conditions in terms of water availability.

Key barriers and challenges in reforming perverse incentives include:

- **Political barriers** - especially at EU level when dealing with reform of major policies such as the CAP and CFP;
- **Resistance from sectoral interest groups** – such as farmers and fishermen;
- **Conflicts with other existing policies and objectives** – for example renewables subsidies, designed to meet climate objectives, can have adverse impacts on biodiversity;
- **Aspects of the design of current policies** – for example the lack of time limits for water abstraction licences, and requirement for compensation for variations in licenses – presents significant barriers to reform;
- **Conflict with social objectives** – such as tackling fuel poverty – which makes it difficult to tackle some environmentally damaging subsidies such as reduced VAT rates on domestic fuel; and
- **Complexity of reform packages** – where reform needs to be accompanied by complementary measures to minimise impacts to competitiveness and social equity.

Lessons that can be learned from the above examples are that:

- Reform of perverse incentives can be a **long term process**, but persistence can yield results over time;
- **Research and evidence** on the size and adverse impacts of incentives, on winners and losers and on options for reform can play a valuable role in making the case for reform;
- There is often a **need to work within an existing system**, even when this system is being reformed, if the need for change is sufficiently great and the timescales for reform are long. Adapting existing tools may provide cost effective short term solutions, where reform is a long term process.
- **Transparency, accurate design** (including timing) and **clear communication** with stakeholders and the general public are crucial to gain public support and counterbalance resistance from particular interest groups.
- **Flanking measures** and other complementary policies can help mitigate social and economic impacts of reform and increase its acceptability.

2.3 UK action to assess the value of biodiversity and ecosystem services

The UK has been active in supporting research to assess the value of biodiversity and ecosystem services. These efforts have culminated with the publication in 2011 of the UK **National Ecosystem Assessment** (UKNEA), the first overall analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. The NEA was an inclusive process involving many government, academic, NGO and private sector institutions. Through the NEA, the UK claims to be the first country to have undertaken a complete assessment of the benefits that nature provides, how they have changed over the past, the prospects for the future and their value to our society.

Other notable activities under this theme have included:

- Development of official government guidance on valuing the natural environment in economic appraisals;
- Defra guidance on valuing ecosystem services;
- A series of research projects supported by Defra and the devolved administrations to assess the value of natural environment and ecosystem services in the UK, including recent studies supported by Defra to value the benefits of the UK Biodiversity Action Plan and the benefits of Sites of Special Scientific Interest;
- Studies into the economic impacts of the natural environment, undertaken at the country level in Scotland, Wales and Northern Ireland, and in English regions;
- Internationally, UK support for TEEB initiative (The Economics of Ecosystems and Biodiversity).

Through a range of studies, the UK has significantly furthered its understanding of the value of biodiversity and ecosystem services in recent years, and approaches to assess them. Progress has also been made in providing guidance to inform such assessments and to incorporate them in decision making. For example, the government is currently developing guidance on valuing the natural environment in economic appraisal, which will be appended to the HM Treasury Green Book – the official government manual on economic appraisal. Defra has issued guidance on developing and valuing ecosystem services and on the use of value transfer techniques to assess the value of environmental impacts. Nevertheless, significant gaps in our knowledge still remain, particularly with respect to ecosystem services which are localised and/or difficult to quantify and value.

Key barriers and challenges in assessing the value of biodiversity and ecosystem services include:

- **Knowledge gaps** – particularly a shortage of scientific evidence to enable us to quantify particular regulating services (such as pollination, regulation of pests and diseases, and regulation of water quality and flows);
- **Limitations in valuation methods** – particularly with regard to the value of cultural services derived from biodiversity and ecosystems;
- **Limitations in the availability of resources** for economic assessment – particularly where this requires costly original valuation work; and
- **Difficulties in transferring the benefits and values** from one study to another context, particularly given that many of the benefits of biodiversity and ecosystems are location-specific.

The lessons from UK experience include that:

- Gaps in our knowledge mean that **not all of the benefits of biodiversity and ecosystem services can be measured and valued**. Nevertheless, **assessments based on partial evidence can be valuable** and informative, providing gaps and limitations are understood;
- The **value of biodiversity and ecosystem services needs to be recognised and accounted for in decision making**, even when it cannot be expressed in money terms. Structured assessment frameworks, that assess benefits and services in qualitative, quantitative and where possible monetary terms, can help to achieve this;
- **High profile, national level assessments** such as the UKNEA can be influential in capturing the attention of decision makers and stimulating new approaches and initiatives;
- While biodiversity is valuable in its own right, economic assessments, taking account of the value of ecosystem services and the impacts of the natural environment on the economy, can be helpful in **influencing wider debates and decision making processes**; and
- The idea that **biodiversity presents an opportunity**, rather than a constraint to economic development, is now widely accepted, and recognised in a range of different policy documents in the UK, although conflicts between biodiversity and development continue to arise, particularly at the local level.

2.4 UK actions to take account of the value of biodiversity and ecosystem services in decision making

The UK has used a range of different tools to incorporate biodiversity into decision making among different types of organisations and at different levels. These include:

- **Regulation** –including implementation of national and EU legislation for biodiversity and the wider environment.
- **Plans and strategies** – such as marine plans being developed across the UK, Scotland's Land Use Strategy, and Defra's Ecosystem Approach Action Plan.
- **Institutional measures** –including the Natural Capital Committee, a new network of Natural Value Ambassadors, Green Infrastructure Partnership and Local Nature Partnerships.
- **Evidence and information tools** –such as the UK and country level biodiversity indicators, Biodiversity Evidence Programme, Ecosystems Knowledge Exchange Network, UK Natural Capital Accounts, and UK support for initiatives internationally relating to natural capital and ecosystem accounting.
- **Guidance** –including planning guidance issued in different UK countries, and guidance to public authorities to assist them in implementing their duty to have regard for the conservation of biodiversity in undertaking their activities.

Notable progress has been made in:

- Introducing **a duty for all public authorities to have regard for the conservation of biodiversity** in undertaking their activities;

- Promoting widespread **recognition of the benefits of the ecosystem approach**, with a wide range of local projects adopting this approach across the UK;
- Promoting recognition of the importance of achieving **favourable condition for Sites of Special Scientific Interest**, and focusing effort and resources on actions designed to achieve this. In England the government achieved a target for 95% of SSSI area to be in favourable or recovering condition by the end of 2010;
- Developing a **marine planning system** in UK waters, designed to achieve the sustainable use of the seas by balancing the needs of different marine users and the marine environment;
- Development and publication of **biodiversity indicators** at the UK and country levels, designed to ensure that better account is taken of biodiversity in decision making;
- Improving the management of the water environment, by implementing the EU **Water Framework Directive**;
- Addressing the impacts of development on biodiversity through the **planning system**.

However, although progress has been made, significant further efforts are required. For example:

- **Biodiversity continues to be damaged through development**, as requirements to avoid, mitigate or compensate for biodiversity loss are not fully and consistently implemented;
- While the **condition of SSSIs** is improving, the majority remain in unfavourable recovering condition;
- Much effort is required to improve the **ecological status of surface waters**, especially those affected by diffuse pollution;
- While awareness of biodiversity and the priority attached to its conservation have undoubtedly increased in recent years, much still needs to be done to **integrate biodiversity concerns into decision making**, both within government and business.

Significant challenges and difficulties in integrating biodiversity into decision making include:

- Ensuring that **current requirements are implemented and enforced**;
- Maintaining **commitments not to increase the burden of regulation on business**, whilst developing the policy framework to help businesses account for the value of biodiversity, particularly during the current economic downturn;
- Addressing **continuing loss of biodiversity**, in spite of evidence of its value;
- Addressing the **barriers caused by language and terminology** relating to ecosystems, biodiversity and green infrastructure, not helped by the multitude of initiatives in these areas.

The following lessons can be learned from UK experience:

- **Estimates of the value of biodiversity are not always necessary** to take account of it in decision making, providing there is understanding of the value of biodiversity and ecosystem services and how they underpin wellbeing;
- **Rules and provisions are not enough** – there is a need for implementation and enforcement;
- **Information and guidance is important**, particularly where it is practical and easy for decision makers to follow. However, it does not deliver change by itself, and appropriate incentives are important;
- **Local approaches can help to influence decision making** in particular locations, while networking and sharing experience between them can play a valuable role in enhancing their effectiveness;
- **Perceived conflicts with other priorities** make influencing public and private decision making an on-going challenge.
- Establishing systems to enable decision makers to take the value of biodiversity into account requires an initial investment of **time and effort**, though transaction costs

decrease over time as experience increases, building a knowledge base which can be shared with other decision makers in the future.

2.5 UK action to promote sustainable consumption and production

Activities to promote sustainable consumption and production reduce demand for natural resources and therefore help to mitigate impacts on biodiversity. The UK has implemented a number of initiatives with this aim. These include:

- **Research to assess the lifecycle impacts of products**, and to inform action to reduce these impacts;
- **Product roadmaps**, designed to assess the impacts of particular products and to stimulate voluntary action to reduce them, in partnership with businesses;
- **Provision of technical advice and financial support to improve resource efficiency**, through the Waste and Resources Action Programme (WRAP);
- The development of a new **Product Research Forum**, bringing government and industry together to understand and take steps to reduce the environmental impacts of grocery and home improvement products; and
- **Government Buying Standards**, designed to promote sustainable buying within government.

The UK's work programme on Sustainable Consumption and Production has helped to understand and address the environmental impacts of a wide range of products.

Defra's Product Roadmaps have been successful in stimulating voluntary action to reduce the impacts of some key product groups, such as clothing, receiving the backing of some key players in the industry. However, other roadmaps – such as that for passenger cars - have been less successful, reflecting the lower demand amongst the industry for further evidence and action.

There is limited evidence of the impact of SCP initiatives on biodiversity. Much of the focus of these initiatives has been on other environmental impacts such as material, energy and water use, greenhouse gas emissions and waste, issues that directly affect business costs. National and international biodiversity is expected to benefit indirectly from these initiatives

Government Buying Standards have achieved some success. For example, there is a requirement that all timber is purchased from sustainable sources, and this has not only impacted on the government's own purchases but also catalysed action within the timber sector. The government has established a Central Point of Expertise for Timber Procurement (CPET) to advise government procurers on responsible purchasing of timber and provide them with information and advice to support the implementation of the timber procurement policy.

Some of the key challenges in designing SCP programmes to address biodiversity impacts include:

- **Cost considerations** – addressing biodiversity impacts is less likely to yield direct cost savings than some other environmental priorities such as reducing use of energy, water and materials, although these measures may benefit biodiversity indirectly;
- **Consumer resistance to change** hampers progress in addressing the biodiversity impacts of some products, such as fish;
- **Difficulties of measuring the impact of UK production and consumption on biodiversity** are a barrier to assessing progress through SCP measures.

Lessons that can be learnt from SCP programmes include that:

- **Action designed primarily to achieve other environmental objectives may help to achieve biodiversity gains**. For example, much of the impetus for UK action for timber and palm oil has been driven by concerns about greenhouse gas emissions, but is likely to have yielded benefits for biodiversity;

- **Biodiversity can benefit indirectly** from measures to improve resource efficiency, although it is difficult to evaluate these measures in such terms as the benefits to biodiversity are often difficult to quantify; and
- Other arguments, such as the **reputational benefits** of addressing biodiversity impacts, may be important drivers for change.

2.6 UK action to engage business with biodiversity

UK initiatives to engage business in biodiversity issues include:

- The development of new **guidance to assist businesses in reporting their environmental impacts**, within which biodiversity reporting is a key theme;
- Initiatives to support the **green economy**, including a new Green Economy Council and an Ecosystem Markets Task Force;
- Initiatives to engage businesses in key **sectors and product areas**, such as construction, fisheries and peat;
- **Partnerships and forums** designed to engage business in biodiversity issues at the country, regional and local levels;
- Support for **international initiatives** to engage business with biodiversity, such as the TEEB for Business Coalition.

While it is perhaps too early to observe significant benefits from business engagement activities, considerable progress is evident from the level of interest, support and participation among businesses for key initiatives such as the Ecosystem Markets Task Force and the TEEB for Business Coalition. There has also been significant engagement through business and biodiversity partnerships and forums. Further evidence of progress in this agenda can be drawn from the current revision of government guidance on business environmental reporting. Biodiversity is one of five priority themes in the guidance currently being developed, while in the previous (2006) document it was dealt with in a single paragraph.

Key challenges in promoting business engagement with biodiversity include:

- The challenge of **convincing business of the relevance of action for biodiversity**, especially when the business impacts of biodiversity loss are not always immediate or direct (e.g. because costs or benefits take years to manifest, or complex international supply chains make traceability difficult);
- The difficulty of **identifying specific and practical actions** that business can take to avert biodiversity loss;
- The continuing existence of **market failures**, which place limits on the ability to identify market based solutions to biodiversity issues; and
- The challenge of **clearly defining the role of new initiatives**, and avoiding conflict with existing initiatives and organisations.

Recent experience in the UK demonstrates that:

- There is a **significant and growing appetite for businesses to engage** in the biodiversity agenda;
- **It is important that new action builds on, rather than replicating, existing initiatives**;
- Partnerships and initiatives to engage business with biodiversity require **strong leadership, good governance, effective communications and a clear and shared agenda for action.**

2.7 Sharing experience and building capacity internationally

As well as implementing its own initiatives with regard to the different aspects of biodiversity incentives discussed above, the UK plays an active role internationally in sharing its experience and in supporting initiatives to further incentives for biodiversity conservation.

Examples of international actions include support for:

- **Positive incentive measures for biodiversity**, through developing REDD+ guidance, International Climate Fund, the Darwin Initiative and the UK's work on implementation of the Nagoya Protocol on Access and Benefit Sharing;
- **Efforts to promote understanding of the value of biodiversity** and ecosystems globally, notably the TEEB initiative;
- **International initiatives to account for natural capital**, including the World Bank's Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES)
- **International business engagement initiatives**, such as the TEEB for Business Coalition.

The UK has shared reports and guidance documents relevant to biodiversity incentives internationally, through the CBD, TEEB and other mechanisms. For example, the CBD Incentive Measures database[2] includes numerous UK reports, guidance documents and manuals on different topics, particularly with regard to valuing the natural environment and ecosystem services, and developing positive incentive measures for biodiversity.

While not all of the initiatives described above will be directly transferable internationally, the review suggests that the UK has developed a substantial body of evidence and experience relevant to the different aspects of the CBD biodiversity incentives agenda. The UK undoubtedly has many insights to share with other Parties, and much to learn from the experience of other countries.

[2] http://www.cbd.int/incentives/case-studies.shtml

3 Guidance to identify and reform incentives harmful to biodiversity

3.1 A tool to guide the reform of biodiversity harmful incentives (BHI)

Decision X/44 stresses the importance of identifying, eliminating, phasing out, or reforming existing harmful incentives for sectors that can potentially affect biodiversity, with a view to minimizing or avoiding their negative impacts.

In view of this recommendation, IEEP and GHK developed a guidance tool designed to assist the UK and other countries to identify existing perverse incentives that are harmful for biodiversity and to better understand how these should be eliminated, phased out or reformed. This tool builds on existing guidance for the identification and reform of environmentally harmful subsidies (EHS) internationally, and applies it to inform the analysis of incentives harmful to biodiversity.

The first step for using the tool (Phase 0), involves identifying what threats are posed to biodiversity, and how these are linked to key economic activities and sectors. This step should draw, and be based, on existing evidence. However, any absence of evidence should not necessarily be taken as an indication that there is no impact on biodiversity. If no evidence is identified, regular review is therefore recommended of any potential impacts to capture any changes to the knowledge base. Moreover, if the analyst feels it is necessary, there may also be scope for recommending or pursuing further research if it is felt that that the existing evidence may be missing potentially important (e.g. more indirect) impacts on biodiversity.

This will then allow the analyst to identify potential subsidies or incentives within these sectors which are promoting various activities which may be causing harm. The next four phases of the 'Biodiversity Harmful Incentives Reform Tool' then aim to identify whether these subsidies need to be reformed or phased out, and what options may be available to do so:

1. **Screening of subsidies**: This screening phase serves to identify those incentives that have clear potential to harm biodiversity and are politically more viable for reform.
2. **Assessment of the need for reform**: The objective of this phase is to assess whether the subsidy reform/removal is likely to bring significant environmental benefits. If so, the assessment should be carried forward, looking at the trade-offs with social and economic impacts explored in the next phase.
3. **Analysis of reform options**: Here, concrete policy reform options for harmful incentives are developed and supported by evidence. This phase should help to prepare the political decision making for the reform/removal of biodiversity harmful subsidies, and should help to identify whether reform is advisable and/or likely to be successful.
4. **Identification of opportunities for action**: The objective of this phase is to identify whether there are practical windows of opportunities, champions who could make the reform happen and due public and political support to enable progress. This would help in the timing and prioritisation of reform actions.

The tool is summarised in Figure 3.1 and presented in full in Volume 3 of this report.

3.2 Case studies applying the tool

Three case studies were selected in discussion with Defra and have been used to illustrate the tool's application and to explore the reform of incentives harmful to biodiversity in the UK. These case studies cover:

- The water abstraction regime;
- Eligibility criteria for CAP direct payments; and,

- Wind energy developments.

The case studies were very different in nature and provided different insights into harmful incentives and their reform. The key conclusions and differences are presented in Table 3.1.

Figure 3.1 The subsidy reform tool

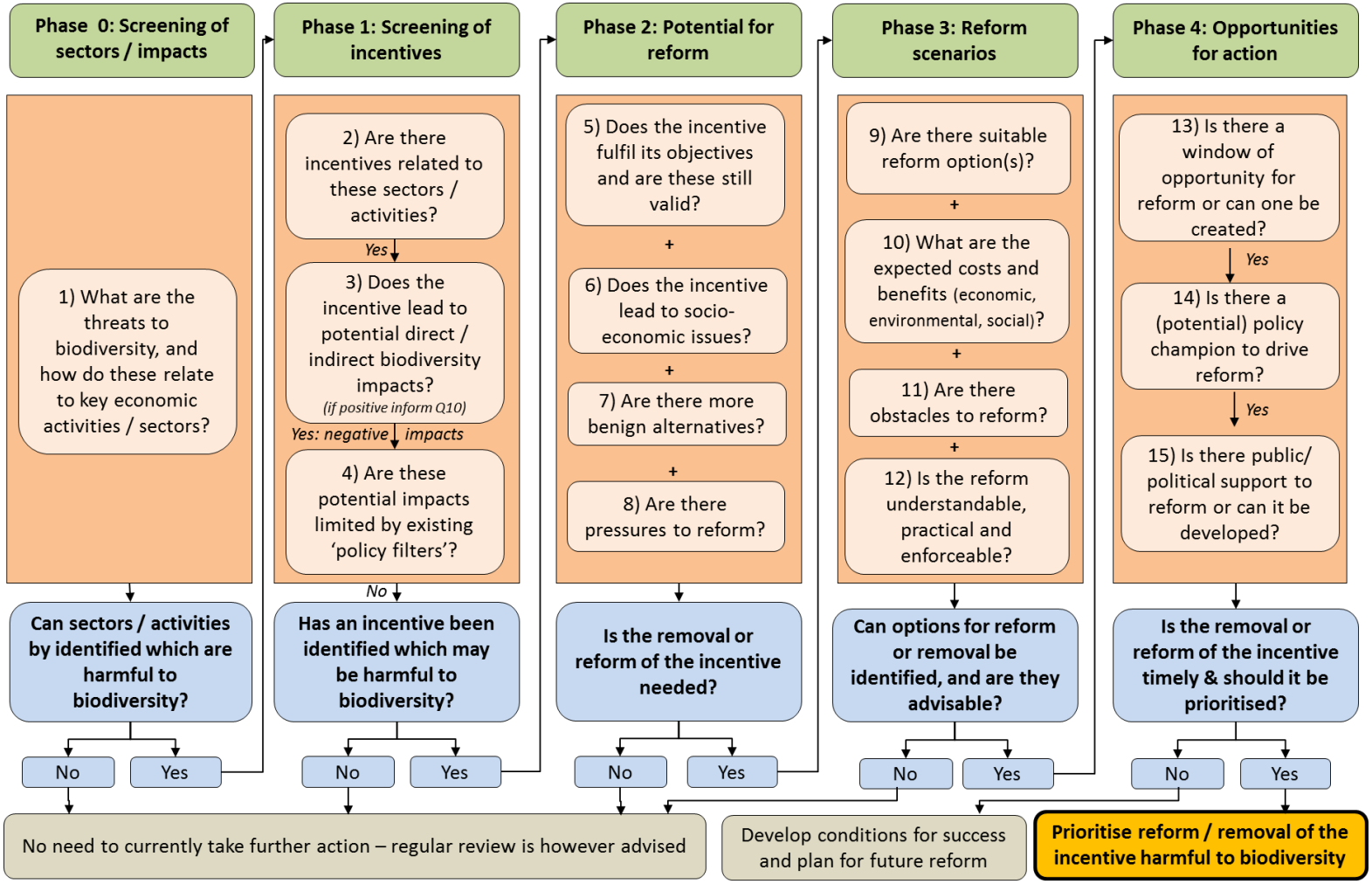

Table 3.1 Key conclusions and differences across the 3 case studies

	Water abstraction	Eligibility criteria	Wind energy developments
Need for reform	**HIGH** A considerable need for reform was identified, given the length of time the system has been in place without any substantial review to its design or implementation. Moreover, it is becoming clear that the system is both unsustainable and inefficient. This need is also going to increase into the future given the rise of challenges such as climate change.	**MEDIUM** It is clear that the incentive is creating a situation in which farmers may decide to remove potentially biodiverse and environmentally valuable habitats due to the inherent uncertainty in the system. Although a need could be identified, there is some uncertainty however over the extent to which the problem is causing the loss of valuable habitats and the size of the threat to biodiversity in the context of other pressures	**LOW** Although wind farm developments have the potential to have negative impacts on biodiversity and important habitats depending on their location, planning controls are in place which should, if properly implemented, provide sufficient means for these to be identified, assessed, and mitigated. Hence the need for reform to the incentive itself is low.
Ease of reform	**MODERATE** Requires significant effort and a long-term view as it involves completely changing a 50+ year old system. The effort is therefore substantial, however there is a window of opportunity and a significant level of support	**GOOD** Relatively easy given the current window of opportunity, the relatively straightforward options for doing so and the level of support available	**N/A**
Means of reform	**LEGISLATIVE** Reform is a long term process (2020+) and to avoid continued negative impacts would require substantial changes, including reform of the legislative framework	**NON-LEGISLATIVE** Improving clarity and certainty of the guidance for implementing the eligibility criteria – reform could therefore avoid legislative changes.	**N/A** However does require planning controls and the planning system to be robust and effective.
Conclusion	**Reform must be prioritised** given the scale of the problem, despite the potential obstacles and challenges to doing so	**Reform can be pursued** given its relative ease and the fact that local benefits can be considerable	**No need for reform**

3.3 Conclusions regarding reform of biodiversity harmful incentives

3.3.1 Applying the guidance tool

The guidance tool sets out a structured, step by step approach designed to inform the identification and reform of incentives harmful to biodiversity. It is designed to be flexible to address a wide range of situations in the UK and other countries where biodiversity is adversely affected by incentives, and to inform approaches to reforming them. The following subsections consider some of the applications and limitations of the tool and draw overall conclusions about its usefulness.

3.3.2 The scope of biodiversity harmful incentives

Biodiversity is affected, directly or indirectly, by a wide range of economic activities. Pressures on biodiversity occur directly as a result of development, land use and management, and the extraction of natural resources, and indirectly, through a wide range of production and consumption decisions that cause pollution and/or affect the use of land and resources.

Harmful incentives or subsidies are also defined broadly by the guidance tool and include not just direct payments and market supports but a much wider range of examples where resources or activities are under-priced, for example through a failure to take account of their scarcity and/or environmental costs.

As a consequence, biodiversity harmful incentives are likely to be widespread and to occur in a range of sectors such as energy, transport, manufacturing and services, as well as those more obviously linked to biodiversity such as agriculture, forestry, fisheries and construction.

It follows that the potential application of the tool is widespread, but that the priority for reform is likely to vary widely according to the extent of the pressure on biodiversity and the degree to which it is driven by harmful incentives.

3.3.3 Progress to date

In considering the application of the guidance tool in a UK context, it is important to recognise that much has been achieved in recent years in reforming environmentally harmful subsidies and in pricing environmental externalities. The UK has been central to the debate about the reform of the CAP and has played a leading role in developing agri-environment schemes and in increasing their share of expenditure. Vehicle excise duties, the landfill tax and the aggregates tax are further examples of efforts to ensure that prices better reflect environmental costs. Action is also being taken to reform incentives for water abstraction to ensure more appropriate pricing of the use of water resources.

As a result of these and other developments, biodiversity harmful incentives are much less of a problem than they might have been in the past, and clear cut opportunities for reform are more difficult to find, where they not already been identified.

3.3.4 Action at UK and EU level

The scope for incentive reform in the UK is also limited by what is achievable at national level, rather than requiring EU wide action. The Common Fisheries Policy and Common Agricultural Policy remain among the greatest priorities for incentive reform in the UK, but can only be achieved through EU wide negotiations, in which the UK continues to play an active role. The relevance of these policies for biodiversity is widely understood, limiting the value that can be added through a general guidance tool such as this.

3.3.5 Reforming incentives or applying safeguards

Another important factor in addressing the biodiversity harmful incentives agenda is the degree to which reform of incentives should be a priority, or whether attention should focus on safeguards to their application. Biodiversity is potentially affected by a wide range of incentives, but is also protected by a range of different mechanisms. National and EU nature conservation designations, the planning system, EIA regulations, cross compliance rules and water legislation are all examples of mechanisms that can help to safeguard biodiversity from adverse pressures. Even where potentially harmful activities are incentivised, these safeguards can help to prevent adverse impacts on biodiversity.

An example is provided by the case study on wind energy, which is promoted through renewables incentives in order to meet climate change objectives, but which can impact negatively on biodiversity in some circumstances, and particularly on sensitive sites. Planning systems in the UK aim to avoid adverse impacts on biodiversity from renewables and other developments. If fully and consistently enforced, planning legislation and guidance should minimise risks to biodiversity, suggesting that this, rather than changes to renewables incentives, might be the priority.

However, in cases such as these, where impacts on biodiversity are potentially mitigated by regulation or policy filters, it is necessary to ensure that these regulatory safeguards are effective and efficient in preventing any adverse impacts in practice. Any unintended consequences of these regulatory measures should also be considered. Therefore, this step should explicitly assess whether these filters are working. Regular reviews should also be conducted of the policy filters, wherever possible, to ensure they are continuing to deliver the expected results and/or safeguards to mitigate any potential negative impacts on biodiversity.

3.3.6 Biodiversity harmful incentives and environmentally harmful subsidies

Most of the incentives potentially harmful to biodiversity highlighted in the guidance tool also have other environmental impacts. Indeed, many affect biodiversity only indirectly through their effects on climate change, air quality or the water environment. Examples include taxation of aviation fuel and domestic energy, and pricing of water. It is clear that there are close links between BHI and EHS. For instance, identifying BHI could be considered an initial step in taking forward the wider EHS agenda, given that negative impacts on biodiversity are often a consequence of wider environmental impacts and are therefore a good indicator for identifying EHS. BHI and EHS are therefore two complementary concepts, and the agenda for their reform should, where possible, be considered in tandem.

However, the guidance tool also highlights the need to consider specific evidence of biodiversity pressures (such as through the National Ecosystem Assessment) when determining priorities.

3.3.7 Future priorities for reform

As a result of these different considerations, a general conclusion from the development and testing of the tool is that there might be some priorities for reform of biodiversity harmful incentives, however many such perverse incentives have already been identified in the UK context and measures are already being taken to address them. Nonetheless, the tool can be used to identify these priorities in a structured way, and to guide action for reform. It provides a mechanism for reviewing and understanding financial flows across different sectors and economic activities, in order to identify biodiversity harmful subsidies which may otherwise be difficult to identify.

3.3.8 Potential international applications

The tool is likely to have wider applications in other countries, and has been designed to be flexible to different contexts. Defra may therefore wish to share it with other countries through the CBD incentives agenda.

4 Conclusions and policy implications

4.1 Progress and challenges in the biodiversity incentives agenda

The UK has made substantial progress in recent years in developing positive incentives for biodiversity, reforming harmful incentives and accounting for the value of biodiversity and ecosystem services in decision making. This review demonstrates that much has been achieved in each of the action areas covered by Decision X/44.

However, the UK continues to face huge challenges with regard to the conservation of biodiversity nationally and internationally. These challenges include:

- Reversing the **substantial declines of farmland birds** and other widespread countryside species recorded in recent decades;
- Achieving **favourable conservation status for Natura 2000 sites and Sites of Special Scientific Interest;**
- Meeting targets for **ecological status of the water environment**, as set by the EU Water Framework Directive;
- **Conserving depleted fish stocks** and achieving sustainable management of the marine environment;
- **Halting the loss of biodiversity to development**;
- Reducing the impact of the UK's **use of natural resources** on biodiversity globally.

Incentive measures and related activities covered by Decision X/44 have a vital role to play in addressing these challenges, for example by:

- Further **reform of the CAP** and enhancements to **agri-environment programmes** to increase their effectiveness;
- Targeted use of incentives to improve the **condition of protected sites**, supported by enhanced evidence of the value of these sites and its integration into decision making;
- Continuing efforts to **reform the Common Fisheries Policy** at EU level;
- **Enhancing the water environment** through positive incentive measures and addressing harmful incentives for water abstraction;
- Improving the effectiveness of the **planning system** in order to achieve no net loss of biodiversity, including through biodiversity offsets and related measures;
- Improving understanding of the impacts of **UK production and consumption** on biodiversity globally, and taking action to address them.

Table 4.1 summarises UK progress with regard to different aspects of the biodiversity incentives agenda, and highlights some of the key challenges that need to be addressed.

4.2 Possible priorities for future policy

Table 4.2 summarises some of the possible priorities for future action under each of the themes, based on the findings of our review.

Table 4.1 Biodiversity incentives in the UK - progress and challenges

Theme	Summary of Progress	Remaining Challenges
Positive incentives for biodiversity	- Large increase in financial support for biodiversity - Major growth in agri-environment schemes, development of biodiversity targeted measures - Cross compliance to link CAP subsidies to protection of biodiversity and environment - Significant levels of support for international biodiversity incentives	- Resources still insufficient to meet UK BAP targets - Gaps in funding for non-agricultural land - Increasing uptake of biodiversity targeted options in agri-environment schemes - Improving co-ordination to deliver landscape scale benefits, improve coherence of ecological networks - Use of PES schemes limited outside publicly funded programmes
Addressing perverse incentives	- UK has played a major role in debates about CAP and CFP reform - Significant progress in CAP reform and emerging progress towards reform of CFP - Steps are being taken to reform licensing of water abstraction	- Reform of Common Fisheries Policy still at an early stage - CAP reform has decoupled subsidies from production, but UK keen to see greater shift towards positive incentives - Reform of water licensing is slow and long term process
Assessing value of biodiversity and ecosystem services	- UK claims to be first country to complete a National Ecosystem Assessment - Range of other studies have enhanced understanding of biodiversity and ecosystem services - Official government guidance developed on valuing natural environment in economic appraisal - UK support for international initiatives including TEEB	- Many gaps in knowledge remain - Scientific and economic evidence of many ecosystem services is still limited - Limitations in economic valuation techniques are a barrier to reliable and comprehensive economic assessment
Accounting for biodiversity values in decision making	- Duty for all public authorities to have regard for the conservation of biodiversity in undertaking their activities; - Range of initiatives to promote benefits of the ecosystem approach - Significant attention focused on achieving	- Addressing continuing loss of biodiversity to development - Most protected sites remain in unfavourable condition - Much effort required to improve ecological status of surface waters, e.g. by tackling diffuse

		favourable condition for SSSIs - Developing a marine planning system in UK waters - Development and publication of biodiversity indicators at the UK and country levels - Progress in addressing the impacts of development on biodiversity through the planning system		pollution - Much still needs to be done to integrate biodiversity into decision making by government and business
Promoting sustainable consumption and production	-	UK work on SCP has helped to understand and address environmental impacts of a range of products - Significant progress through government buying standards for timber	-	Evidence of consumption and production on biodiversity is very limited - Much more could be done to integrate biodiversity into SCP research and action
Engaging business with biodiversity	-	A range of recent initiatives aim to engage business in biodiversity - Level of interest and support for these initiatives is encouraging	-	Action is at an early stage, and benefits have yet to be seen - Challenges of convincing business of relevance of biodiversity, identifying specific actions and opportunities, and addressing market failures

Table 4.2 Possible priorities for future policy

Theme	Possible priorities for future policy
Positive incentives for biodiversity	- Ensuring resource for biodiversity are sufficient to meet strategic commitments - Assessing and addressing gaps in resources and incentives (e.g. for marine environment) - Enhancing the co-ordination and effectiveness of agri-environment schemes to deliver biodiversity priorities - Facilitating the wider adoption of PES through business engagement and pilot initiatives - Monitoring and evaluating the effectiveness of biodiversity incentive measures
Addressing perverse incentives	- Continuing to press for reform of CAP and CFP at EU level - Demonstrating best practice through UK implementation of CAP and CFP programmes - Progressing reform of water abstraction licensing system - Use of biodiversity harmful incentives toolkit to identify and address further priorities for reform in UK and internationally
Assessing value of biodiversity and ecosystem services	- Further develop and communicate the evidence base of the UK NEA and make it relevant to decision and policy making at different spatial scales across the UK - Promote government guidance on taking account of natural environment in economic appraisal, and ensure it is widely understood and applied - Strengthen evidence base on value of biodiversity and ecosystem services through site specific case studies, assessing their implications for policy and delivery - Continuing support to TEEB follow on initiatives, to enhance understanding of value of ecosystems and biodiversity internationally and promote integration into policy and decision making
Accounting for biodiversity values in decision making	- Biodiversity proofing of a range of government policies and strategies to ensure that they take account of biodiversity and contribute to efforts to halt its loss in the UK and internationally - Continuing efforts to enhance the effectiveness of the planning system in preventing biodiversity loss, including by trialling and evaluating biodiversity offsets - Evaluating the effectiveness of new institutional measures such as the Natural Capital Committee, Natural Value Ambassadors, Green Infrastructure Partnership and Local Nature Partnerships, with a view to increasing their impact over time - Development and raising awareness of evidence base including UK Biodiversity Indicators, country level biodiversity indicators, Biodiversity Evidence Programme, Ecosystems Knowledge Exchange Network, UK Natural Capital Accounts, and UK support for initiatives internationally relating to natural capital and ecosystem accounting
Promoting sustainable consumption and production	- Strengthening evidence base of global biodiversity impacts of UK production and consumption - Integrating biodiversity evidence and action into existing SCP research and initiatives

Engaging business with biodiversity	- Continuing efforts to assist business in reporting biodiversity reporting, encourage development of green economy and engage business in biodiversity issues - Identification of tangible opportunities and practical actions for business to engage with and benefit from biodiversity, and support to encourage these to be realised

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Incentive Measures and Biodiversity – A Rapid Review and Guidance Development

Volume 2: A Review of Biodiversity Incentives in the UK

Defra

23 April 2012

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Incentive Measures and Biodiversity – A Rapid Review and Guidance Development

Volume 2 – A Review of Biodiversity Incentives in the UK

Defra

A report submitted by GHK
in association with

the Institute for European Environmental Policy

Date: 23 April 2012

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Contents

1 Introduction

GHK Consulting Ltd (GHK), in collaboration with the Institute for European Environmental Policy (IEEP), was commissioned by Defra to review current and planned policy in the UK that addresses Decision X/44 on Incentive Measures for Biodiversity of the Convention on Biological Diversity and to develop guidance and recommendations for future policy in this area.

The final report is presented in three volumes

- Volume 1 summarises the overall findings from the study and presents recommendations for the future;
- Volume 2 presents the findings of a rapid review of biodiversity incentives in the UK; and
- Volume 3 presents guidance for the identification and reform of incentives harmful to biodiversity.

This report is Volume 2 of the final report and presents a review of biodiversity incentives in the UK. It was submitted by Defra to the CBD in January 2012 as the basis for the UK's input to the progress review on activities related to Decision X/44.

The report summarises and reviews progress in the UK in relation to six key themes addressed by Decision X/44:

- Developing positive incentive measures for biodiversity (Section 2);
- Addressing perverse incentives that impact on biodiversity (Section 3)
- Assessing the value of biodiversity and ecosystem services (Section 4);
- Taking account of the value of biodiversity and ecosystem services in decision making (Section 5);
- Promoting sustainable consumption and production (Section 6); and
- Business engagement on biodiversity (Section 7).

For each theme, the review summarises key activities taking place at UK level and within the different countries of the UK (England, Northern Ireland, Scotland and Wales). It highlights progress and achievements, discusses some of the main barriers and challenges encountered and how they have been addressed, and identifies the lessons that can be learnt from experience in the UK to date.

Section 8 briefly summarises some of the initiatives that the UK has taken to promote understanding of incentive measures internationally.

There are six annexes, presenting data tables summarising selected UK initiatives under the six themes.

2 Positive Incentives for Biodiversity

2.1 Summary of Activity

UK positive incentive measures for biodiversity include:

- The **agri-environment programme**, which provides resources for habitat management, restoration and re-creation on a large scale;
- **Grants and incentives for woodland** creation, restoration and maintenance;
- **Cross compliance measures**, requiring farmers to achieve basic environmental standards as a condition for receipt of direct payments under the CAP;
- A series of **funding programmes focused on biodiversity**, such as Nature Improvement Areas (England), Biodiversity Action Grant Scheme and Natural Project Grants (Scotland), the Wildlife, Geology, Landscapes and Seascape Grant Pillar (Wales) and Natural Heritage Grants (Northern Ireland);
- A range of grants and incentive measures designed to improve management of the **water environment** (see Case Study 1Evidence 1);
- Requirements to implement **action to compensate for biodiversity loss**, including compensatory measures required by the planning system, piloting of biodiversity offsets, and UK implementation of EU environmental liability legislation;
- **International incentive programmes**, such as UK support for REDD+, the Overseas Territories Environment Programme, the Darwin Initiative, the Flagship Species Fund and the UK Implementation of Nagoya Protocol on Access and Benefit Sharing;
- **National Lottery funding** for biodiversity projects, especially through the Heritage Lottery Fund;
- Defra **research to inform the development of Payments for Ecosystem Services** (PES) schemes and other positive incentives;
- A range of **other incentives** relevant to biodiversity.

Relevant initiatives are summarised in Annex 1.

Evidence 1 Scottish Water Environment Restoration Fund

The Scottish Environment Protection Agency works to protect and improve the water environment through regulation, monitoring and planning. The Water Framework Directive (WFD) requires SEPA to prevent the deterioration of aquatic ecosystems and, where possible, restore surface waters and groundwaters damaged by human activities to 'good status' (as defined by the directive) by 2015. Where possible, SEPA is improving Scotland's water environment through regulatory means such as the Controlled Activities Regulations (CAR) by licensing and monitoring individuals and companies that carry out activities which can adversely affect the water environment. To deal with cases where this is not possible, the Water Environment Restoration Fund was established to fund physical improvements through restoration work. Examples include correcting damage from activities undertaken before CAR (e.g. river straightening) or dealing with abandoned or redundant structures such as an old mill weir. From its inception in 2008, the fund had allocated more than £1.5 million by 2011 to various projects.

The fund is open to a broad range of interest groups, including community groups, fishery trusts, environmental charities and landowners. Only those who already have a duty to undertake works cannot apply to the fund. Projects can be funded for instance, which:

- Restore natural processes in rivers or lochs;
- Engineer degraded rivers to restore natural profiles by, for example, recreating meanders;
- Remove or modify weirs to improve fish passage, flow and sediment movement;
- Restore flood plains, coastal intertidal zones and wetlands;
- Control non-native invasive bank side and instream plants;
- Undertake scoping studies to assess costed options for physical restoration works.

The Water Environment Restoration Fund is a useful example of how different tools can be used to fill different roles and address potential gaps in the existing framework. Although the regulatory means exist in Scotland to require individuals and companies to restore the water environment where their activities have adverse impacts (the Controlled Activities Regulations), in some cases it is difficult to identify the relevant party that should take responsibility for the restoration activities. The Fund helps to fill these gaps and encourages the engagement and empowerment of local communities who want to restore the water environment. Although primarily designed to fulfil Water Framework Directive objectives, applications are also assessed on their wider benefits including biodiversity gain.

2.2 Progress and Achievements

There has been a large increase in resources for incentive measures for biodiversity and ecosystems in the last 20 years. Defra has estimated that the financial support given to biodiversity and conservation initiatives by the UK government increased by 126% from around £250 million in 2000/01 to £560 million in 2009/10.[1]

A large proportion of this has come through expansion of the agri-environment programme, which is co-funded through the Common Agricultural Policy (CAP) budget. Agri-environment schemes are particularly important in funding biodiversity action in the UK, as agriculture accounts for around 75% of the total land area, and a large proportion of priority habitats are farmed in some way.

Agri-environment schemes in the UK have been supported by an extensive programme of monitoring and evaluation. Mid-term evaluations of current rural development programmes in England, Northern Ireland, Scotland and Wales suggest that agri-environment schemes have delivered significant benefits for biodiversity, but that there is scope to enhance their benefits further (Evidence 2).

[1] Defra (2011) UK Biodiversity Indicators in Your Pocket 2011. http://jncc.defra.gov.uk/pdf/BIYP_2011.pdf

Evidence 2 Environmental Stewardship

Environmental Stewardship (ES) is an agri-environment scheme which offers payments to farmers and land managers in England for effective land management to protect and enhance the environment and wildlife. The scheme is delivered for Defra by Natural England and forms part of the Rural Development Programme for England (2007-2013). It builds on the successes of previous agri-environment schemes, the Countryside Stewardship Scheme and Environmentally Sensitive Areas. The agri-environment programme is given a high priority in England, receiving 80% of the funding allocated to the Rural Development Programme.

The primary objectives of ES are to:

• Conserve wildlife (biodiversity);

• Maintain and enhance landscape quality and character;

• Protect the historic environment;

• Protect natural resources (water and soil); and

• Promote public access and understanding of the countryside.

Nearly 6.5 million hectares (nearly 70% of England's farmland) are in agri-environment schemes. This includes 43,000 Environmental Stewardship agreements covering 5.5 million hectares plus predecessor scheme agreements still in force covering approximately 700,000 hectares. The budget for agri-environment schemes in England is £118 million in 2011/12 and will increase to £156 million in 2013/14.

ES has four different elements:

• Entry Level Stewardship (ELS) - open to all farmers, land managers and tenants - requires a basic level of environmental management, and participants can choose from a wide range of more than 80 management options.

• Organic entry level stewardship (OELS) is the organic strand of ELS and is open to all farmers registered with an organic inspections body that are not in an existing organic aid scheme.

• Uplands Entry Level Stewardship (UELS) is open to all eligible farmers with land in Severely Disadvantaged Areas (SDA), and requires a basic level of environmental management. Participants can choose from a range of management options, such as cattle grazing and maintenance of traditional farm buildings.

• Higher Level Stewardship (HLS) involves individually tailored agreements that deal with more complex types of land management, and provides higher levels of payments to a subset of farmers in return for higher levels of environmental benefits. HLS is usually combined with ELS, UELS or OELS options, and applications are made on a competitive basis.

A mid-term evaluation of the RDPE[2] found that ES had made good progress against its targets, including those for biodiversity. It found that significant localised benefits had been observed for particular species, such as cirl buntings in Devon, but that large scale effects on meta-populations have not generally been observed in the short-term. Limited impacts on biodiversity had been observed through ELS, perhaps because of a lack of geographical targeting and because the largest rates of uptake had been for boundary features rather than in-field options. The evaluation also found concern about levels of deadweight within the scheme, with ELS in particular paying for practices, features and habitats which might be provided even without payments. However it was noted that a proportion of these would be at risk in the absence of the scheme. Furthermore, ES helps to protect a large proportion of eligible Biodiversity Action Plan priority habitats, and Sites of Special Interest.

Experience highlights the importance of advice and training for the delivery of the programme. In England, this has involved not just advice from government but also NGOs, wildlife trusts and others. Defra believes that the broad structure of ES – including the entry level scheme and more

[2] Hyder and ADAS (2010) Rural Development Programme for England 2007 – 2013. Mid Term Evaluation. http://ec.europa.eu/agriculture/rurdev/countries/uk/mte-rep-uk-england_en.pdf

demanding higher level stewardship payments on top – works well for biodiversity. This payment structure was endorsed by a report on agri-environment measures by the EU Court of Auditors[3]. However, there is scope to enhance effectiveness for biodiversity – for example by increasing uptake of in-field options compared to boundary options in ELS. ELS has succeeded in engaging large numbers of farmers in agri-environment schemes, providing a good basis for delivering biodiversity benefits. By refining the scheme and enhancing its effectiveness, greater benefits can be delivered in future.

Multi-annual contracts have worked – helping to provide the certainty required to maintain and manage the farmed environment. However, future CAP reform introduces uncertainties with regard to the overall levels of funding for agri-environment schemes, as well as the implications of proposals to green the first pillar of the CAP, which would have implications for ELS as it affects the baseline on which agri-environment schemes are built.

Defra is currently examining ways of making Environmental Stewardship more effective, examining different aspects such as the incentive structure of ES, the scope to focus HLS more on outcomes (to avoid farmers more in identifying and maintaining success rather than following prescriptions), improving co-operation and co-ordination to achieve landscape scale benefits, and examining the scope to promote packages of options within ES (e.g. packages of options to benefit farmland birds) to enhance its effectiveness.

By comparison, there has been relatively limited progress in extending payments for ecosystem service (PES) schemes in the UK, other than through the CAP funded rural development programme. Nevertheless, some successful schemes have been brought forward, such as the Sustainable Catchment Management Project (SCaMP) in North West England, which supports an integrated approach to catchment management designed to meet biodiversity and water quality objectives[4].

The National Lottery – and especially the Heritage Lottery Fund – has also proved to be a valuable source of funding for biodiversity and landscape initiatives, and has funded numerous habitat restoration schemes throughout the UK[5].

A recent review, “Making Space for Nature”, found that, in spite of progress achieved in furthering biodiversity conservation, England still lacks a coherent and resilient ecological network, and made a series of recommendations for action to achieve this. In response, the government is examining ways of improving co-ordination of agri-environment schemes to deliver landscape scale conservation benefits, and will fund a series of Nature Improvement Areas, local partnerships which will work with existing funding and incentive structures to enhance the coherence of ecological networks (Evidence 3).

Evidence 3 Nature Improvement Areas

The Natural Environment White Paper commits Government to assist partnerships of local authorities, local communities and landowners, the private sector and conservation organisations to establish new Nature Improvement Areas, based on a local assessment of opportunities for restoring and connecting nature on a significant scale. NIAs are designed to improve biodiversity in England by encouraging collaboration between organisations and enhancing the ecological network in England.

The decision to establish NIAs follows the findings of “Making Space for Nature”, a review of England’s wildlife sites and ecological network , chaired by Professor Sir John Lawton. This noted that much progress has been made in recent years in conserving biodiversity, but that England has yet to achieve a coherent and resilient ecological network. Among the review’s recommendations was that a series of ecological restoration zones should be established over large, discrete areas, within which significant enhancements of ecological networks are achieved, by enhancing existing wildlife sites, improving ecological connections and restoring ecological processes.

[3] European Court of Auditors (2011) Is agri-environment support well designed and managed? http://eca.europa.eu/portal/pls/portal/docs/1/8760788.PDF

[4] http://www.unitedutilities.com/scamp.aspx

[5] http://www.hlf.org.uk/ourproject/projectsbysector/landandbiodiversity/Pages/index.aspx

To support establishment of NIAs, the government will contribute funding to 12 initial NIAs identified through a competitive bidding process. These are due to begin work on 1 April 2012 and the learning from them will help extend the approach. The characteristics of NIAs will vary across England, reflecting what is possible and what is needed locally. They will all provide opportunities to deliver ecological networks on a large area scale and enhance these by enlarging and enhancing existing wildlife sites, improving ecological connectivity, creating new sites and integrating surrounding land uses. NIAs will demonstrate a shared vision among a wide partnership including statutory and voluntary sectors. They will provide benefits to wildlife and people, inspire people in the natural world, and, by restoring ecosystem processes, help to mitigate climate change impacts.

NIAs will contain the following components of an ecological network:

- Core areas - especially existing wildlife sites (e.g. National Nature Reserves, Sites of Special Scientific Interest, Local Nature Reserves)
- Corridors and stepping stones
- Restoration areas - where priority habitats may be restored to provide more core areas
- Buffer zones - that reduce pressures on core areas
- Surrounding land that is managed in a wildlife-friendly way - including for sustainable food production.

The government will contribute £7.5 million over the 3 years, with additional funding coming from other sources such as local contributions and national funding programmes such as the Heritage Lottery Fund. To make the most of the resources available, NIAs will need to work with existing funding schemes and incentive measures, such as the Environmental Stewardship scheme, and with the planning system.

Challenges will include balancing the needs and interests of local stakeholders, such as landowners and local wildlife trusts, seeking an appropriate balance between economic and environmental objectives, and ensuring that NIAs provide opportunities as well as constraints at the local level. A measure of success will be whether the initiative succeeds in co-ordinating conservation actions such that their combined results exceed the sum of the parts.

Some further lessons can be learned from Integrated Biodiversity Delivery Areas (IBDAs), a previous initiative with a similar objective, subject to a current evaluation. IBDAs were less successful than was hoped, which could be a result of their top-down approach, insufficient resources (including resources to support the projects and share experience between them) and organisational changes during the course of the initiative. It is hoped that NIAs, which will be better resourced and involve more locally-generated approaches and partnerships, backed by central support and networking, will be effective in strengthening England's ecological network.

2.3 Barriers and Challenges

UK experience highlights a number of significant barriers and challenges:

- **Mobilising resources for biodiversity conservation** remains an on-going challenge, despite recent increases in funding. The UK agreed to meet the new Strategic Plan for Biodiversity 2011-2020 and the Resource Mobilization Strategy at Nagoya in 2010; however there is an evidence gap on some of the policy tools required to support implementing and monitoring the RMS; in addition to understanding the resources required to implement new biodiversity commitments, such as the new England Biodiversity Strategy.
- **Funding for action outside the agricultural sector** is comparatively limited, especially in the current economic climate.
- **Co-ordinating the delivery** of biodiversity conservation activity, to enhance the coherence of the UK's ecological networks, is a **significant challenge.** Evidence suggests that the provision of incentives to individual farmers is insufficient to maximise biodiversity benefits, and that greater co-ordination to deliver landscape scale conservation benefits is needed;

- **Variations in rates of uptake** of conservation measures are evident. For example, the biodiversity benefits of Entry Level Stewardship in England are believed to be limited by relatively low up take of in field options compared to field boundary options;
- **A changing policy landscape and uncertain market conditions** affect the responses of land managers to incentive structures. While multi-annual agri-environment agreements have been helpful in aiding decision making, there are also uncertainties about the effects of CAP reform and markets on future funding and incentives;
- **Moving beyond publicly funded incentive schemes** has proved to be a particular challenge in the UK. A range of barriers have been identified to wider adoption of PES schemes, including knowledge gaps, regulatory and institutional structures, and transactions costs (Evidence 4).

Evidence 4 Payments for Ecosystem Services Schemes

Payments for ecosystem services (PES) are a market-based approach to link the suppliers and beneficiaries of ecosystem services to facilitate the compensation of actions undertaken to increase the provision of these. They have the potential to utilise new revenue streams, public and private, to address market failures in land-use and management practices. PES should pay for ecosystem services above and beyond what would typically be provided through regulatory compliance; without additionality PES payments would be classed as a subsidy.

Defra published 'An Introductory Guide to Valuing Ecosystem Services' in 2007[6], and since then has been working to increase the consideration of impacts on the natural environment in decision making. As part of its work on ecosystem services, Defra have been exploring the potential for a broader application of PES schemes. The recently published Natural Environment White Paper (NEWP)[7] commits the government to encourage and facilitate greater use of PES as part of efforts to broaden the range of policy instruments available.

Although PES is a relatively new concept, PES-like initiatives have been in existence for some time, including through agri-environment schemes, where farmers are paid to farm in a manner that increases the provision of ecosystem services. Another successful scheme, led by the water company United Utilities, makes payments for land management practices in water catchment areas, to reduce downstream treatment costs[8]. More recently, national parks have trialled a 'visitor payback' scheme to encourage visitors to contribute towards maintenance and enhancement of the rural environment[9].

Defra has identified the opportunity for private PES schemes to increase the provision of ecosystem services, and has recently published research[10] identifying the barriers and opportunities to the implementation of PES schemes, across varying spatial scales and a range of ecosystem services. Many of the opportunities identified involve building on existing experience, by increasing the use of visitor payback schemes in National Parks, developing PES for woodlands, increasing the application of PES to water catchments, using angling permit fees to pay for river restoration and habitat improvements, and increasing the scope of agri-environment schemes, focusing on geographically important ecosystem services.

Challenges identified include:

- A need to improve awareness and understanding of the links between environmental change and the benefits to stakeholders.
- Gaps in scientific evidence about ecosystem services, especially given the location-specific nature of many services and hence the need for technical information and evidence about causal relationships at particular sites, which can be costly to obtain.

[6] Defra (2007) An Introductory Guide to Valuing Ecosystem Services

[7] HMG (2011) The Natural Choice: securing the value of nature

[8] United Utilities (2011) http://www.unitedutilities.com/scamp.aspx [Accessed online 15/12/11]

[9] Nurture Lakeland (2011) http://www.nurturelakeland.org/what-do-we-do/visitorpayback.html [Accessed online 15/12/11]

[10] URS Scott Wilson (2011) Barriers and Opportunities to the Use of Payments for Ecosystem Services

- Barriers presented by current institutional and regulatory systems and processes, especially given the variety of services delivered by multi-functional land use compared to the responsibilities of institutions for particular elements of land-use policy.
- The transaction costs involved in developing and operating PES. These may be reduced by building trust between stakeholders, which can be facilitated by an intermediary (such as government or an NGO).

2.4 Lessons Learned

A number of lessons have been learned from the UK's experience of biodiversity incentive schemes to date. These include that:

- Biodiversity action requires an increase in the **level of resources mobilised (including financial, human and technological)**, particularly in a densely populated and intensively managed country with many potentially competing land use and land management priorities;
- Incentives are important in influencing land management, but need to be accompanied by **other supporting measures**, particularly advice and training, which enhance their effectiveness;
- The **location, targeting and pattern of uptake** of incentive measures play an important role in influencing their effect on biodiversity and ecosystems. Having extended the availability of incentives to large numbers of farmers and land managers, UK authorities are now increasingly looking to improve the co-ordination of delivery to enhance the coherence of ecological networks and the delivery of ecosystem services;
- **Targeted programmes**, such as the Scottish Water Environment Restoration Fund, can play an important role in filling the gaps left by mainstream incentive schemes and regulatory requirements;
- An appropriate balance needs to be struck between **"top-down" and "bottom-up"** approaches to the delivery of incentives. "Top-down" approaches based on common frameworks can help to enhance the coherence of incentive structures, bring economies of scale in policy design and delivery, and encourage sharing of knowledge and experience. However, bottom-up approaches, involving local partnerships and addressing local priorities, can often enhance the effectiveness of delivery.
- **Monitoring and evaluation** are important in enhancing the effectiveness of incentives over time.

3 Addressing Perverse Incentives

3.1 Summary of Activity

Perverse incentives, including environmentally harmful subsidies (EHS), are measures that, by supporting a given activity or objective, have indirect damaging effects on the environment. They are defined by the OECD as 'a result of a government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs, but in doing so, discriminates against sound environmental practices'. [11]

The UK's work to address perverse incentives that adversely affect biodiversity includes initiatives:

- **At the national level** – on issues such as water pricing and energy incentives; and
- **At the EU level** – where the UK continues to advocate further reform of major subsidy programmes such as the Common Agricultural and Common Fisheries Policy.

At the national level, the reform of the water abstraction licensing system has been identified as a major priority in England and Wales (Evidence 5). The current system does not provide clear signals (e.g. pricing) to promote behaviour to meet water needs and protect water ecosystems. This has adverse effects on biodiversity and is considered to be unsustainable in the long run, particularly given predicted changes in climate. The government is working to reform the system, while making short term changes designed to improve the efficiency of addressing its current adverse impacts.

Evidence 5 Reform of the Water Abstraction Regime

Recognition of the need for change

The current water abstraction system was put in place in the 1960s, and was designed to manage competing human demands for water rather than to protect the environment. A recent report[12] highlighted that various characteristics of the system mean that abstractors do not receive the right signals or incentives for sustainable decision-making. For instance:

- Many licences have a fixed water allocation such that the volume of water permitted for abstraction is not linked to the actual volume of water available. Moreover, most licences have been issued without a time limit, making it difficult to review them.
- Licences issued more recently have more restrictions, but there is still only a limited mechanism to ensure that users respond to relative scarcity or abundance. Charges for licences are not linked to the volumes abstracted so do not reflect the availability of water or the value that users place on it. Once an allocation is made, there is no financial incentive to use it efficiently, or to consider its scarcity and other environmental impacts.
- There is currently little trading or sharing of abstraction licences because of various real and perceived barriers (e.g. poor information, a lengthy administrative process, uncertainties about the outcomes), the consequence being that abstractors who do not need to take their full water allocation do not hand back or sell-on licences as their needs change.
- Payments for licenses are paid into a fund of which a part (the Environment Improvement Unit Charge - EIUC) is used to compensate other license holders if they suffer a loss when changes are made to their license to address over-abstraction. This incentivises license holders to wait and seek the maximum compensation payment rather than adapt quickly and at least cost.

There is a very slow regulatory process for changing abstraction licenses in order to reduce the volumes licensed for abstraction, and a requirement for compensation for any losses caused.

[11] Adapted from OECD (1998) *Improving the environment through reducing subsidies*, OECD, Paris; and OECD (2005), Environmentally Harmful Subsidies: Challenges for Reform, OECD, Paris.

[12] OFWAT & EA (2011) The *case for change* – reforming *water abstraction* management in England. Available from: http://publications.environment-agency.gov.uk/PDF/GEHO1111BVEQ-E-E.pdf

The programme for Restoring Sustainable Abstraction

To address some of these issues, the Restoring Sustainable Abstraction (RSA) programme was established to identify, investigate and solve environmental risks or problems caused by unsustainable licensed water abstraction throughout England and Wales. Under this programme, the Environment Agency (EA) is investigating 263 catchment-scale schemes in England and Wales where there is a risk of damage to important conservation sites. Investigations may lead to changing abstraction licenses. License holders are encouraged to voluntarily change the license, a process which is straightforward and quick. If the license holder objects, they may be eligible for compensation. The time and cost associated with these changes has a significant impact on abstractors and regulators. The programme has seen some license holders voluntarily change their conditions (e.g. Portsmouth Water). In 2012, the EA will publish information on the progress of the programme in addressing locally damaging abstractions.

Reform under the Water White Paper

The 2011 Water White Paper[13] announced a commitment to change the water abstraction regime to one that is more resilient to the challenges of climate change and population growth and that better protects the environment. The White Paper recognises that too much water is being abstracted in some catchments and that abstraction charges do not send the right price signals. The Paper anticipates a new regime to be in place in the mid to late 2020s, with the consultation for reform to run over the next 2 to 3 years. It is hoped that the new system will better reflect the value of water, its relative scarcity and the value of ecosystem services to ensure that water ecosystems are protected. Licenses may be designed to vary the volume available for abstraction according to water availability. There is also no intention to fund compensation for any losses due to the transition to a system - this is legally justified since changes will be designed to protect the environment.

However, the Paper recognises that more immediate change is also needed, and also lays down options for improving the system and making better use of existing tools within the current framework. These measures include:

- Creating a framework where company solutions for restoring sustainable abstractions are included in the price review process.
- Exploring the possibility of an Abstraction Incentive Mechanism to incentivise water companies to take into account the environmental impacts of abstraction when considering the use of their water supplies. It is hoped that this could avoid the risk that trading of water could increase over abstraction.
- Changing the current charging scheme to use the EIUC to fund hydro-morphological features where it is cost effective and where the primary objective is to address unsustainable abstraction, while still enabling abstractors to take the water they need. The cost of implementing the measure will be funded by the EIUC.
- Piloting the use of reverse auctions as a tool for restoring catchments to a sustainable balance, when there are several licenses in a catchment that could be varied to protect the environment. Licensees whose abstraction is damaging the environment will be able to bid to sell back part or all of the licensed volume to the EA.
- Using, from 2012, the power under the Water Act 2003 that enables licenses which cause serious damage to be removed or varied without compensation.

Barriers and lessons learned

Although it is clear that the system needs reform and is no longer fit for purpose, it is also obvious that there are several challenges and barriers to be overcome in order to implement the necessary changes. The case also illustrates some key lessons to be learned:

- It is difficult to work within an 'inflexible' system which was designed in a different context and where the needs and priorities were therefore also different.
- Relying on regulatory measures in the absence of in-built positive incentives can create a slow and costly system.
- A system based on taxation and compensation is very difficult to work with due to the challenging and politically sensitive nature of changing (i.e. increasing) prices.
- The need to identify and implement changes within an existing system, even when this

[13] See Defra (2011) *Water for Life*. http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf

system will undergo more comprehensive reform in the future, if the need for change is sufficiently great and the timescales for reform are long.

- Even within a relatively 'inflexible' system which is no longer fit for purpose, there are measures that can be taken and tools that can be adapted to meet new priorities, e.g. funding hydromorphological measures as a cheaper means of achieving the same environmental outcome instead of compensating abstractors by changing the conditions of the license. Even so, it is difficult to raise the funds required by increasing user charges.
- Assessing and valuing losses is a complex undertaking and open to subjective judgements, providing challenges to the regulatory authorities.

The government also announced in its 2011 Natural Environment White Paper that it will carry out a full review of how it 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 and yields better environmental results. Energy incentives are also relevant to biodiversity, both directly (for example by encouraging development of windfarms and other renewables with potential effects on habitats) and indirectly, through mitigation of climate change and effects on air quality. While not directly focused on biodiversity, proposals to reform banding of the Renewables Obligation could have implications for wildlife, which could be positive or negative.

At the EU level, two major subsidy programmes, the Common Agricultural Policy and Common Fisheries Policy, have both had profound impacts on biodiversity, and the UK has been active in pressing for successive reforms. The UK has undertaken research into the impacts of the CAP and CFP on biodiversity and the environment, and on alternative future policy options. The government has been active in current debates about reform of these policies for the 2014 to 2020 EU budgeting period, and has criticised current proposals for the new CAP, arguing among other things that a greater shift towards payments for biodiversity and the environment is required (Evidence 6).

A selection of current initiatives is summarised in Annex 2.

3.2 Progress and Achievements

The UK has played a central role in debates about reform of the CAP, and has been a pioneer of agri-environment policies, since the introduction of the Environmentally Sensitive Areas scheme in 1987. Successive CAP reforms have made considerable progress in decoupling subsidies from production and thereby reducing the negative impacts of subsidies on biodiversity and the environment. Positive incentives for wildlife and the environment have also increased, although the UK has called for a greater shift in the balance of subsidies.

Defra has also advocated radical reform of the Common Fisheries Policy, arguing that the current policy is broken and has not delivered its key objective of an economically viable fishing industry which minimises impacts on marine ecosystems. In July 2011, the UK welcomed proposals from the European Commission as a vital first step, and promised to work with the EU and other Member States to deliver the radical reforms that the marine environment and fishermen need and the public expects.

Reform of the water abstraction system in England and Wales is a long term process, with the Water White Paper anticipating that a new regime will be in place in the mid to late 2020s, following consultation for reform over the next 2 to 3 years. More immediate changes to reduce the impact of abstractions will be made within the current system. The slow pace of reform reflects the complexity of the system, the large number of abstractors affected and the need to tailor a new system to the differing conditions in terms of water availability.

Evidence 6 UK work on CAP reform

The UK has long argued for reform of the EU Common Agricultural Policy (CAP), and has been active in CAP reform negotiations in calling for a more market oriented policy, with a much reduced

budget and greater focus on environmental protection and management. Successive reforms have decoupled most support from production, reducing the incentives to intensify agriculture and the negative effects of this on the environment, and have increased funding for rural development and agri-environment measures, the so-called second pillar of the CAP. However, the majority of the £47 billion CAP budget is still spent on direct payments to farmers and market measures ("Pillar 1" support).

The UK government argues that Pillar 2 of the CAP should receive a greater share of a smaller CAP budget, with the focus being on rewarding the positive benefits that farming delivers for wildlife, people and the landscape. The UK has supported numerous research projects to inform the CAP reform debate, through the Land Use Policy Group[14] and other means.

Defra Ministers have criticised new EU proposals for the CAP over the 2014 to 2020 period, arguing that they do not go far enough in addressing the twin challenges of international food security and protecting our wildlife and biodiversity. They argue that biodiversity objectives will be met more effectively through positive incentive measures under the second pillar of the CAP, rather than adding additional conditions to Pillar 1 subsidies (the so-called "greening" of direct support measures). In a press release issued on 14 November 2011, Defra Minister Caroline Spelman said: "We remain convinced that the best way to help the environment is through the current system of specific environmental payments to farmers, in return for the public goods they provide, such as encouraging wildlife on their farms." [15]

3.3 Barriers and Challenges

Key barriers and challenges in reforming perverse incentives include:

- **Political barriers** - especially at EU level when dealing with reform of major policies such as the CAP and CFP;
- **Resistance from sectoral interest groups** – such as farmers and fishermen;
- **Conflicts with other existing policies and objectives** – e.g. the reform of renewables subsidies potentially damaging to biodiversity may conflict with climate change policy objectives; it is important that different environmental, social and economic objectives and trade-offs are taken into account, and possible win-win or compromise solutions identified;
- **Aspects of the design of current policies** – for example the lack of time limits for water abstraction licences, and requirement for compensation for variations in licenses – presents significant barriers to reform;
- **Conflict with social objectives** – such as tackling fuel poverty – which makes it difficult to tackle some environmentally damaging subsidies such as reduced VAT rates on domestic fuel; and
- **Complexity of reform packages** – reform may often need to be accompanied by complementary measures, e.g. flanking measures to minimise impacts to competitiveness and social equity. Identifying key trade-offs, appropriate measures and balanced packages may be complex and require a thorough understanding of the incentive and its environmental, social and economic context, complicating the reform process.

3.4 Lessons Learned

Lessons that can be learned from the above examples are that:

[14] http://www.lupg.org.uk/

[15] Defra press release, *CAP plans don't get to heart of challenges,* 14.11.11 http://www.defra.gov.uk/news/2011/11/14/cap-devolved-administrations/

- Reform of perverse incentives can be a **long term process**, but persistence can yield results over time;
- **Research and evidence** on the size and adverse impacts of incentives, on winners and losers and on options for reform can play a valuable role in making the case for reform;
- There is often a **need to work within an existing system**, even when this system is being reformed, if the need for change is sufficiently great and the timescales for reform are long. Adapting existing tools may provide cost effective short term solutions, where reform is a long term process.
- **Transparency, accurate design** (including timing) and **clear communication** with stakeholders and the general public are crucial to gain public support and counterbalance resistance from particular interest groups.
- **Flanking measures** and other complementary policies can help mitigate social and economic impacts of reform and increase its acceptability.

4 Assessing the Value of Biodiversity and Ecosystem Services

4.1 Summary of Activity

The UK has been active in supporting research to assess the value of biodiversity and ecosystem services. These efforts have culminated with the publication in 2011 of the UK National Ecosystems Assessment (UKNEA), the first overall analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. The NEA was an inclusive process involving many government, academic, NGO and private sector institutions. It responded to a recommendation by the House of Commons Environmental Audit Committee to conduct a Millennium Assessment type analysis in the UK to enable the identification and development of effective policy responses to ecosystem service degradation.

Other notable activities under this theme have included:

- Development of official government guidance on valuing the natural environment in economic appraisals;
- Defra guidance on valuing ecosystem services;
- A series of research projects supported by Defra and the devolved administrations to assess the value of natural environment and ecosystem services in the UK, including recent studies supported by Defra to value the benefits of the UK Biodiversity Action Plan and the benefits of Sites of Special Scientific Interest;
- Studies into the economic impacts of the natural environment, undertaken at the country level in Scotland, Wales and Northern Ireland, and in English regions;
- Internationally, UK support for TEEB initiative (The Economics of Ecosystems and Biodiversity).

A summary of selected UK initiatives is given in Annex 3.

Evidence 7 UK National Ecosystem Assessment

The UK National Ecosystem Assessment (UK NEA) is the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. The project, which ran from 2009 to 2011, produced an independent and peer-reviewed assessment of the state and value of the UK's natural environment and ecosystem services, identifying what has driven change observed in the natural environment and the services it has provided over the last 60 years, and what may drive change in the future. It includes an investigation into the monetary and non-monetary value to the economy, society and individuals from various ecosystem services, including how some of these may change in future.

More than 500 UK scientists and economists were involved in the assessment which was funded by the governments of England, Scotland, Northern Ireland and Wales, the Natural Environment Research Council and the Economic and Social Science Research Council. The project cost £1.3m.

The UK claims to be the first country to have undertaken a complete assessment of the benefits that nature provides, how they have changed over the past, the prospects for the future and their value to our society. It aims to help people to make better decisions that impact on the UK's ecosystems to ensure the long-term sustainable delivery of ecosystem services for the benefit of current and future populations in the UK.

Key findings

The key findings of the assessment were:

- Natural capital is critically important to well-being and economic prosperity, but is consistently undervalued in conventional economic analyses and decision making.
- Ecosystems and ecosystem services, and the ways people benefit from them, have changed markedly in the past 60 years, driven by changes in society.
- The UK's ecosystems are currently delivering some services well, but others are still in long-term decline.
- Population growth and climate change will increase pressures on ecosystems, both in the UK and further afield.
- Actions and decisions made now will have long term consequences for ecosystems, ecosystem services and human well-being. It is important that these consequences are understood so that informed decisions can be made.
- A move to sustainable development will require an appropriate mixture of regulations, technology, financial investment and education, as well as changes in individual and societal behaviour and adoption of a more integrated, rather than conventional sectoral, approach to ecosystem management.

Overall the assessment provides values for a range of services to help decision makers fully understand the worth of the natural environment. It stresses the need for a more collaborative approach to enhancing our environment, with everyone playing their part to capture more of nature's benefits.

The results of the NEA provide policy makers with policy options to secure the continued delivery of the UK's ecosystem services, and the evidence base needed to strengthen decision making and ensure effective management in the future.

The high profile of the assessment has helped to enhance its influence and impact.

Next steps

Follow on work has recently being commissioned specifically to:

- Develop the economic analysis to further increase the breadth of ecosystem services analysed, and analyse the macroeconomic implications of the findings of the UKNEA;
- Further explore the cultural ecosystem services and how values for ecosystem services can be better understood and operationalised into a range of decision making contexts;
- Develop the analysis of future ecosystem changes, applying and developing the UKNEA scenarios; and

- Communicate the messages from the UKNEA and new information generated under this project, including the co-development of practical tools and other supporting materials with a range of key user groups to enable them to make best use of this evidence

4.2 Progress and Achievements

Through the NEA, the UK claims to be the first country to have undertaken a complete assessment of the benefits that nature provides, how they have changed over the past, the prospects for the future and their value to our society.

Through a range of other studies, the UK has significantly furthered its understanding of the value of biodiversity and ecosystem services in recent years, and approaches to assess them. Progress has also been made in providing guidance to inform such assessments and to incorporate them in decision making. For example, the government is currently developing guidance on valuing the natural environment in economic appraisal, which will be appended to the HM Treasury Green Book – the official government manual on economic appraisal. Defra has issued guidance on developing and valuing ecosystem services and on the use of value transfer techniques to assess the value of environmental impacts.

Nevertheless, significant gaps in our knowledge still remain, particularly with respect to ecosystem services which are localised and/or difficult to quantify and value.

Evidence 8 Studies of the economic impact of the natural environment supported by the devolved administrations

In Scotland

A recent report[16] published by the Scottish Natural Heritage and other partners, assessed the extent to which sustainable use of the nation's natural environment supports Scotland's economy. This covered some of the benefits that people derive from the natural environment. The report demonstrated that, for instance:

- The natural environment supports nearly one in seven of all full time jobs in Scotland, 242,000 in total; and,
- The natural environment benefits two-thirds of existing businesses.

In Northern Ireland

In 2006, a partnership of nine leading environmental NGOs, together with Northern Ireland Environment Agency commissioned a study to value the economic significance of Northern Ireland's environment. The research[17] revealed that:

- Economic activities relating to the environment of Northern Ireland contribute £573 million to the regional economy; and,
- These environment-related economic activities support the equivalent to 32,570 full-time jobs.

In Wales

In 2001 the Valuing the Environment Partnership was launched. The Partnership aimed to gather hard economic evidence that the environment is fundamental to prosperity in Wales and for the first time calculated the economic impact of the whole environment of Wales. The research[18] found that:

- £6 billion of GDP in Wales is directly dependent on the environment.

[16] The Economic Impact of Scotland's Natural Environment. Scottish Natural Heritage Commissioned Report No.304 (ROAME No. R07AA106).

[17] See: http://www.doeni.gov.uk/niea/valuing_our_environment_full_report.pdf

[18] See: http://www.nationaltrust.org.uk/main/w-global/w-localtoyou/w-wales/w-wales-news/w-wales-news_valuing_the_welsh_historic_environment.htm

- 1 in 6 Welsh jobs is supported by the environment, totalling 30,00 FTE jobs
- The environment contributes £1.8 billion in wages to the economy of Wales each year, and £840 million to Wales' gross value added.

Lessons learned

While environmental authorities and NGOs recognise the need to conserve biodiversity and the environment in their own right, presenting evidence on their contribution to the economy can help to convince decision makers and stakeholders outside the environmental sector. The idea that biodiversity presents an opportunity, rather than a constraint to economic development, is now widely accepted, and recognised in a range of different policy documents in the UK, although conflicts between biodiversity and development continue to arise, particularly at the local level.

4.3 Barriers and Challenges

Key barriers and challenges in assessing the value of biodiversity and ecosystem services include:

- **Knowledge gaps** – particularly a shortage of scientific evidence to enable us to quantify particular regulating services (such as pollination, regulation of pests and diseases, and regulation of water quality and flows);
- **Limitations in valuation methods** – particularly with regard to the value of cultural services derived from biodiversity and ecosystems. While stated preference methods are capable of valuing these services, they are subject to considerable practical difficulties and potential biases which limit their application and utility;
- **Limitations in the availability of resources** for economic assessment – particularly where this requires costly original valuation work; and
- **Difficulties in transferring the benefits and values** from one study to another context, particularly given that many of the benefits of biodiversity and ecosystems are location-specific.

4.4 Lessons Learned

The lessons from UK experience include that:

- Gaps in our knowledge mean that not all of the benefits of biodiversity and ecosystem services can be measured and valued. Nevertheless, assessments based on partial evidence can be valuable and informative, providing gaps and limitations are understood;
- The value of biodiversity and ecosystem services needs to be recognised and accounted for in decision making, even when it cannot be expressed in money terms. Structured assessment frameworks, that assess benefits and services in qualitative, quantitative and where possible monetary terms, can help to achieve this;
- High profile, national level assessments such as the UKNEA can be influential in capturing the attention of decision makers and stimulating new approaches and initiatives;
- While biodiversity is valuable in its own right, economic assessments, taking account of the value of ecosystem services and the impacts of the natural environment on the economy, can be helpful in influencing wider debates and decision making processes; and
- The idea that biodiversity presents an opportunity, rather than a constraint to economic development, is now widely accepted, and recognised in a range of different policy documents in the UK, although conflicts between biodiversity and development continue to arise, particularly at the local level.

5 Taking Account of the Value of Biodiversity and Ecosystem Services in Decision Making

5.1 Summary of Activity

The UK has used a range of different tools to incorporate biodiversity into decision making among different types of organisations and at different levels. These include:

- **Regulation** – imposing legal requirements to take action that benefits biodiversity. Examples include implementation of the EU Habitats, Birds and Water Framework Directives, planning legislation, and legislation in England and Wales, Scotland and Northern Ireland introducing a duty for public authorities to have regard for the conservation of biodiversity in undertaking their activities.
- **Plans and strategies** – designed to guide decision making. Examples include marine plans being developed across the UK, Scotland's Land Use Strategy, and Defra's Ecosystem Approach Action Plan.
- **Institutional measures** – designed to build capacity to better take account of biodiversity in decision making. Initiatives at different levels include the Natural Capital Committee, a new network of Natural Value Ambassadors, Green Infrastructure Partnership and Local Nature Partnerships.
- **Evidence and information tools** – designed to inform decisions. These include the UK Biodiversity Indicators and country level biodiversity indicators, Biodiversity Evidence Programme, Ecosystems Knowledge Exchange Network, UK Natural Capital Accounts, and UK support for initiatives internationally relating to natural capital and ecosystem accounting.
- **Guidance** – designed to assist decision makers to take account of biodiversity. Examples including planning guidance issued in different UK countries, and guidance issued to public authorities to assist them in implementing their duty to have regard for the conservation of biodiversity in undertaking their activities.

A summary of selected initiatives is given in Annex 4.

Evidence 9 Ecosystems Knowledge Exchange Network

The Ecosystems Knowledge Exchange Network (EKEN) was recently established to bring together ecosystem demonstrator projects and their interest groups, following a recommendation of the recent Natural Environment White Paper for England. The network currently includes 30 different projects which have adopted an ecosystems approach, and aims to improve communication between them and sharing of experience and best practice. The ambition is to expand this to at least 200.

The NERC Centre for Ecology and Hydrology leads the consortium running the network, with funding of £300,000. The network will:

- Bring together a range of researchers, local interest groups, decision makers and managers involved in a range of locally based ecosystems projects;
- Facilitate shared learning between these constituents (e.g. exchanging delivery lessons, sharing local scale evidence, etc.);
- Use the collective knowledge to help address evidence gaps; and,
- Use this new evidence to support an outreach function for demonstrating the value of the natural environment to a wider audience in the UK and internationally.

By building a collective knowledge base, the EKEN seeks to answer outstanding evidence questions, such as:

- How to get local communities involved and interested in biodiversity and ecosystem services;
- How to encourage local communities to use complex environmental datasets to support their decision making; and
- How to encourage businesses to take into the account the value of natural capital in their decision making.

The EKEN therefore hopes to work across two levels:

- **On a delivery level**, the network's role is about developing a community of practice for demonstrating the value of the natural environment. It will provide evidence and insights into the effective delivery of projects which adopt an ecosystems approach. This will be shared with new audiences to help them make better marine and land management decisions which will ultimately deliver a range of socio-economic benefits.
- **On a strategic level**, the network will provide a more coherent picture of how an ecosystems approach is being applied across communities. The network will also help to assess trends and patterns in how communities operate in these situations, understand the range of socioeconomic interests of community bodies involved and investigate how these shape behaviours and actions towards the natural environment and green economy.

Factors of, and barriers to, success

Key to the EKEN's success will be working with existing frameworks, institutions, tools and instruments. Experience in the past has shown that successful delivery depends on taking into account the local context and any place-based issues. However, these particularities should not be considered a barrier to sharing knowledge and experience.

The EKEN has already identified other barriers that will have to be overcome, including:

- **Terminology:** there is a lack of understanding about what is meant by ecosystem services, and how this relates to other related concepts, such as Green Infrastructure. However, it is also clear that while many might not be familiar with the terminology, an ecosystems approach is being adopted by many projects without them realising. A lack of knowledge of the language therefore is not preventing action.
- **Practical action**: Although many stakeholders understand and appreciate the value of natural capital, many do not understand how that can be factored into their decision making in a practical and meaningful way
- **Deliberative and participatory decision making**: there is still a lack of local engagement of local communities.
- **Building bridges**: many different actors are typically involved in various aspects of projects which adopt an ecosystems approach. Many of these have different priorities and

approaches, creating institutional barriers to effective join-up.

The EKEN will seek to overcome and address these barriers, for instance by overcoming some of the information barriers and ensuring that stakeholders are learning from experience. The EKEN will also seek to build a community of shared ownership. An important part of the initiative is also disseminating this knowledge and experience to wider audiences.

5.2 Progress and Achievements

Notable progress has been made in:

- Introducing a duty for all public authorities to have regard for the conservation of biodiversity in undertaking their activities;
- Promoting widespread recognition of the benefits of the ecosystem approach, with a wide range of local projects adopting this approach across the UK;
- Promoting recognition of the importance of achieving favourable condition for Sites of Special Scientific Interest, and focusing effort and resources on actions designed to achieve this. In England the government achieved a target for 95% of SSSI area to be in favourable or recovering condition by the end of 2010;
- Developing a marine planning system in UK waters, designed to achieve the sustainable use of the seas by balancing the needs of different marine users and the marine environment;
- Development and publication of biodiversity indicators at the UK and country levels, designed to ensure that better account is taken of biodiversity in decision making;
- Improving the management of the water environment, by implementing the EU Water Framework Directive;
- Addressing the impacts of development on biodiversity through the planning system, based on the principle that development should avoid impacts on biodiversity in the first instance; that any unavoidable impacts should be mitigated as far as possible; and that compensation for loss of biodiversity will be required as a last resort. Progress is being made towards offsetting losses of biodiversity through development, with a view to achieving no net loss (Evidence 10, Evidence 11).

Evidence 10 Biodiversity Offsets

Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses in a measurable way. They have the potential to ensure that no net loss of biodiversity occurs as a result of development, by requiring compensation for any damage that occurs. The existing planning system in England requires compensation to be provided where damage to biodiversity cannot be avoided, but experience suggests that these requirements are not adhered to in all cases.

The Natural Environment White Paper, 2011, confirmed that the Government will test a voluntary approach to offsets in England in a number of local pilot areas. Natural England will work with these areas, providing advice, support and quality assurance. The aim is to develop a body of information and evidence, so that the Government can decide whether to support greater use of biodiversity offsetting in England, and, if so, how to use it most effectively.

Offsets will aim to improve the implementation of the requirements of the planning system for biodiversity and provide a straightforward and cost-effective way to assess the impact of a development and to agree the requirements for compensation.

Six pilot areas in which offsets will be trialled have been announced, as well as eight supporting projects. The pilots are voluntary – groups of local authorities have volunteered to implement them, while the offset requirements will be voluntary for participants. Whether developers volunteer to provide offsets is likely to depend on the perceived benefits in streamlining planning applications. For example, by applying standardised approaches and metrics offsets may increase certainty

regarding compensatory requirements, avoiding the need for tailored, locally specific and potentially time consuming assessments.

One of the potential barriers to the wider adoption of offsets is the desire of the UK Government to reduce the burden of regulation on business. However, the voluntary engagement on behalf of businesses may help reveal whether they believe offsetting has the potential to reduce the burden of regulation on them – for example by streamlining the planning process.

However, although progress has been made, significant further efforts are required. For example:

- Biodiversity continues to be damaged through development, as requirements to avoid, mitigate or compensate for biodiversity loss are not fully and consistently implemented;
- While the condition of SSSIs is improving, the majority remain in unfavourable recovering condition;
- Much effort is required to improve the ecological status of surface waters, especially those affected by diffuse pollution;
- While awareness of biodiversity and the priority attached to its conservation have undoubtedly increased in recent years, much still needs to be done to integrate biodiversity concerns into decision making, both within government and business.

Evidence 11 Scottish Borders - Compensation for Biodiversity Loss

Scotland has chosen not to implement a national system of biodiversity offsets, but to require compensation for biodiversity loss on a case by case basis.

Scottish Borders Council's biodiversity policy is based on a principle that there will be no net loss of biodiversity in the region. In 2006, the Council issued Supplementary Planning Guidance for Biodiversity, designed to implement this principle, as well as the duty to further the conservation of biodiversity placed on all public bodies by the Nature Conservation (Scotland) Act of 2004. The guidance states that development should avoid impacts on biodiversity in the first instance; that any unavoidable impacts should be mitigated as far as possible; and that compensation for loss of biodiversity will be required as a last resort. This will ensure that no net loss of Local Biodiversity Plan (LBAP) habitats occurs and that ecological networks will be maintained.

A number of projects have been developed through the planning process to deliver compensatory habitats in biodiversity offsets to help ensure no net loss of biodiversity through development. There are currently two black grouse projects, a project for natural flood management in the Gala water catchment, and two projects for blanket bog restoration being managed by the Council in partnership with LBAP partners and developers. These projects have addressed the impacts of windfarms and other developments.

While the compensation schemes in the Borders have required some investment of time and effort, this has provided valuable knowledge and experience that can be replicated more cost-effectively in future cases, both in the region and in other areas of Scotland.

5.3 Barriers and Challenges

Significant challenges and difficulties in integrating biodiversity into decision making include:

- Ensuring that **current requirements are implemented and enforced** – for example that all public authorities are aware of and implement their biodiversity duty, and that existing planning requirements with respect to biodiversity are implemented consistently;
- Maintaining **commitments not to increase the burden of regulation on business**, whilst developing the policy framework to help businesses account for the value of

biodiversity, particularly during the current economic downturn. This could be a barrier, for example, to the wider use of biodiversity offsets;

- Addressing **continuing loss of biodiversity**, in spite of evidence of its value. Even where there is strong evidence of the value of biodiversity and ecosystem services, this is not always taken account of in decision making;
- Addressing the **barriers caused by language and terminology**. There is often confusion regarding the terminology relating to ecosystems, biodiversity and green infrastructure, not helped by the multitude of initiatives in these areas.

5.4 Lessons Learned

The following lessons can be learned from UK experience:

- **Estimates of the value of biodiversity are not always necessary** to take account of it in decision making, providing there is understanding of the value of biodiversity and ecosystem services and how they underpin wellbeing;
- **Rules and provisions are not enough** – there is a need for implementation and enforcement;
- **Information and guidance is important**, particularly where it is practical and easy for decision makers to follow. However, it does not deliver change by itself, and appropriate incentives are important;
- **Local approaches can help to influence decision making** in particular locations, while networking and sharing experience between them can play a valuable role in enhancing their effectiveness;
- **Perceived conflicts with other priorities** make influencing public and private decision making an on-going challenge.
- Establishing systems to enable decision makers to take the value of biodiversity into account requires an initial investment of **time and effort**, though transaction costs decrease over time as experience increases, building a knowledge base which can be shared with other decision makers in the future.

6 Promoting Sustainable Consumption and Production

6.1 Summary of Activity

Activities to promote sustainable consumption and production reduce demand for natural resources and therefore help to mitigate impacts on biodiversity. The UK has implemented a number of initiatives with this aim. These include:

- **Research to assess the lifecycle impacts of products**, and to inform action to reduce these impacts (Evidence 12);
- **Product roadmaps**, designed to assess the impacts of particular products and to stimulate voluntary action to reduce them, in partnership with businesses;
- **Provision of technical advice and financial support to improve resource efficiency**, through the Waste and Resources Action Programme (WRAP);
- The development of a new **Product Research Forum**, bringing government and industry together to understand and take steps to reduce the environmental impacts of grocery and home improvement products (Evidence 13); and
- **Government Buying Standards**, designed to promote sustainable buying within government.

A summary of selected UK initiatives is given in Annex 5.

Evidence 12 Research projects in Sustainable Consumption and Production

The concept of Sustainable Consumption and Production (SCP) covers all the lifecycle environmental impacts of goods and services and is essentially about the more efficient use of resources in production and consumption, in order to reduce or avoid the associated lifecycle impacts.

In order to better understand SCP, Defra is developing a shared evidence base to inform UK SCP policy. The research programme encompasses a diverse range of R&D projects covering two general areas, although there is considerable overlap between the two:

- Products and consumers; and,
- Business efficiency and business processes

Much of the research is policy-led, in that a gap in the evidence needed to inform policy is identified, and the research is designed to address this gap.

By considering the life-cycle of products (cradle-to-grave) the research tends to have a strong international element. In considering the impact of UK consumption, the projects often explore the effects this has on resources in other countries. An example is a recent research project to map and understand the UK palm oil supply chain.

Although the consideration of the impacts of biodiversity in SCP research is increasing, the effects on biodiversity are usually an indirect consideration as other aspects such as energy use, water use and greenhouse gas emissions tend to be the focus of the research. This is largely due to the difficulties in measuring the impacts on biodiversity. This highlights a need to better understand the links between biodiversity, resource use and other environmental impacts.

Evidence 13 WRAP Product Research Forum

The new Product Research Forum (PRF) is a forum supported by the UK government and relevant industry bodies. It is coordinated by the Waste and Resources Action Programme (WRAP). The PRF (soon to be renamed the Product Sustainability Forum) was established to bring together a range of stakeholders with a common interest in improving the availability and accuracy of environmental impact data for consumer products. It aims to set key environmental metrics, establish a methodology and gather data on reducing product-related environmental impacts.

By enabling members to share knowledge in understanding and reducing the environmental impacts of grocery and home improvement products, the Forum will help organisations to put into context their work on different aspects of product impacts and benefits and will help to develop the foundations of possible new voluntary action by the grocery and home improvement sectors.

The PRF currently considers 5 impact categories (including greenhouse gas emissions and impacts on water) but does not explicitly consider the biodiversity-related impacts of products. Nonetheless, the members of the PRF are increasingly recognising the role that biodiversity plays in underpinning their markets and in mitigating future risks. This is especially clear in the case of the importance of insect pollinators for the grocery sector. Many have taken direct measures to promote biodiversity, such as incorporating living walls into their stores and employing corporate bee keepers. Moreover, most members have an element of biodiversity evaluation incorporated into their work.

Before businesses can take better account of biodiversity, however, there is a need for them to better understand the value of biodiversity, how it relates to their business and what practical measures they can take to address it.

In recognition of the increasing interest in biodiversity, the PRF has established a Watching Brief on Biodiversity and regularly reports to the Steering Group of the PRF on the growing body of evidence on biodiversity with a view to incorporating it into future work. It is expected that biodiversity considerations will be mainstreamed into the PRF in the first half of 2012.

Currently the various initiatives being undertaken by PRF members to promote biodiversity are relatively ad hoc, uncoordinated and based on a general rather than detailed appreciation of the importance and value of biodiversity. The PRF hopes to contextualise and develop these actions. For instance, under an Interventions Working Group, ideas will be explored about what can be done to address risks to biodiversity more effectively, and to improve understanding of the linkages between biodiversity and other environmental impacts and metrics.

6.2 Progress and Achievements

The UK's work programme on Sustainable Consumption and Production has helped to understand and address the environmental impacts of a wide range of products.

Defra's Product Roadmaps have been successful in stimulating voluntary action to reduce the impacts of some key product groups, such as clothing, receiving the backing of some key players in the industry. However, other roadmaps – such as that for passenger cars - have been less successful, reflecting the lower demand amongst the industry for further evidence and action (Evidence 14).

There is limited evidence of the impact of SCP initiatives on biodiversity. Much of the focus of these initiatives has been on other environmental impacts such as material, energy and water use, greenhouse gas emissions and waste, issues that directly affect business costs. National and international biodiversity is expected to benefit indirectly from these initiatives.

Government Buying Standards have achieved some success. For example, there is a requirement that all timber is purchased from sustainable sources, and this has not only impacted on the government's own purchases but also catalysed action within the timber sector. The government has established a Central Point of Expertise for Timber Procurement (CPET) to advise government procurers on responsible purchasing of timber and provide them with information and advice to support the implementation of the timber procurement policy (Evidence 15).

Evidence 14 Product Roadmaps

As part of Defra's Sustainable Consumption and Production (SCP) programme, 10 pilot product roadmaps were developed, with the aim of reducing the environmental and social impacts across the life cycle of a range of priority products. Through the road maps, Defra has worked to reduce these impacts, through voluntary action plans designed to improve sustainability performance through the activities of business, government and others.

The products were chosen from the product groups with the highest impacts, based on evidence that four broad product groups account for 70-80% of all environmental impacts and 60% of consumer expenditure[19]. These groups are:

- Food and drink (with roadmaps developed for milk, fish and shellfish);
- Passenger transport (passenger cars);
- Buildings (TVs, domestic lighting, electric motors, windows, WCs, plasterboard);
- Clothing and textiles (clothing).

The roadmaps proved an effective means of engaging with businesses on the sustainability of their products, as they were built on a strong evidence base. Moreover, this evidence base was developed in partnership with business, creating greater ownership.

Nonetheless, some roadmaps proved more successful than others. Key to their success was the timing of the initiative, which was affected by the position of the industry and the stage at which it was engaged (or not engaged) in sustainability considerations. For instance, the passenger cars roadmap was less successful because automobile manufacturers had already done much to address the environmental impacts of their products, reducing the added-value of the roadmap in demonstrating the need for action and type of action required. In contrast, the clothing roadmap was particularly successful, since many in the industry had only just begun to engage with sustainability issues when it was launched. Sustainability was becoming an increasingly prominent consideration, but the knowledge and evidence base was still relatively undeveloped.

Although the impacts on biodiversity were considered to some extent, the focus of the roadmaps tended to be on other aspects, such as water use, energy use and greenhouse gas emissions. Biodiversity was a greater consideration in some product groups than others, playing a more significant role in the case of the clothing and fish roadmaps, than the one on passenger cars. A key challenge for taking greater account of the biodiversity impacts of the products was the difficulty in measuring these impacts compared to other environmental impacts. For biodiversity, it was also more difficult to demonstrate how and to what extent the business would be negatively affected, especially where these effects were largely foreseen in the longer term. In comparison, the effects of resource and energy use have direct implications for business costs.

Actions taken by business for biodiversity are often driven by reputational concerns and increased customer awareness rather than concern about the direct business impacts of biodiversity loss. However, some lower profile or less consumer facing businesses are less likely to take action for this reason.

Although biodiversity was not considered explicitly by some of the roadmaps, their benefits in reducing other environmental and resource impacts are expected to benefit biodiversity indirectly, for example through reduced stress on aquatic ecosystems from lower water use.

[19] EU-25 study 'The environmental impact of products' (EIPRO)

Evidence 15 The Central Point of Expertise for Timber Procurement (CPET) and Government Buying Standards

Government Buying Standards provide sustainability specifications for a range of products commonly purchased by Government, such as IT equipment, white goods and paper. The products assessed were chosen for their environmental and financial impact, scope for environmental improvement and political or example-setting function.

The Standards comprise mandatory minimum standards at the market average level and best practice specifications. These best practice specifications are more stretching than the mandatory minimum and are voluntary for those procurers that wish to purchase the "best in class" products in certain areas. These are likely to become the minimum over different time periods depending on the product or product group.

The Standards include a component on timber procurement, which requires that all timber and wood-derived products must be from only:

- Independently verifiable legal and sustainable sources OR
- FLEGT-licensed timber or equivalent sources.

The policy is mandatory for all Central Government Departments, Executive Agencies and Non Departmental Public Bodies. Local authorities, other public bodies and the private sector are also encouraged to adopt sustainable timber procurement policies. The policy applies to all timber and wood-derived products used in the government estate, in furniture, paper and construction (including temporary site works and material supplied by contractors such as scaffolding, hoardings and shuttering). Exceptions to the requirements are accepted rarely and only in situations where a particular type of product or timber species is needed (such as for use in marine defences or refurbishment of an historic building) and no legal and sustainable or FLEGT timber is available.

The Central Point of Expertise on Timber Procurement (CPET)

CPET[20] is a service of the UK Government, set up by the Defra and operated by Proforest, to advise government procurers on responsible purchasing of timber and provide them with information and advice to support the implementation of the timber procurement policy.

As part of the process of setting up CPET, a study was completed in 2004 that assessed five certification schemes identified by government procurement staff as the most commonly encountered in the UK wood supply chain. The study determined which of the schemes deliver UK Government requirements for legal and sustainable timber. Re-assessments have been undertaken since, with the most recent in 2010. See: http://www.cpet.org.uk/uk-government-timber-procurement-policy/cpet-news/news%20stories/results-of-cpet2019s-2010-review-of-forest-certification-schemes.

The impact of the Government's Timber Procurement Policy

An impact assessment of the impacts of the Government's Timber Procurement Policy (TPP) was commissioned in 2010, and has been published.[21] The findings show that there has been rapid growth in the use of certification and verification labels, and there are now a number of initiatives to promote the sustainability of timber (e.g. EU FLEGT Action Plan, EU Timber Regulation, private and public TPPs). While a positive change in the behaviour of the private and public sector has been seen, there is nonetheless a lack of accurate figures to assess actual government expenditure on sustainable timber. The impact also varies depending on the product types being considered.

The assessment found that the TPP had been applied inconsistently across departments and contractors. However, the wider market impacts are nonetheless evident, with all trade stakeholders being consulted noting that the TPP had an impact on the way they do business. There was also a significant increase in the certified wood supply between 2003 and 2009 (from 47% to 63% of total UK supply).

[20] http://www.cpet.org.uk/about-cpet

[21] See: http://www.cpet.org.uk/files/Defra%20Timber%20Impacts%20of%20TPP%20Efeca%20Final%20Report.pdf

The impact of Buying Standards on biodiversity

The TPP is perhaps the clearest example where the Government's Buying Standards are likely to have an impact on maintaining biodiversity and minimising harm to ecosystems. However, it is harder to assess the impact of other standards on biodiversity. This is largely due to the difficulty associated with measuring impacts on biodiversity. The Buying Standards are underpinned by methods of one kind or another for assessing impacts in order to determine whether products are meeting certain criteria. Compared to other metrics such as water use and energy use, the impacts on biodiversity are much more difficult to assess and therefore it is more difficult to set and measure buying standards which attempt to minimise the impact on biodiversity. Nonetheless, by minimising the impacts on other resources (e.g. water) there are likely to be several indirect benefits to biodiversity as the pressures on those resources and their associated eco-systems and habitats are decreased.

Maximising the success of Buying Standards

It is clear that to maximise the impact of buying standards, the market must be developed to the point where the standards stimulate the development and maturation of more sustainable options. The timing is therefore important, such that the buying standards aren't introduced too early (where the interest in, and mechanisms for, improved sustainability are still absent).

It is also important the economic case can be made for implementing the standards, to evidence that savings can be made over a certain period, or that at least the cost of the more sustainable option is not much more than the conventional counterpart. The latter is more likely where the sustainable option has become mainstreamed.

6.3 Barriers and Challenges

Some of the key challenges in designing SCP programmes to address biodiversity impacts include:

- **Cost considerations** – addressing biodiversity impacts is less likely to yield direct cost savings than some other environmental priorities such as reducing use of energy, water and materials, although these measures may benefit biodiversity indirectly. There has been a great focus on helping business to cut costs in the current economic climate;
- **Consumer resistance to change** hampers progress in addressing the biodiversity impacts of some products, such as fish;
- **Difficulties of measuring the impact of UK production and consumption on biodiversity** are a barrier to assessing progress through SCP measures.

6.4 Lessons Learned

Lessons that can be learnt from SCP programmes include that:

- **Action designed primarily to achieve other environmental objectives may help to achieve biodiversity gains**. For example, much of the impetus for UK action for timber and palm oil has been driven by concerns about greenhouse gas emissions, but is likely to have yielded benefits for biodiversity;
- **Biodiversity can benefit indirectly** from measures to improve resource efficiency, although these it is difficult to evaluate these measures in such terms as the benefits to biodiversity are often difficult to measurequantify; and
- Other arguments, such as the **reputational benefits** of addressing biodiversity impacts, may be important drivers for change.

7 Engaging Business with Biodiversity

7.1 Summary of Activity

UK initiatives to engage business in biodiversity issues include:

- The development of new **guidance to assist businesses in reporting their environmental impacts**, within which biodiversity reporting is a key theme (Evidence 16);
- Initiatives to support the **green economy**, including a new Green Economy Council to explore opportunities for government and business to work together to promote the green economy, and an Ecosystem Markets Task Force to explore opportunities for business to benefit from markets which value and protect nature's services (Evidence 17);
- Initiatives to engage businesses in key **sectors and product areas**, such as construction, fisheries and peat;
- **Partnerships and forums** designed to engage business in biodiversity issues at the country, regional and local levels;
- Support for **international initiatives** to engage business with biodiversity, such as the TEEB for Business Coalition.

A summary of selected UK initiatives is given in Annex 6.

Evidence 16 Government guidance on business environmental reporting

The Government announced in the 2011 Natural Environment White Paper that it will publish new guidance for businesses by 2012 on how to measure and report their corporate environmental impacts. This will complement existing government guidance on how to report on greenhouse gas emissions and will follow the same step-by-step approach to ensure consistency and encourage those not already reporting. It will cover key areas such as water use and waste minimisation as well as impacts on natural resources and biodiversity. The guidance will aim to be consistent with international guidance and conventions where these exist.

The guidance will cover five key themes, under which key performance indicators (KPIs) will be proposed: waste; water; materials; air and biodiversity/ecosystem services. It will develop and improve previous guidance issued in 2006[22]. However, the section on biodiversity and ecosystems will be new, reflecting the significant broadening of interest in the subject in the last five years, and is expected to attract significant attention. There will be a three month consultation period early in 2012, which will include workshops on different issues. The guidance will aim to reference and draw from existing initiatives, such as the Global Reporting Initiative (GRI), TEEB and OECD biodiversity indicators, rather than replicating them.

[22] Defra (2006) Environmental Key Performance Indicators - Reporting Guidelines for UK Business. http://archive.defra.gov.uk/environment/business/reporting/pdf/envkpi-guidelines.pdf

Evidence 17 Ecosystem Markets Task Force

On 23 November 2011 the Government launched a business-led Ecosystem Markets Task Force to review the opportunities for UK business from expanding green goods, services, products, investment vehicles and markets which value and protect nature's services. The Task Force is chaired by Ian Cheshire, Group Chief Executive Officer of Kingfisher plc and has members from eight other businesses.

The Task Force will report back to government in 2013 through the Green Economy Council. Its report will examine the drivers and barriers to green market growth in the short to medium term, including expected developments in international and European environmental policy. It will highlight areas of comparative advantage for UK business, and examine the potential for the financial sector to market new products which invest in natural capital and services to provide a return for investors and nature alike. It will also look at whether markets have the required information to function properly and grow, for example to compare and verify the standard of products provided. One of the key challenges for the Task Force will be to identify real opportunities that capture the interest of businesses while offering potential benefits for biodiversity and ecosystems, particularly given the significant market failures that have led to biodiversity and ecosystems being undervalued and significantly depleted in recent decades. While it is not clear at this stage exactly where these opportunities lie, the strong business interest in the Task Force and the calibre of its membership highlight the importance of its agenda to the UK business community.

7.2 Progress and Achievements

While it is perhaps too early to observe significant benefits from business engagement activities, considerable progress is evident from the level of interest, support and participation among businesses for key initiatives such as the Ecosystem Markets Task Force and the TEEB for Business Coalition. There has also been significant engagement through business and biodiversity partnerships and forums. Further evidence of progress in this agenda can be drawn from the current revision of government guidance on business environmental reporting. Biodiversity is one of five priority themes in the guidance currently being developed, while in the previous (2006) document it was dealt with in a single paragraph.

Evidence 18 UK Support for TEEB for Business Coalition

The Economics of Ecosystems and Biodiversity (TEEB) study is a major international initiative to draw attention to the global economic benefits of biodiversity, to highlight the growing costs of biodiversity loss and ecosystem degradation, and to draw together expertise from the fields of science, economics and policy to enable practical actions moving forward. The UK has been a major supporter TEEB, providing funding and expertise to assess and highlight the economic case for protecting ecosystems and biodiversity globally. The UK's support has included contributions from Defra, as well as support of £500,000 from the Department for International Development (DFID) for the WAVES programme. In 2011 the Natural Environment White Paper stated that the Government will fund a £210,000 project to undertake case studies to help apply the principles of TEEB to the development of national strategic biodiversity plans, further enhancing the UK's reputation as global leaders in the field of biodiversity.

The UK Government has highlighted engagement with business as a key priority for TEEB, and will support a new international coalition of businesses and business organisations to follow up on the TEEB for Business report. Defra has pledged funding of £100,000 to this initiative. The TEEB for Business Coalition will catalyse and co-ordinate action by helping participating businesses from the UK and elsewhere to understand and address their environmental impacts. The Coalition will provide a network, bringing together different groups to identify and share best practice, and will catalyse action by identifying gaps in activity and opportunity to fill them. Initially operating from the UK, it will have an open architecture and aim to achieve a wide business membership.

TEEB has done much to raise awareness and stimulate interest in biodiversity issues within the business community. The greatest challenge that the new coalition faces is to unite business interests to achieve a shared sense of purpose and to pursue a common agenda. This will require a good governance structure and strong communications and leadership.

7.3 Barriers and Challenges

Key challenges in promoting business engagement with biodiversity include:

- The challenge of **convincing business of the relevance of action for biodiversity**, especially when the immediate business impacts of biodiversity loss are not always immediate or directly apparent (e.g. because costs or benefits take years to manifest, or complex international supply chains make traceability difficult);
- The difficulty of **identifying specific and practical actions** that business can take to avert biodiversity loss;
- The continuing existence of **market failures**, which place limits on the ability to identify market based solutions to biodiversity issues; and
- The challenge of **clearly defining the role of new initiatives**, and avoiding conflict with existing initiatives and organisations.

7.4 Lessons Learned

Recent experience in the UK demonstrates that:

- There is a **significant and growing appetite for businesses to engage** in the biodiversity agenda;
- **It is important that new action builds on, rather than replicating, existing initiatives**;
- Partnerships and initiatives to engage business with biodiversity require **strong leadership, good governance, effective communications and a clear and shared agenda for actio**n.

8 Sharing experience and building capacity internationally

As well as implementing its own initiatives with regard to the different aspects of biodiversity incentives discussed above, the UK plays an active role internationally in sharing its experience and in supporting initiatives to further incentives for biodiversity conservation.

Examples of international actions include support for:

- **Positive incentive measures for biodiversity**, through developing REDD+ guidance, International Climate Fund, the Darwin Initiative and the UK's work on the implementation of the Nagoya Protocol on Access and Benefit Sharing;
- **Efforts to promote understanding of the value of biodiversity** and ecosystems globally, notably the TEEB initiative;
- **International initiatives to account for natural capital**, including the World Bank's Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES)
- **International business engagement initiatives**, such as the TEEB for Business Coalition.

The UK has shared reports and guidance documents relevant to biodiversity incentives internationally, through the CBD, TEEB and other mechanisms. For example, the CBD Incentive Measures database[23] includes numerous UK reports, guidance documents and manuals on different topics, particularly with regard to valuing the natural environment and ecosystem services, and developing positive incentive measures for biodiversity.

While not all of the initiatives described above will be directly transferable internationally, the review suggests that the UK has developed a substantial body of evidence and experience relevant to the different aspects of the CBD biodiversity incentives agenda. The UK undoubtedly has many insights to share with other Parties, and much to learn from the experience of other countries.

[23] http://www.cbd.int/incentives/case-studies.shtml

Annex 1 Positive Incentives for Biodiversity - Summary of Selected UK Initiatives

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
Incentives for agriculture and woodlands							
Rural Development Programme England (2007 - 2013)	Farming and Forestry Improvement Scheme A scheme of support, developed to help farming, forestry and horticultural businesses in England to become more efficient at using resources. Key areas elgible for funding include: - nutrient management - energy efficiency - water resource management - animal health and welfare - forestry	Aims to help businesses more profitable and resilient whilst reducing the impact of farming on the environment.	England	Defra, with Natural England, Forestry Commission and Rural Payments Agency	£20m	2007 to 2013	http://www.defra.gov.uk/rural/rdpe/
	Woodland Planning Grant Woodland Planning Grant (WPG) contributes to the cost of producing a management plan, which is the foundation of sustainable woodland management. The plan identifies the existing value of the woodland (economic, environmental and social) and the owner's objectives. From this, the plan then sets out how the woodland will be managed in the short and long term.	To help owners to certify their woodland through the UK Woodland Assurance Standard, and enables them to access other sources of funding.					http://www.defra.gov.uk/rural/rdpe/
	Woodland Assessment Grant Woodland Assessment Grant (WAG) contributes to cost of work to collect information that will help woodland manager decision making. Management information may relate to the potential impact on landscape, archaeology, ecology or local community. We will also support the production of deer management plans or tree measurement work related to continuous cover forestry.	To gather information to improve management decisions					http://www.defra.gov.uk/rural/rdpe/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	Woodland Improvement Grant Woodland Improvement Grant (WIG) funds capital investment in woodlands, over an agreed period to create, enhance and sustain an increase in the quantity and quality of public benefits delivered. Types of WIG fund: Woodland Biodiversity Action Plan (including a specific measure for Red squirrels) Woodland Sites of Special Scientific Interest (SSSI) Condition Improvement Woodland Public Access Regionally specific grants that have been developed to meet priorities identified in the Regional Forestry Frameworks.	To enhance and sustain an increase in the quantity and quality of public benefits delivered from woodlands					http://www.defra.gov.uk/rural/rdpe/
	Woodland Regeneration Grant Woodland Regeneration Grant (WRG) contributes to the costs of making changes to the composition of woodland within the normal cycle of felling and regeneration. It aims to support change in woodland composition through natural regeneration and restocking after felling.	To support an increase in the capacity for sustainable management of woodlands					http://www.defra.gov.uk/rural/rdpe/
	Woodland Management Grant Woodland Management Grant (WMG) aims to encourage low key, sustainable woodland practice by helping with the additional costs of providing and sustaining higher-quality public benefits from existing woodlands. It is designed to protect the delivery of existing public benefits and improve a woodland's capacity to create more.	To contribute to the additional costs of providing public benefits that arise from meeting the UK Forestry Standard for sustainable woodland management; to protect, increase and maintain the area of woodland under sustainable management; and to identify and address threats to woodland, prevent decline and increase the capacity for sustainable management.					http://www.defra.gov.uk/rural/rdpe/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	Woodland Creation Grant This EWGS grant for new woodland has three elements that can be applied for, depending on the eligibility of both site and applicant: - Woodland Creation Grant (WCG): This is the main grant that contributes to the costs of establishing new woodland. - Additional Contributions (AC): ACs increase the contribution towards the cost of establishing new woodlands that deliver specific priorities. - Farm Woodland Payments (FWP): these are compensation payments for agricultural income forgone when creating new woodlands on agricultural land.	To support the creation of new woodlands where they deliver the greatest public benefits					http://www.defra.gov.uk/rural/rdpe/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	Entry level stewardship Entry Level Stewardship (ELS) is one element of the Environmental Stewardship scheme delivered by Natural England on behalf of the Department for Food, Environment and Rural Affairs (Defra) and is open to all farmers, land managers and tenants. It is a voluntary scheme, designed to deliver significant environmental benefits in high priority areas. ELS requires a basic level of environmental management, and participants can choose from a wide range of more than 80 management options. These cover all farming types including uplands - for example, hedgerow management, stone wall maintenance, low input grassland, buffer strips, and various arable options.	The primary objectives of Environmental Stewardship are to: • conserve wildlife (biodiversity); • maintain and enhance landscape quality and character, by helping to maintain important features such as traditional fi eld boundaries; • protect the historic environment, including archaeological features and traditional farm buildings; • promote public access and understanding of the countryside; and • protect natural resources, by improving water quality and reducing soil erosion and surface run-off. • Within the primary objectives, ES also has secondary objectives of genetic conservation and fl ood management. In meeting these objectives, Environmental Stewardship will: • support the adaptation of the natural environment to climate change; and • enhance the contribution of agriculture and land management to climate change mitigation, for example, by reducing greenhouse gas emissions, and providing and protecting carbon storage.			Nearly 6.5 million hectares (nearly 70% of England's farmland) are in agri-environment schemes (43,000 Environmental Stewardship agreements covering 5.5 million hectares plus predecessor scheme agreements still in force covering approximately 700,000 hectares) • 2010/11 – £84m • 2011/12 – £118m • 2012/13 – £136m • 2013/14 – £156m		http://www.naturalengland.org.uk/ourwork/farming/funding/es/default.aspx

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	Organic entry level stewardship OELS (including the new uplands strand of OELS, referred to as Uplands OELS) is the organic strand of ELS. It is geared to organic and organic/conventional mixed farming systems, and is open to all farmers registered with an organic inspections body that are not not in an existing organic aid scheme.						-
	Uplands Entry Level Stewardship Launched in February 2010, it aims to support hill farmers with payments for environmental management. Uplands ELS follows on from the Hill Farm Allowance which had its final payments to farmers in 2010. Uplands ELS is open to all eligible farmers with land in Severely Disadvantaged Areas (SDA), regardless of the size of the holding. UELS requires a basic level of environmental management, and participants can choose from a range of management options, such as cattle grazing and maintenance of traditional farm buildings						-
	Higher Level Stewardship Higher Level Stewardship (HLS) is one element of the Environmental Stewardship (ES) scheme - a government scheme that is open to all farmers, land managers and tenants in England. It is a voluntary scheme, designed to deliver significant environmental benefits in high priority areas. It builds on ELS and OELS to concentrate on individually tailored agreements that deal with more complex types of land management. HLS is usually combined with Entry Level Stewardship (ELS), Uplands ELS or Organic ELS options, but unlike these, entry into the scheme is subject to careful assessment and is a competitive scheme to apply for, with budgets set for each financial year. A wide						-

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	range of management options are offered, which support key features of the different areas of the English countryside.						
Glastir - Rural Development Programme for Wales (2007 - 2013)	Glastir - Agri-environment scheme Glastir is a 5 year whole farm sustainable land management scheme available to farmers and land managers across Wales. From 2012, Glastir will replace the existing agri-environment schemes, ensuring that future environmental challenges can be met. Glastir consists of three elements: • All-Wales Element (AWE) - a whole farm land management scheme which is open to application from all farmers and land managers throughout Wales. It is designed to provide support for the delivery of environmental benefits that meet today's challenges and priorities. Successful applicants will make a commitment to deliver environmental goods for five years under a legally binding contract. The scheme consists of the Whole Farm Code (WFC) which applies to all the land entered into the contract as well as management options (applicants will be able to select from a range of options which are best suited to their farm. A minimum number of options will be required in order to reach the points threshold). • Targeted Element (TE) – a part farm scheme	Glastir pays for the delivery of specific environmental goods and services aimed at: • combating climate change; • improving water management; and, • maintaining and enhancing biodiversity. The Rural Development Plan (RDP) provides a framework to: - Strengthen farming and forestry industries in Wales - Safeguard and enhance the environment and rural heritage - Foster competitive and sustainable businesses and thriving rural communities	Wales	Welsh Assembly Government	£195m	2007 - 2013	http://wales.gov.uk/topics/environmentcountryside/farmingandcountryside/farming/glastirhome/?lang=en

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	intended to deliver significant improvements to the environmental status of a range of habitats, species, soils and water that might also require changes to current agricultural practices. In order to achieve these specific improvements and outcomes, financial support from the Welsh Government will be targeted at locations where action will lead to the required result. • Common Land Element - designed to provide support for the delivery of environmental benefits on common land. There is also an additional funding source for an Agricultural Carbon Reduction and Efficiency Scheme (ACRES) available to farmers who have a contract under the All-Wales Element.						
	Glastir Woodland Creation Grant A bespoke element of Glastir that offers grants to landowners to create new woodlands on their land. The grants provide support for the costs of creating new woodlands as well as income foregone payments for taking land out of agriculture. It is available to all landowners across Wales with more than 0.25 hectares of land which has been designated by FCW and conservation bodies in Wales as suitable for new planting. There are three types of grant available to all landowners in Wales - woodland establishment grants, fencing grants and woodland creation premium grants. The maximum amount available under the grants will be £10,000 per hectare over the 15 years of payments. Grants for fencing are available where this is required. After January 2013, woodland grants will be integrated into Glastir.	To help to fulfil the commitment to create more native and mixed woodland as set out in Woodlands for Wales, the Welsh Assembly Government's woodland strategy.	Wales	FCW until 2013, then transfers to the Glastir Team			http://wales.gov.uk/topics/environmentcountryside/farmingandcountryside/farming/glastirhome/?lang=en

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Scottish Rural Development Programme	Rural Development Contracts - Rural Priorities The Rural Priorities scheme is one component of the Scotland Rural Development Programme 2007-13 . This competitive scheme opened on 7 April 2008. It offers farmers, crofters, foresters, businesses and community groups opportunities to help deliver environmental, social and economic benefits to rural Scotland. Rural Priorities pulls together previous competitive grant schemes for agri-environment (e.g. Rural Stewardship Scheme and Organic Aid Scheme), business development (e.g. Farm Business Development Scheme and Agricultural Business Development Scheme), forestry (e.g. Scottish Forestry Scotland Rural Development Programme Grant Scheme) training and new entrant measures. It is a wide ranging initiative covering more than 115 separate measures. This new approach makes it possible to have a single Rural Priorities contract across a land holding, instead of having to enter separate agreements with Scottish Natural Heritage, Forestry Commission and Scottish Government on different parts of the land. It is also now the main mechanism for funding management of SSSIs and Natura sites, in place of Natural Care schemes and individual SNH agreements.	To contribute to: - improved business viability and competitiveness - improved water quality - adaptation to, and mitigation of, climate change - protection and enhancement of biodiversity and landscapes - sustainable rural communities	Scotland	Scottish Natural Heritage	almost £800 million	2007-2013	http://www.snh.gov.uk/land-and-sea/managing-the-land/farming-crofting/grants-and-funding/rural-development-contracts-%28rdc%29/

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	Rural Development Contracts - Land Managers' Options The Land Managers' Options external site scheme was introduced in March 2008 to replace the Land Management Contracts Menu Scheme which started in 2005. This scheme is non competitive, with funding available for a range of options, up to a limit that is based on available acreage. Land Managers' Options offers a more limited range of options than Rural Priorities which provides for more specific management. Most of the management measures needed on Site of Special Scientific Interest or Natura sites will be more detailed and are to be found under Rural Priorities rather than Land Managers' Options, though a number of the latter options may be suitable in a few cases.	To increase competitiveness in agriculture and forestry, improve the environment and the countryside and enhance the quality of life in rural areas. LMO provide support for the provision of economic, social and environmental improvements across Scotland.	Scotland	Scottish Natural Heritage		2007-2013	
	Crofting Counties Agricultural Grant Scheme CCAGS is designed to aid and develop agricultural production in the Highlands and Islands of Scotland. The scheme provides grants to crofters and certain other occupiers of land, to improve agricultural infrastructure. Crofting tenants, subtenants (if approved by the Crofters' Commission) and croft owners (providing they can demonstrate they have a similar economic status to crofters) are eligible for assistance. Occupiers of other small holdings in the former crofting counties may also be eligible for support if they satisfy certain criteria. The operations eligible for support include investment in land management for the restoration of degraded land (e.g. grassland improvement works) and various improvements to facilities and infrastructure	The principle objective of CCAGS is to sustain the economic basis and way of life and so help retain population in crofting areas.	Scotland	Crofters' Commission		2007-2013	

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	Less Favoured Areas Support Scheme LFASS is an area based scheme open to farmers and crofters in Scotland's Less Favoured Areas (LFA). LFASS was introduced in 2001 as a replacement for Hill Livestock Compensatory Allowances (HLCA). LFASS has undergone numerous changes, with the current version being itself a transition scheme for 2007-2009. The scheme is likely to see a major revision for 2010 following an EU-wide review of LFA support which is currently underway.	To: ensure continued agricultural land use in order to contribute to the maintenance of a viable rural community; maintain the countryside; and maintain and promote sustainable farming systems.	Scotland	Scottish Government Rural Payments and Inspections Directorate	£65.5 million in 2010	2007-2013	http://www.scotland.gov.uk/Topics/farmingrural/Agriculture/grants/Schemes/LFASS
Forestry Challenge Funds - Woodland In and Around Towns and Forestry for People	Woods In and Around Towns (WIAT) Challenge Fund is targeted at bringing existing areas of urban woodland (a minimum of 1ha block, within 1 km of settlements with a population in excess of 2000) into sustainable management by carrying out an agreed programme of work. Forestry for People (F4P) Challenge Fund is aimed at helping groups realise the potential contribution of local woodlands (minimum size 0.25ha) to the health, learning and strengthening of communities. Examples of this might include setting up walking initiatives, natural play areas, establishment of volunteer groups or developing not-for-profit initiatives such as green exercise projects. F4P is available for eligible projects on both private land and Forestry Commission land where clear community support can be demonstrated.	WIAT: to regenerate the woodland environment close to centres of population and improve the quality of life for people living and working there. The scheme is open to both owners and occupiers of eligible woods. F4P: to increase the potential contribution of local woodlands to the health, learning and strengthening of communities.	Scotland	FCS	£50 million (2005 - 2010)	2005-2014	http://www.forestry.gov.uk/wiat

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Central Scotland Green Network Development Fund	Intended to deliver "a step change in environmental quality, woodland cover and recreational opportunities". The project aims to transform the area by increasing woodland cover by 50 per cent, boosting outdoor recreation opportunities, improving the landscape and regenerating derelict and vacant land. The fund supports costs for a range of early activities including site investigation work, surveys, planning and design work, mapping, data collection and community or stakeholder consultations. The CSGN stretches from Ayrshire, Inverclyde and Dunbartonshire in the west through to Fife and East Lothian in the east.	To support the development and implementation of early projects delivering the Green Network on the ground. The initiative aims to: - make Central Scotland a more attractive place - help to absorb CO2 - enhance biodiversity - promote active travel and healthier lifestyles.	Scotland	FCS, SNH	£500,000	2010 - 2012	http://www.forestry.gov.uk/forestry/infd-82key5
Northern Ireland Rural Development Programme (2007-2013)	Countryside Management Scheme The Northern Ireland Countryside Management Scheme enables participants who enter into voluntary seven year commitments to receive financial support for the environmentally sensitive management of all their land as well as the management or creation of habitats or features on the farm	Agri-environment support (a) To support sustainable development of rural areas and to respond to increasing public demand for environmental services; (b) To introduce or to continue to apply agricultural production methods compatible with the protection and improvement of the environment, the landscape and its features, natural resources, the soil and genetic diversity; and (c) To encourage and support agricultural production methods which protect and improve the quality of rivers and lakes, and contribute to the mitigation of and adaptation to the impact of climate change	Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.)		2007 - 2013	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm

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	Organic Farming Scheme The Organic Farming Scheme provides financial support during conversion of land from conventional to organic management. Participants are required to adhere to environmental and animal welfare conditions that are more rigorous than those applying to non-organic farmers.		Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.)		2007 - 2013	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm
	Farm Woodland Premium Scheme The Farm Woodland Premium Scheme will provide annual payments for up to a maximum of 15 years for agricultural income foregone as a result of first afforestation on agricultural land under the Woodland Grant Scheme.	Forest Afforestation To support afforestation and encourage an increase rate of new planting *The Premium Scheme:* To enhance the environment through the planting of farm woodlands by improving the landscape, providing new habitats and increasing biodiversity; and to provide ongoing income through annual payments to compensate for agricultural income foregone *The WGS aim* is to complement the objectives of the Forestry Strategy by: (i) Encouraging the creation and sustainable management of woodlands and forests to (ii) Providing jobs and improve the economy of rural areas and other areas with few sources of economic activity. (iii) Providing a use for land as an alternative to agriculture	Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.), Forest Service		2007 - 2013	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	Woodland Grant Scheme The Woodland Grant Scheme will support the establishment costs of first afforestation on both agricultural and non-agricultural land with 70% of aid will be paid at establishment with the balance in five years. It also offers support for the first establishment of agro-forestry systems combining extensive agriculture and forestry systems. This grant is designed to assist new planting and agroforestry. In addition, for new planting Community Woodland Supplement may be available. This supplement aids the creation of new woodland and is accessible to the public and aims to encourage people to create new woodlands in locations which have a demonstrable potential to be used for informal public recreation		Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.), Forest Service		1988 - ongoing (various revisions)	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm
	Sustainable Forestry Operations Grant Scheme Support for participants who make a voluntary commitment to undertake agreed forest-environment actions to improve the ecosystems within private forests and woodlands and prevent damage by domestic and wild animals.	Forest Environments (a) secure significant environmental benefits through the enhancement of biodiversity, (b) improve the public amenity of woodlands while preserving high value forest ecosystems by reinforcing the protective value of forests in respect of soil, water and natural hazards. (c) assist in achieving the expansion, maintenance, enhancement or restoration targets set out in the native woodland Habitat Action Plans, or benefits to the habitats of those woodland species covered by the Species Action Plan.	Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.), Forest Service		2007 - 2013	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm

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	Woodland Environment Grant One-off financial commitments to achieve environmental objectives or to enhance the public amenity value of existing forests but which do not lead to any significant increase in the value or profitability of the forestry holding		Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.), Forest Service		2007 - 2013	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm
	Less Favoured Areas Compensatory Allowances Scheme The Scheme will provide support for farmers by compensating them for additional costs and income foregone related to maintaining agricultural production in Less Favoured Areas.	Less favoured areas: To improve the environment and the countryside through effective land management.	Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.)		2007 - 2013	http://www.dardni.gov.uk/index/rural-development/nirdp2007-2013.htm
Re-stocking Grant	The Restocking grant is available for the reestablishment of woodland cover in an existing woodland, which will result in positive environmental benefits through the enhancement of biodiversity. Natural regeneration is the regrowth of existing woodland by natural means. Special grants are available to encourage this. Higher rates of grant are paid for the re-establishment of broadleaved species.	To re-establish woodland cover in existing woodland through planting or natural regeneration.	Northern Ireland	DARDNI (Dpt. Of Agric and Rural Dev.)		2007 - 2013	http://www.dardni.gov.uk/forestservice/forestry-grant-information.htm
Cross compliance in the UK under the CAP Single Payment Scheme	The Single Payment Scheme (SPS), part of the Common Agricultural Policy (CAP), is the principal agricultural subsidy scheme in the EU. Eligibility for the scheme is conditional on farmers meeting certain requirements relating to public, animal and plant health, animal welfare, the environment and landscape features. There are three types of Cross Compliance requirements: - Statutory Management Requirements (SMRs), including ccmpliance with legislation - Standards of Good Agricultural and Environmental Condition (GAEC). Requirements vary by country and include biodiversity relevant measures to protect hedgerows, water courses, SSSIs and to achieve appropriate levels of grazing.	To improve compliance with existing standards (Council Regulation EC 1782/2003 Annex III) and to ensure that decoupling of direct payments from production does not lead to environmentally damaging marginalisation or abandonment (Council Regulation EC 1782/2003 Annex IV).	UK	Policy on cross compliance is devolved regionally within the UK to the Scottish Government, Welsh Assembly and Northern Ireland Assembly. Defra sets	Single farm payment totals approximately £2.5 billion in UK annually	Ongoing	http://www.defra.gov.uk/crosscompliance/

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	- requirements to maintain a level of permanent pasture not included in the crop rotation for five years or more. This is not currently a cross compliance requirement for individual farmers, but may become one in future years.			policy for England.			
Woodlands From Waste	A joint initiative between Lancashire Council, Blackpool Council and the Forestry Commission to create over 1000 ha of new woodland over a period of 25 years. It is a waste PFI that will use the organic matter refined from collected waste to plant new trees. Where appropriate, the project will also look to apply an Organic Growth Medium (OGM) to some of these and other sites for ecological, silvicultural or agricultural improvement. The land utilised for tree planting include brownfield and greenfield sites. Trees are not planted where there is already a statutory requirement, such as a planning stipulation or a Forestry Commission Restock and Enforcement Notice. Additionally, it only supports the planting of new woodland and does not assist with the replanting of recently cleared trees.	Increase Lancashire's woodland coverage by close to 10% of current levels. Reduce the amount of waste sent to landfill. Provision of residents and visitors with access to all of the benefits associated with social forestry: health and well-being, recreation, landscape enhancement and increased biodiversity, a valuable asset for all to enjoy for generations to come.	England	Lancashire Council, Blackpool Council and the Forestry Commission	£2 billion over 25 years	2007 - 2032	http://www.lancashire.gov.uk/corporate/web/?siteid=5592&pageid=30717
Biodiversity Grants and Incentives							

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
Nature Improvement Areas	The Natural Environment White Paper commits Government to assist partnerships of local authorities, local communities and landowners, the private sector and conservation organisations to establish new Nature Improvement Areas, based on a local assessment of opportunities for restoring and connecting nature on a significant scale. NIAs are designed to improve biodiversity in England by encouraging collaboration between organisations and enhancing the ecological network in England. The characteristics of NIAs will vary across England, reflecting what is possible and what is needed locally. However all of them should include: • opportunities to deliver ecological networks, both in terms of large area scale and valuable benefits accruing to wildlife and people, are particularly high; • a shared vision exists among a wide partnership including statutory and voluntary sectors; • significant enhancements of the network can be achieved over large areas by enlarging and enhancing existing wildlife sites, improving ecological connectivity and/or creating new sites; • the surrounding land use is better integrated with the management of the ecological network; wildlife habitats and underpinning ecosystem processes are restored, helping to mitigate climate change impacts; and • people are inspired by their enhanced experience of the outside world. NIAs should contain the following components of an ecological network: • Core areas - especially existing wildlife sites (e.g. National Nature Reserves, Sites of Special Scientific Interest, Local Nature Reserves) • Corridors and stepping stones • Restoration areas - where priority habitats may be	NIAs will be places where: • The area and scale of opportunities to deliver ecological networks, and the value of their benefits to wildlife and people, are particularly high • A shared vision for the natural environment exists among a wide partnership of local people, including statutory and voluntary sectors • Significant improvements to the ecological network can be achieved by promoting connectivity, enlarging and enhancing existing wildlife sites, and creating new sites • Land uses can be integrated with valued landscapes and restoration of wildlife habitats and underpinning natural processes, and help adaptation to climate change • An enhanced ecological network will deliver benefits to urban areas and communities • 'Win-win' opportunities are identified and have potential to provide multiple benefits (e.g. to flood-risk management, or a low-carbon economy) • People can be inspired by the natural world.	England	Defra, Natural England	£7.5 million over three years	2012 - 2015	http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/funding/nia/default.aspx

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	restored to provide more core areas • Buffer zones - that reduce pressures on core areas • Surrounding land that is managed in a wildlife-friendly way - including for sustainable food production.						
Heritage Lottery Fund	Using money raised through the National Lottery, the Heritage Lottery Fund gives grants to sustain and transform the UK heritage. HLF invests in museums, parks and historic places, archaeology, the natural environment and cultural traditions. Land and biodiversity is one of five main themes funded, and covers rural and urban landscapes, public parks to cemeteries, wildlife habitats, and endangered species. Investment has helped to conserve and recover some of the UK's most threatened habitats and species and contributes to UK Biodiversity Action Plan targets. The Landscape Partnerships programme helps conserve areas of distinctive landscape by delivering conservation benefits at a landscape scale as well as helping people learn about and access the countryside.	To sustain and transform the UK heritage, including the natural heritage, and to promote public access and appreciation of it.	UK	Heritage Lottery Fund	£255 million annually across all heritage areas	1994 - ongoing	http://www.hlf.org.uk/Pages/Home.aspx
Biodiversity Action Grants Scheme	Intended to stimulate and encourage projects that will assist implementation of the Scottish Biodiversity Strategy and enhance Scotland's natural environment. Projects that are funded include projects which: - improve, protect and manage native species and habitats; - restore those that have been lost; and - help more people from all walks of life to care about biodiversity	To support projects that benefit biodiversity locally (or nationally) and involve action to implement the new Scottish Biodiversity Strategy.	Scotland	Scottish Executive, SNH	£200K per year (for 3 years)	2008 - 2011	http://www.shetland.gov.uk/community/news/communitydevelopment/documents/BAGsFlyer_000.pdf

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Natural Project Grant	Natural Project Grants will support longer term, higher value projects aimed at benefiting Scotland's nature and landscapes. Projects are given priority if they help engage people with nature, improve the management of nature and landscape, or create better places in the Central Scotland Green Network area. Another priority is to improve the management of wildlife for example, tackling problems of invasive non-native species before they get established will help Scotland to save money in the long-term.	To deliver across three key outcomes: - More people engaging with nature and landscapes - Improved management of nature and landscapes - Better places created in the Central Scotland Green Network (CSGN) area	Scotland	Scottish Executive, SNH		2010 onwards	http://www.snh.gov.uk/funding/our-grants/how-apply/our-grant-categories/
Community Action Grant	The Grants will support short term lower value projects aimed at action on the ground that help get more people and communities involved in outdoor recreation, volunteering, outdoor learning, recording nature and biodiversity work.	To get more people and communities involved in outdoor recreation, volunteering and outdoor learning action to improve, protect and manage habitats, species and landscapes citizen science and biological recording	Scotland	Scottish Executive, SNH		2010 onwards	http://www.snh.gov.uk/funding/our-grants/how-apply/our-grant-categories/
Habitat Enhancement Demonstration Site Scheme	Fund to support and enhance Scotland's environmental habitats. This scheme supports projects that will act as demonstration sites for protecting and enhancing natural habitats. Projects may include the protection, restoration and improvement of existing habitats, or the creation of new habitats. They can range from small scale works done by individuals or community groups to large scale multipartner projects. Priority is given to water environment related projects and brownfield restoration sites. Scheme is set to end in March 2012	To promote habitat enhancement and encourage practical environmental improvements	Scotland	SNH and the Scottish Environment Protection Agency (SEPA)		Until March 2012	http://www.sepa.org.uk/water/water_regulation/regimes/engineering/habitat_enhancement/demonstration_sites.aspx

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Sustainable Action Fund	The Environmental Protection Act 1990 made provision for financial or other assistance for purposes connected with the environment. Section 153 (1) of the Act (as amended) specifies the programme known as the Sustainable Action Fund. Through the Sustainable Action Fund, the Scottish Government supports funding, including the Climate Challenge Fund, aimed at promoting a sustainable future as part of its Greener Scotland programme, comprising three cross cutting programmes designed to ensure greener progress in all that national and local government does (capacity building, public sector leadership and communications and learning) and five specific programmes: Sustainable Places - Smarter Choices, Smarter Places, sustainable health initiatives, regeneration and greenspace support, architecture and design support to develop demonstration projects. Climate Change - Low carbon initiatives. (Climate Change Programme) People and Nature - Biodiversity, landscapes, heritage projects, environmental volunteering. Consumption and Production - Waste, Energy Efficiency, Food. Cultural Identity - Promotion and support of a strong cultural identity across Scotland.	The Sustainable Action Fund grant programme objectives are to fund research, demonstration projects and other relevant activities in support of sustainable development in Scotland. Support is given in the form of core funding or project funding.	Scotland	Scottish Executive	£15.3 million	2001 onwards	http://www.scotland.gov.uk/Topics/SustainableDevelopment/7388 http://www.scotland.gov.uk/Topics/Environment/SustainableDevelopment/funding
Wildlife, Geology, Landscapes and Seascape Grant Pillar	The support under this grant is wide and varied, enabling project delivery across all habitat and taxonomic groups, as well as geo-diversity action.	To promote and stimulate positive action for all aspects of wildlife, geology, landscape and larger 'seascale'.	Wales	Countryside Council for Wales	£4.7m?	Ongoing	http://www.ccw.gov.uk/about-ccw/grants---what-we-fund/wildlife-geology--landscape.aspx

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Natural Heritage Grants	The NI Environment Agency provides small grants for biodiversity projects under its Natural Heritage Grants Programme. This can provide funding support towards projects carried out by voluntary bodies, councils and schools under three priority themes: Nature - Biodiversity and Geodiversity - Conserving the diversity of wildlife, geology and landforms in Northern Ireland; Tomorrow's Landscapes - Maintaining and improving the landscape quality of the country and supporting its sustainable management; and Countryside Access - Providing and promoting opportunities for sustainable access and countryside recreation	The programme aims to encourage the conservation and enhancement of key elements of the environment and its wildlife, and the provision of facilities which help as wide a range of people as possible to enjoy and appreciate the natural heritage	Northern Ireland	Northern Ireland Environment Agency		Ongoing	http://www.doeni.gov.uk/niea/biodiversity/natural_heritage_grants_programme.htm http://www.doeni.gov.uk/niea/natural_heritage_grants_programme_leaflets-2.pdf
Biffaward Biodiversity Grant	Biffaward is a multi-million pound fund which awards grants to community and environmental projects across the UK. Biffaward is managed by the Royal Society of Wildlife Trusts (RSWT) on Biffa's behalf. Looks to support site-based projects that protect and enhance biodiversity across the UK, particularly those concentrating on species and habitats that have been identified as a priority in Biodiversity Action Plans.	Biodiversity enhancements.	UK	Biffa, Royal Society of Wildlife Trusts (RSWT)	Upto £50,000 per project (total fund is several million mpounds)	2007 -	http://www.biffaward.org/index.php/about/boverview
Incentives for water environment							
Catchment Restoration Fund	New fund to be introduced in 2012 to improve up to 800 water bodies over a 4 year period. The Environment Agency and Natural England will work in partnership with civil society organisations such as Rivers Trusts. It is expected that benefits of around £600 million will be secured.	To contribute to coherent and resilient ecological networks through actions to restore habitats, tackle diffuse pollution from rural and urban sources, pollution from metal mines and address invasive non-native species.	England	Environment Agency, Natural England	£92 million	2012 to 2015	http://www.defra.gov.uk/news/2011/04/13/110-million-revamp-for-england%E2%80%99s-rivers/

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Catchment Sensitive Farming Initiative	The Environment Agency and Natural England will work together with farmers to increase the number and appropriate location of Entry Level options under the Environmental Stewardship scheme where there are diffuse pollution problems. As lessons are learnt from trialling the catchment approach in the pilot areas, government will work with stakeholders to develop new guidance on river basin management planning, setting out the approach to be taken in the second planning cycle from 2015 to 2021.	To tackle diffuse agricultural pollution in sensitive catchments.	England	Environment Agency, Natural England	£18 million in 2011/12	Up to 2013	http://www.naturalengland.org.uk/ourwork/farming/csf/default.aspx
Water Environment Restoration Fund	SEPA works to preserve and improve the water environment through regulation, monitoring and planning. The Water Framework Directive (WFD) requires SEPA to prevent the deterioration of aquatic ecosystems and, where possible, restore surface waters and groundwaters damaged by human activities to 'good status' (as defined by the directive) by 2015. Where possible, SEPA is improving Scotland's water environment through regulatory means such as the Controlled Activities Regulations (CAR) by licensing and monitoring individuals and companies that carry out activities which can adversely affect the water environment. However, if an activity was undertaken before CAR, eg straightening, or where it is an abandoned, redundant structure such as an old mill weir the restoration fund could be used to tackle it instead. The fund supports physical improvements to Scotland's water environments projects	To deliver physical improvements to river, loch, estuarine and coastal water bodies and wetlands.	Scotland	SEPA	Up to £2M per year from 2012/13	2008 - ongoing?	http://www.sepa.org.uk/water/restoration_fund.aspx

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HMRC Enhanced Capital Allowances - Water Saving Investments	The Enhanced Capital Allowance Scheme for Water Saving Investments is part of the government initiative to provide tax relief to businesses for investments in designated energy saving technology. The aim of the scheme is to encourage businesses to invest in water saving technologies by enabling businesses to claim 100% first year capital allowances on investments in technologies and products that encourage sustainable water use.	To reduce water consumption in the UK.	UK	HMRC	N/A	2008 -	http://www.hmrc.gov.uk/capital_allowances/investmentschemes.htm#d
International Grants and Incentives							
UK Support for REDD+	Reducing Emissions from Deforestation and Forest Degradation (REDD) is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. “REDD+” goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.The UK is playing a leading role in the development of a REDD+ mechanism and played a pivotal role in establishing the REDD+ Partnership of developed and developing countries. As part of the ‘Fast Start’ climate change finance commitment, the UK has also pledged £300 million over 2010-2012 to support plans and preparations in countries with large forests to be able to reduce rates of deforestation.	Aims to conserve forests by offering incentives to developing countries	International	REDD+ is a UN initiative with partners in 35 developing countries and donors from the developed countries	UK has pledged funding of £300 million 2010 to 2012 to support plans and preparations in countries with large forests to be able to reduce rates of deforestation	2008 - ongoing	http://www.un-redd.org/AboutUNREDDProgramme/tabid/583/Default.aspx

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
OTEP Overseas Territories Environment Programme	Joint programme of the Foreign and Commonwealth Office and the Department for International Development to support the implementation of the Environment Charters and environmental management more generally in the UK Overseas Territories. Projects must contribute to the implementation of the Overseas Territories Environment Charters, National Biodiversity Action Plans, National Environmental Management Plans, or other strategy/plan that sets out international commitments and targets, and must show how the project is a priority for the individual Territory/Territories. Copies of Charters for individual Territories can be found at www.ukotcf.org. Projects must demonstrate a contribution to the achievement of relevant Multilateral Environmental Agreements, particularly the conventions on biodiversity, climate change and desertification.	The goal of OTEP is: 'Enhanced quality of life and livelihood opportunities for the inhabitants of all UK Overseas Territories through the sustainable use (or protection, where necessary) of environmental and natural resources, whilst securing global environmental benefits within the scope of the core principles of the relevant multilateral environmental agreements.	UK Overseas Territories	originally part-funded by DFID/FCO as well as by UKOTCF itself. This arrangement ended in early 2011. Now funded by UKOTCF only		Ongoing	http://www.ukotcf.org/OTEP/index.htm
Darwin Initiative	A grant scheme supporting the conservation and sustainable use of global biodiversity, assisting countries rich in biodiversity but poor in financial resources to meet their objectives under one or more of the three major biodiversity Conventions (CBD, CITES, CMS), through the funding of collaborative projects which draw on UK biodiversity expertise. In April 2011, new funding of £25 million was announced for four years to add to the £80 million already invested in similar projects in over 150 developing countries since its establishment in 1992, following the original Rio Summit.	To improve the quality of the lives of the poorest on the planet, through funding projects on biodiversity and ecosystem services.	International	Defra	£25 million 2011 to 2015	1992 to at least 2015	http://www.defra.gov.uk/environment/natural/biodiversity/internationally/darwin-initiative/
Flagship Species Fund	UK fund to support species conservation in UK Overseas Territories. The Fund supports projects focussing on flagship species, with a key taxonomic focus on primates, sea turtles and trees (although a small amount of funding for other groups is	Provision of practical support to the conservation of endangered species and their habitats in developing countries.	International	Defra		2001 -	http://www.fauna-flora.org/initiatives/flagship-species-fund/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	available).						
UK Implementation of Nagoya Protocol on Access and Benefit Sharing	UK is currently investigating how it will implement the Nagoya Protocol. This will help developing countries share in profits from the commercialisation of genetic resources (e.g. from drugs and cosmetics based on genetic resources), and will also provide access to those resources.	To enhance incentives to protect ecosystems by ensuring that countries benefit from genetic resources sourced from them, while providing access to those resources	International	Defra	n/a	2011 -	http://www.defra.gov.uk/environment/natural/biodiversity/internationally/cbd/cop-nagoya/
Compensatory measures							
UK implementation of EU Environmental Liability legislation	Directive 2004/35/EC (The Environmental Liability Directive) seeks to achieve the prevention and remedying of environmental damage – specifically, damage to habitats and species protected by EC law, damage to species or habitats on a site of special scientific interest for which the site has been notified, damage to water resources and land contamination which presents a threat to human health. It reinforces the "polluter pays" principle – making operators financially liable for threats of or actual damage. The Environmental Damage (Prevention and Remediation) Regulations come into force in England on 1 March 2009, and the Environmental Damage (Prevention and Remediation) (Wales) Regulations came into force on 6 May 2009 in Wales. Similar regulations have been put in force in Northern Ireland and Scotland.	By introducing liability for environmental damage, the legislation aims to ensure that those responsible prevent and remedy environmental damage, rather than the taxpayer paying.	EU legislation, transposed separately into the UK countries	Defra and devolved administrations	n/a	Regulations introduced in UK in 2009	http://www.defra.gov.uk/environment/quality/environmental-liability/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
Biodiversity offsets	Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses in a measurable way. The Natural Environment White Paper, 2011, confirmed that the Government would test a voluntary approach to offsetting in England in a number of local pilot areas. Natural England will work with pilot areas, providing advice, support and quality assurance. The aim is to develop a body of information and evidence, so that the Government can decide whether to support greater use of biodiversity offsetting in England, and, if so, how to use it most effectively.	Offsets will aim to ensure that development results in no net loss of biodiversity. It will aim to improve the implementation of the requirements of the planning system for biodiversity and provide a straightforward and cost-effective way to assess the impact of a development and to agree the requirements for compensation.	England	Defra, Natural England	n/a	Two year pilot 2012 to 2014 following preparatory work in 2010/11	http://www.defra.gov.uk/environment/natural/biodiversity/uk/offsetting/
The Environment Bank	The Environment Bank company facilitates the delivery of mitigation and compensation schemes associated with planned development. It provides a mechanism for creating, managing and enhancing habitats and landscapes by engaging with developers and landowners. It works with stakeholders to design and implement on the ground bespoke mitigation strategies for the benefit of wildlife, nature conservation and people. The Environment Bank is intended to facilitate the government's vision for England, as stated in the England Biodiversity Strategy, to be 'a country - its landscapes and water bodies, coasts and seas, towns and cities - where wild species and habitats are part of healthy functioning ecosystems; where we nurture, treasure and enhance our biodiversity, and where biodiversity is a natural consideration of policies and decisions and in society as a whole'. It engages with the government's agenda of providing places to encourage health and well being of local communities.	The objectives of the Environment Bank are: • To further the conservation of nature and natural resources in association with planned development through site purchase and habitat creation, site restoration, enhancement and management, and development and achievement of UK and Local Biodiversity Action Plans; • To bring together funds from sites or strategic plans and to identify suitable places and managers to establish nature conservation and landscape gains; • To provide management plan and monitoring frameworks at different spatial scales to ensure that what is created and/or managed successfully achieves its conservation targets, and is sustainable and long-term;	England	Environment Bank	N/A	2011 -	http://www.environmentbank.com/index.html

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
		• To champion, in association with identified stakeholders, an improved approach to land-use planning, reconciling conflicts between development and nature conservation; • To provide areas for peaceful recreation, consistent with the Government's initiatives for healthy living.					
Other incentive measures							
Green Investment Bank	From April 2012, the Department for Business, will start to make direct, state-aid compliant investments in green infrastructure projects. Over time, the Government will look to grow the GIB and will enable it to have borrowing powers from 2015-16 and once debt is falling as a percentage of GDP. Once state aid approval is achieved, the Government will move to enshrine the enduring nature of the GIB in legislation. Business has a vital role in seizing new opportunities to trade green goods and services which benefit nature.	To increase private sector investment in green infrastructure, including from new types of investor	UK	Department for Business	£3 billion capital funding	2012 -	

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
Defra research on PES schemes	PES are voluntary schemes which compensate for actions undertaken to deliver enhancements in nature's services. The Natural Environment White Paper sets out Government's role in enabling and facilitating these voluntary schemes to harness their potential for protecting and enhancing nature's services and commits to action including publishing an action plan in 2012 to expand schemes in which the provider of nature's services is paid by the beneficiaries, after undertaking a full assessment of the challenges and barriers, and introducing a new research fund targeted at these schemes and publishing a best practice guide for designing them. Pilots will also be encouraged to develop across a broad spectrum of nature's services and beneficiaries.	To encourage and facilitate more voluntary schemes to be established in which beneficiaries of ecosystem services pay providers, thus enhancing incentives for positive management of ecosystems	England	Defra	n/a	2010 - ongoing	http://www.defra.gov.uk/environment/natural/ecosystems-services/
Heritage Management Plans	An incentive for landowners to prepare Heritage Management Plans (HMPs) that deliver integrated sustainable management of outstanding land designated or in process of designation as conditionally exempt from inheritance tax.	To incentivise the preperation of Heritate Management Plans	England	Defra, Natural England		Ongoing	http://www.naturalengland.org.uk/ourwork/landscape/protection/historiccultural/heritagelandscapes/grants.aspx
Local nature partnership fund	This fund has been established to support the creation of self sustaining Local Nature Partnerships and help them respond to Defra's proposals for LNPs as set out in the Natural Environment White Paper.	To create Local Nature Partnerships	England	Defra	£1 million in 2012	2012	http://www.defra.gov.uk/environment/natural/whitepaper/local-nature-partnerships/lnp-fund/
Tourism Visitor Payback Schemes	VisitEngland acts as a source of best practice, identifying and sharing advice with destination management organisations and other bodies in the tourism industry that want to develop payback schemes. A toolkit has been developed.	To encourage visitors or local business benefiting from tourism to 'pay back' to the area in the form of donations for work which enhances the local natural environment	England	VisitEngland	n/a	Ongoing	www.visitengland.org/england-tourism-industry/DestinationManagerTool

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
							kit/
Sustainable Development Fund	The Scheme started in June 2000 in National Parks and in April 2001 in the Areas of Outstanding Natural Beauty (AONB). It is open to individuals or organisations from the public, private or voluntary sectors if they can demonstrate that their proposal meets the eligibility criteria.	Aims to develop new ways of achieving a more sustainable way of living in the countryside. The Scheme aims to: - Explore ways of implementing the principles of sustainability and removing obstacles to sustainability; - Develop models for the sustainable management of the countryside that could be applied more widely in Wales; and - Generate greater awareness and understanding of sustainability.	Wales	WAG, National Parks Authority (UK)	216,666 per Park Authority and £70,000 per AONB in 2010-2011. The funding will continue on an annual basis at the Ministers discretion.	2000 - ongoing	http://wales.gov.uk/topics/environmentcountryside/consmanagement/susdevfund/?lang=en
Environment Wales	Environment Wales has 5 grant streams, designed to aid projects in each step of their development. Start-up Grants: These help to cover the costs involved with establishing new voluntary or community groups such as hiring venues, publicity or printing, training, insurance, affiliation etc. The maximum grant is £1,000. Pre-Project Grants: These help cover the costs of any studies or surveys that need to be undertaken before a project can begin; for example feasibility studies, business plans, ecological surveys or community appraisals. The studies must be undertaken by a third party. The maximum grant is £4,000. 3 other Environment Wales grant streams are open to registered projects only: training support grants, project grants (to help cover project materials and equipment), and management grants (to fund new posts within	To contribute to sustainable development by supporting and encouraging voluntary action to protect and improve the environment; to support voluntary organisations and community groups undertaking practical projects that promote one or more of the following objectives: - to achieve sustainable improvements to the Welsh environment through practical projects; - to increase understanding of sustainable development and the environment through information, education and advisory services;	Wales	WCVA (Wales Council for Voluntary Action), with 8 Operational partners, e.g. Wildlife Trust Wales, Groundwork Wales, The National Trust.		1992 - ongoing	http://www.environment-wales.org/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
	registered projects).	- to help create new environmental initiatives which also allow communities and voluntary organisations to contribute to their social and economic needs; - to support and train staff and volunteers engaged in these activities.					
The Landfill Communities Fund (LCF)	This tax credit scheme enables operators of landfill sites to contribute money to enrolled Environmental Bodies (EBs) to carry out projects that meet environmental objects contained in the Landfill Tax Regulations. The Government saw the LCF as a way for Landfill Operators (LOs) and EBs to work in partnership to create significant environmental benefits and jobs and to undertake projects which improve the lives of communities living near landfill sites. LOs can contribute up to 6.2% of their landfill tax liability to EBs, and reclaim 90% of this contribution as a tax credit. They may bear the remaining 10% themselves, or else an independent third party can make up this 10% difference to the LO.	There are six main areas of work that can be undertaken when utilising LCF monies, these are called the 'objects' and must involve actual physical works at an identified site. The areas of work that can be undertaken are: • The remediation or restoration of land which can not now be used because of a ceased activity that used to take place there • The reduction, prevention or mitigation of effects of pollution that has resulted, or may result, from an activity which has now ceased • The provision, maintenance or improvement of a public park or other general public amenity • The conservation of a specific species or a specific habitat where it naturally occurs • The repair, maintenance or restoration of a Place of Worship or a Place of Architectural Importance • The provision of financial, administrative or other similar services by one organisation	UK	HMRC, ENTRUST	Depends on the size of the landfill tax payment	1996 -	http://www.entrust.org.uk/home/lcf

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated)	Timescale	Reference / weblink
		enrolled with ENTRUST to another					

Annex 2 Tackling Perverse Incentives - Summary of Selected UK Initiatives

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Reform of water abstraction regime	The Water White paper announced the commitment to change the water abstraction regime, to make it resilient to the challenges of climate change and population growth and to protect the environment. The White Paper recognises that too much water is being abstracted in some catchments and that abstraction charges do not send the right price signals - as the cost of abstraction licences do not reflect the relative scarcity of abundance of water, and charges do not vary to reflect competing demands for water. There is a potential need to exchange around 30,000 new licences once currently exempt abstractors are brought into the system. Several options for future water regimes will be investigated and proposed for consultation.	Key goals of a new abstraction system include: providing clear signals and regulatory certainty on the availability of water; better reflect the value of water to customers, its relative scarcity and the value of ecosystem services; reflect the benefit of discharges to river systems; drive efficiency in water use; be fair to all abstractors; be flexible and responsive to changes in supply and demand; and meet water needs of the population and the environment at the least cost to water bill payers.	England & Wales	Defra, Environment Agency, Ofwat	Not defined yet	Consultation about proposal for reform will run in 2013. legislation implementing changes to be implemented early in next Parliament. New regime should be in pace by mid-late 2020s	http://www.defra.gov.uk/environment/quality/water/legislation/whitepaper/
Review of agriculture incentives	The Natural England White Paper includes a commitment for a full review of how advice and incentives for farmers and land managers are used. This may include both positive and negative incentives.	The initiative aims to create a more integrated, streamlined and efficient approach (to advice and subsidies) that is clearer for farmers and land managers and yields better environmental results.	England	Defra	Not defined yet	Not defined yet	http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf

CAP reform	The Natural Environment White Paper stresses that Pillar 2 of the CAP should receive a greater share of a smaller CAP budget. A reformed CAP should have an objectively allocated, more flexible, Pillar 2, with a stronger focus on results which recognises the significant role for the agricultural sector in delivering the sustainable and efficient use of natural resources, including a stronger focus on improved outcomes, climate change mitigation and biodiversity. Changes to the EU rules on rural development should also be sought, to secure a range of objectives, including to make it easier for land managers to work together to achieve environmental goods.	The aim is to accelerate the CAP ongoing move towards greater market orientation and improved agricultural competitiveness, with an increasing focus on the achievement of public benefits in return for CAP expenditure.	EU	Defra	Not defined yet	2014-2020	http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf
CFP reform	The Natural Environment White Paper notes that the UK Government is pressing for reform that simplifies and regionalises the CFP, building in the right incentives for fishermen to operate sustainably and profitably.	The aim is to address existing failings of the CFP in the course of its reform due by 2013	EU	Defra	Not defined yet	by 2013	http://www.official-documents.gov.uk/document/cm80/8082/8082.pdf
Proposal to reform banding for the Renewables Obligation	The proposals, now under consultation, foresee new support levels for large scale renewable electricity under the Renewables Obligation (RO). The ROC support for more 'mature' RES technologies (like wind, anaerobic digestion and solar) will come down from 2 ROCs/MWh in 2013/14 and 2014/15 to 1.9 in 2015/16 and 1.8 in 2016/17. The proposals will instead offer additional support to tidal stream and wave technologies, with ROCs/MWh rising from 2 to 5 up to a 30MW project cap and 2 above the cap. The move is expected to boost the marine energy industry, supporting in particular small and medium-sized projects. Although a 'subsidy reform', this is not strictly a reform of 'harmful' subsidies, but may have effects on biodiversity	The proposals are designed to shift support towards technologies that need help to reach the market, such as wave and tidal, and away from those where market costs have come down. The result is small and staggered cuts in support to on and offshore wind, anaerobic digestion and solar among others.	UK	DECC	These proposals are expected to cost between £0.4bn and £1.3bn less than retaining current banding	2013-17 (2014-17 for offshore wind) . Proposals published in Oct 2011; consultation will run until Jan 2012. The RO will close in 2017 and replaced by FIT	http://www.decc.gov.uk/en/content/cms/news/pn11_85/pn11_85.aspx

Energy Market Reform - Carbon Price Floor	A Carbon Price Floor (CPF) has been designed to top up the EU Emissions Trading System (EU ETS) carbon price to a target level for the electricity generation sector. The CPF will be introduced by removing from the Climate Change Levy (CCL) the current exemption for supplies of fossil fuels which are used to generate electricity in the UK. For generators who use oil to generate electricity, the amount of fuel duty they can reclaim will be varied. Future rates will be announced at subsequent Budgets depending on the prevailing carbon price. The measure will complement the Feed-in Tariff with Contract for Difference (FiT CfD). It can be considered a harmful subsidy reform as it should help 'setting the price right' in line with the Polluter Pays Principle, in order to account for previously unpaid for externalities.	The measure is meant to drive further investment in low carbon technologies.	UK	DECC	The CFP begins at around £15.70/tCO2 in 2013 and follows a straight line to £30/tCO2 in 2020, rising to £70/tCO2 in 2030 (real 2009 prices).	From 2013 to 2030	http://www.decc.gov.uk/en/content/cms/legislation/white_papers/emr_wp_2011/emr_wp_2011.aspx

Annex 3 Assessing the Value of Biodiversity and Ecosystem Services - Summary of Selected UK Initiatives

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
National Initiatives and Guidance							
National Ecosystem Assessment	The UK National Ecosystem Assessment (UK NEA) is the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. Part of the Living With Environmental Change (LWEC) initiative, the UK NEA commenced in mid-2009 and reported in June 2011. It was an inclusive process involving many government, academic, NGO and private sector institutions. The UK claims to be the first country to have undertaken a complete assessment of the benefits that nature provides, how they have changed over the past, the prospects for the future and their value to our society. The NEA responded to a recommendation by the House of Commons Environmental Audit Committee to conduct a MA type assessment in the UK to enable the identification and development of effective policy responses to ecosystem service degradation . It addresses needs set out in Defra's Action Plan for Embedding an Ecosystems Approach (2007).	The NEA aims to help people to make better decisions that impact on the UK's ecosystems to ensure the long-term sustainable delivery of ecosystem services for the benefit of current and future populations in the UK. Its 3 specified objectives were to: produce an independent and peer-reviewed UK National Ecosystem Assessment for the whole of the UK; raise awareness of the importance of the natural environment to human well-being and economic prosperity; and ensure full stakeholder participation and encourage different stakeholders and communities to interact and, in particular, to foster better inter-disciplinary cooperation between natural and social scientists, as well as economists.	UK	Many government, academic, NGO, and private sector institutions. Secretariat provided by UNEP-WCMC. The scientific analysis was led by two Co-Chairs, Defra's Chief Scientific Adviser, Professor Bob Watson, and Professor Steve Albon of the Macaulay Institute.	n/a	2009 to 2011	http://uknea.unep-wcmc.org/Home/tabid/38/Default.aspx

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Guidance on valuing the natural environment in economic appraisals	In the Natural Environment White Paper, 2011, the UK Government announced that it will publish new supplementary guidance in 2011 to HM Treasury's Green Book for use by all Government Departments on valuing the natural environment in appraisals. This will cover techniques for monetary and non-monetary valuation and the need to take into account values from individuals, communities, businesses and other interested parties when undertaking environmental valuation.	Guidance will aim to ensure that the value of the natural environment is taken account of in public policy appraisals.	UK	Defra/ HM Treasury	n/a	2011 -	http://www.hm-treasury.gov.uk/data_greenbook_supguidance.htm
Valuing Nature Network	Sponsored by the Natural Environment Research Council, the network supports interdisciplinary partnerships to scope, develop and promote research capacity in the valuation of biodiversity, ecosystem services and natural resources and facilitate the integration of such approaches in policy and practice in the public and private sectors. 8 projects are currently being supported: Assessing and valuing peatland ecosystem services for sustainable management; Bridging the gap between supply and demand for valuation evidence (BRIDGE); Capturing differentiated experience of change to ensure pro-poor ecosystem service interventions are fit for purpose; Environmental and ecological economics and management; Interdisciplinary methods to build a socio-ecological decision-making tool to inform marine governance and policy; Interdisciplinary quantitative ecosystem services team (INQUEST); Scale dependence of stocks and flows in the valuation of ecosystem services; and valuing the impacts of ecosystem service interactions for policy effectiveness.	The network aims to improve understanding of the complexity of the ways in which the natural environment underpins human well-being, in order to provide evidence and advice to inform decision makers.	UK	NERC	n/a	2010-	http://www.valuing-nature.net/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Defra guidance on valuing ecosystem services	Defra has supported research and developed guidance to facilitate the valuation of ecosystem services. This has included : an introductory guide to valuing the benefits to society from ecosystem services; detailed practical guidelines on value transfer to help application of evidence on the environmental impacts of proposed policies and projects in decision-making; a value transfer strategy that sets out steps to enable better incorporation of valuation evidence into policy and decision making; a review of how the environment is accounted for in policy appraisal in Defra; guidelines on participatory and deliberative techniques (PDTs) in relation to ecosystem services; and detailed guidance on accounting for environmental impacts in impact assessments, including how to incorporate values of ecosystem services into cost benefit analyses.	To facilitate the valuation of ecosystem forces and to help values to be incorporated into decision making.	England/ UK		n/a	2007 -	http://www.defra.gov.uk/environment/natural/ecosystems-services/valuing-ecosystem-services/
Research Projects							
Defra research into the value of natural environment and ecosystem services	Defra has commissioned numerous research studies to assess and value the benefits and services delivered by the natural environment. Recent examples include studies of the benefits of Sites of Special Scientific Interest, the UK Biodiversity Action Plan, England's terrestrial ecosystem services, the ecosystem services delivered by Environmental Stewardship, and case studies of value transfer for ecosystem services.	To enhance understanding of the value of the natural environment and the services it provides, to inform decision making.	England/ UK	Defra	n/a	On-going	http://www.defra.gov.uk/environment/natural/ecosystems-services/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
The Economic Impact of Scotland's Natural Environment. Scottish Natural Heritage Commissioned Report No.304 (ROAME No. R07AA106).	SNH, in partnership with others, recently published a report on the extent to which sustainable use of the nation's natural environment supports Scotland's economy. This covered some of the benefits that people derive from the natural environment, demonstrating that the natural environment supports nearly one in seven of all full time jobs in Scotland, 242,000 in total, and benefits two-thirds of existing businesses.	To document and highlight the benefits that the natural environment provides for Scotland's economy	Scotland	RPA & Cambridge Econometrics. (2008). For Scottish Government	n/a	2008	http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1035
Natural Heritage Research Partnership (NHRP): NIEA research projects on Biodiversity and Landscape	Northern Ireland Environment Agency (NIEA) research of relevance to the natural heritage is guided by the Natural Heritage Research and Development Strategy (2004 – 2009).	To provide high quality research to underpin decisions relating to NIEA Natural Heritage's statutory duties and to help deliver strategic targets relating to the Government's key themes of sustainable development, biodiversity and climate change. The research is used on by Natural Heritage staff to: - inform the delivery of the Northern Ireland Biodiversity Strategy - make decisions on the impact of development on nature conservation, landscape and countryside matters - inform the development of environmental policy - formally protect or designate sites - inform the monitoring and management of designated sites - monitor changes in the natural environment as a whole facilitate sustainable use and enjoyment of the countryside	Northern Ireland	Natural Heritage, NIEA, DOE	n/a	2008 - 2018	http://www.qub.ac.uk/sites/Quercus/NaturalHeritageResearchPartnership/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
International Initiatives							
UK support for The Economics of Ecosystems and Biodiversity (TEEB)	The UK has provided financial resources and expertise to support the TEEB initiative to assess and highlight the economic case for protecting ecosystems and biodiversity globally. In 2011 the Natural Environment White Paper stated that the Government will fund a £210,000 project to undertake case studies to help apply the principles of the Economics of Ecosystems and Biodiversity (TEEB) study to the development of national strategic biodiversity plans, further enhancing our reputation as global leaders in the field of biodiversity.	The Economics of Ecosystems and Biodiversity (TEEB) study is a major international initiative to draw attention to the global economic benefits of biodiversity, to highlight the growing costs of biodiversity loss and ecosystem degradation, and to draw together expertise from the fields of science, economics and policy to enable practical actions moving forward.	International	TEEB is supported by a partnership of international agencies and national governments, including the UK. The TEEB central officie is provided by UNEP in Geneva.	The latest funding provided by the UK includes £210,000 for TEEB case studies	2008 - on-going	http://www.teebweb.org/

Annex 4 Taking Account of Biodiversity in Decision Making - Summary of Selected UK Initiatives

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Integrating biodiversity into national decision making							
Natural Value Ambassadors	Natural Environment White Paper 2011 stated that the government will inaugurate a network of 50 Natural Value Ambassadors to engage key decision-makers and opinion-formers using the latest evidence and materials available. Local Nature Partnerships will be invited to nominate candidates, as will professional bodies from other sectors such as business, health and education.	To engage key decision-makers and opinion-formers using the latest evidence and materials available.	UK	Defra	n/a	2012 -	http://www.archive.defra.gov.uk/environment/natural/documents/newp-white-paper-110607.pdf
Natural Capital Committee	The Government announced in the Natural Environment White Paper 2011 that it will establish an independent Natural Capital Committee, reporting to the Economic Affairs Cabinet Committee which is chaired by the Chancellor of the Exchequer. The Committee will advise the Government on the state of English natural capital. Firstly, it will provide advice on when, where and how natural assets are being used unsustainably. Secondly, it will advise the Government on how it should prioritise action to protect and improve natural capital, so that public and private activity is focused where it will have greatest impact on improving wellbeing in our society. Finally, it will advise the Government on research priorities to improve future advice and decisions on protecting and enhancing natural capital. To support the initial work of the Natural Capital Committee, the Government will take forward a scoping study in 2011 for a natural capital asset check.	To put the value of England's natural capital at the heart of economic thinking	England	Defra	n/a	2011-	http://www.defra.gov.uk/environment/natural/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
UK Biodiversity indicators	18 indicators (comprising 34 measures) have been reported annually since 2007 (data are up to 2009 and 2010 in most cases). Most of the datasets underpinning the indicators are updated annually, but some are updated on 5-10 year cycles. Fourteen indicators have been updated in the 2011 publication.The indicators include the population status of key species; plant diversity; the status of priority species, habitats and ecosystems; genetic diversity of rare breeds of sheep and cattle; protected sites; management of woodland agricultural land and fisheries; impacts of air pollution and invasive species; expenditure on biodiversity; and the amount of time given by volunteers to nature conservation activities.	To provide an overview of biodiversity trends in the UK	UK	Defra, UK Biodiversity Partnership (the Government, the Devolved Administrations in Scotland, Wales and Northern Ireland, and Non-Governmental Organisations)	n/a	Ongoing	http://www.defra.gov.uk/statistics/files/UK-Biodiversity-Indicators-2011-statistical-release.pdf
Biodiversity Programme / Biodiversity Evidence Programme	The aim of the Biodiversity Evidence Programme is to make sure Defra's Biodiversity Programme policies are based on the best evidence available. This is done by identifying evidence needs to underpin Biodiversity Programme outcomes, developing and managing evidence projects to address these needs, and providing evidence-based, policy-relevant advice to Ministers and officials. Defra's Biodiversity Programme covers diverse policy areas including internationally and nationally designated protected sites, conservation of priority species and habitats, mitigating the effects of climate change on biodiversity, ensuring biodiversity is able to adapt to climate change and wildlife management and protection.	To make sure biodiversity is taken into account by other policy and delivery sectors and to help the UK to play a leading international role in biodiversity conservation, in terms of both shaping international biodiversity agreements and supporting key delivery projects in the UK Overseas Territories and elsewhere.	UK	Defra, delivery partners (NE, EA, FC, JNCC) , other government departments and UK Research Councils	£4 million each year	Ongoing	http://www.defra.gov.uk/environment/natural/biodiversity/biodiversity-evidence-programme/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Ecosystem Approach Action Plan	The UK has published an ecosystems approach action plan which shows how it is embedding ecosystems thinking into policy-making and delivery on the natural environment. The action plan sets out a strategic approach to policy and delivery on the natural environment and a number of actions to enable Defra, key partners and stakeholders to work together in applying an ecosystem approach to conserving, managing and enhancing the natural environment in England. The action plan identifies a number of clear priority areas for action that will be fundamental to success and to securing wider engagement at the national, regional and local levels. The main priorities are: promoting joined-up working; identifying opportunities for mainstreaming an ecosystems approach; using case studies that demonstrate the benefits of taking an ecosystems approach; developing ways of valuing ecosystem services; and developing a robust evidence base. Defra and the Defra network is working with partners in taking forward the actions identified in the plan.	The principles/ objectives of the plan are: taking a more holistic approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services; ensuring that the value of ecosystem services is fully reflected in decision-making; ensuring environmental limits are respected in the context of sustainable development, taking into account ecosystem functioning; taking decisions at the appropriate spatial scale while recognising the cumulative impacts of decisions; and applying adaptive management of the natural environment to respond to changing pressures, including climate change.	England	Defra and agencies	n/a	2007 -	http://archive.defra.gov.uk/environment/policy/natural-environ/change/government.htm
Biodiversity indicators for England	The new England Biodiversity Strategy includes a commitment to publish a compact set of indicators and provides a suggested framework of indicator topics, grouped around the four priority areas set out in the Strategy. Defra is working to develop this new set of indicators and has published a discussion document outlining the technical issues and options for developing a set of headline indicators to track progress.	Parties to the CBD agreed to use indicators to report progress towards the goals and targets agreed in Nagoya in 2010. The proposed indicators help to achieve this, as well as providing a means of synthesising and communicating complex information to a broad audience, allowing a wide range of organisations and individuals to judge progress for themselves. They are used to inform policy decisions in non-biodiversity sectors that have an important impact on	England	Defra	n/a	2011-	http://www.defra.gov.uk/consult/2011/08/19/biodiversity-2020/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
		biodiversity conservation.					
UK Natural Capital Accounts	Government announced in the 2011 Natural Environment White Paper that it will work with the Office for National Statistics to fully include natural capital in the UK Environmental Accounts, with early changes by 2013. In 2012 it will publish a roadmap for further improvements up to 2020. Over time, it will move from measuring the value of the physical stocks to systematically valuing the services they provide. Further research will be undertaken to do this, building on the results of the NEA.	To put natural capital at the heart of government accounting, to capture nature's value in how we measure economic progress	UK	Defra, Office of National Statistics	n/a	2011-	http://www.ons.gov.uk/ons/rel/environmental/uk-environmental-accounts/2011---blue-book-update/artnaturalcapital.html
Integrating biodiversity into public sector activity							

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Natural Environment and Rural Communities Act 2006 (Nerc) Biodiversity Duty	Section 40(1) of the NERC Act places a new duty on every public authority, in exercising its functions, to "have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". The duty affects all public authorities. Local authorities are a key target group, but the duty also affects a wide range of public bodies including fire, and police, health and transport authorities etc. The Wales Biodiversity Partnership has produced biodiversity checklists for local authority and public authority staff in Wales. The checklists are designed to assist public and local authorities to take account of biodiversity in their operational activities and will help organisations to remain legal under the Biodiversity Duty, Habitats Regulations and other biodiversity related legislation. In addition, the implementation of the checklists and guidance should help build towards the biodiversity outcomes contained in the Environment Strategy for Wales. Checklists have been prepared for: Biodiversity Champions; Developers; Ecological Advisors; Local Authorities; Local Planning Authorities; the Police; Project Officers and Public Bodies. The Act requires that the Secretary of State (England) and National Assembly (Wales) prepare a list of priority habitats and species (Section 41 and 42 respectively). Impacts on these priority habitats / species is a material consideration in planning and development control decisions, and should be given priority when Public Bodies are implementing the NERC Section 40 duty.	The aim of the biodiversity duty is to raise the profile of biodiversity in England and Wales, so that the conservation of biodiversity becomes properly embedded in all relevant policies and decisions made by public authorities.	England & Wales	Defra, NE, WAG, all public authorities	N/A	2006 - present	• http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/duty.aspx • http://www.biodiversitywales.org.uk/content/uploads/documents/Guidance%20Legislation/Sec%042%20planning%20guidance%20Feb%202009.pdf

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Biodiversity Duty under the Wildlife and Natural Environment Bill proposed amendments (2010)	Introduces a new biodiversity duty upon public authorities in Northern Ireland, on all Departments, district councils and public bodies to further the conservation of biodiversity consistent with the exercise of their functions. It will further complement the commitments in Northern Ireland's sustainable development strategy, which highlights biodiversity as one of the key themes.	To raise the profile of biodiversity and promote biodiversity issues as a natural part of policymaking throughout the public sector. It will also help to ensure that Northern Ireland meets its commitments at a European and international level to work towards halting the loss of biodiversity.	Northern Ireland	Government and all public authorities	N/A	2010 - present	http://www.niassembly.gov.uk/record/committees2009/Environment/100107_WildlifeandNaturalEnvironment_Bill.htm
Biodiversity Duties in Scotland: under the Nature Conservation (Scotland) Act 2004; Conservation (Natural Habitats, &c.) Regulations 1994, and the Water Environment and Water Services (Scotland) Act 2003)	The Nature Conservation (Scotland) Act 2004 gives all public bodies a duty to further the conservation of biodiversity. The Act came into force on the 29 November 2004. There is a role for every local authority, health board, agency or other public body, involved in health, arts, tourism, sport, education or business development to support biodiversity from simple direct actions to educating others and raising awareness.	To protect and safeguard biodiversity	Scotland	SEPA, Scottish Executive, all public authorities	N/A	2004 - present	http://www.snh.gov.uk/protecting-scotlands-nature/biodiversity-scotland/biodiversity-duty-guidance/
Biodiversity in water management							

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
WFD implementation in the UK contributing to biodiversity objectives in the water sector	The EU Water Framework Directive requires the UK to manage all its water resources in streams, rivers and seas to ensure they are in the best environmental condition. This includes assessing the implication of activities on biodiversity in designated sites (SSSIs, SACs, SPAs) through nature conservation procedures for environmental licensing. General Binding Rules (GBR) and licence conditions are set to safeguard biodiversity. It introduced a new approach to protecting the quality of fresh water across whole "river basins" or catchment areas. Monitoring of fresh water includes ecological parameters to ensure protection for the natural environment. This includes monitoring of invasive alien species .	To deliver an integrated approach to the entire water environment, including ensuring that all surface waters achieve good ecological status	UK - implemented separately in England and Wales, Scotland and Northern Ireland	Defra, devolved administrations and environment agencies	N/A	2003 - present	http://www.wfduk.org/
Biodiversity in the planning system							
Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9)	Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9) sets out national planning policies on the protection of biodiversity and geological conservation in England . Circular 06/05: Biodiversity and Geographical Conservation - Statutory Obligations and Their Impact Within the Planning System provides administrative guidance on application of the law in England relating to planning and nature conservation. Planning for Biodiversity and Geological Conservation: A Guide to Good Practice complements those publications and provides good practice guidance on ways regional planning bodies and local planning authorities can help deliver the national policies in PPS9 and comply with legal requirements set out in the Circular.	The planning system has a significant part to play in meeting the Government's international commitments and domestic policies for habitats, species and ecosystems. In moving towards this vision, the Government's objectives for planning are: to promote sustainable development by ensuring that biological and geological diversity are conserved and enhanced as an integral part of social, environmental and economic development, so that policies and decisions about the development and use of land integrate biodiversity and geological diversity with other considerations; to conserve, enhance and restore the	England	Communities and Local Government.	n/a	2005 -	http://www.communities.gov.uk/publications/planningandbuilding/pps9

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
		diversity of England's wildlife and geology by sustaining, and where possible improving, the quality and extent of natural habitat and geological and geomorphological sites; the natural physical processes on which they depend; and the populations of naturally occurring species which they support; and to contribute to rural renewal and urban renaissance by enhancing biodiversity in green spaces and among developments so that they are used by wildlife and valued by people, recognising that healthy functional ecosystems can contribute to a better quality of life and to people's sense of well-being and ensuring that developments take account of the role and value of biodiversity in supporting economic diversification and contributing to a high quality environment.					

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Technical Advice Note 5; Nature Conservation and Planning (2009)	Technical Advice Note (TAN) 5 provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. The TAN provides advice for local planning authorities on: • The key principles of positive planning for nature conservation; • Nature conservation and Local Development Plans; • Nature conservation in development management procedures; • Development affecting protected internationally and nationally designated sites and habitats; • Development affecting protected and priority habitats and species.	Too strengthen the case of Local Sites & Local Biodiversity Action Plan implementation.	Wales	WAG	N/A	2009 - Present	http://wales.gov.uk/docs/desh/policy/100730tan5en.pdf
The National Planning Framework 2	The need to take full account of the impacts of development on the natural environment and to mitigate damage is being integrated into the modernised development planning and development management systems. This is being built into new Scottish Planning Policies to complement the new Act, including new policies on Green Belts, Fish Farming, Natural Heritage and Open Space and Physical Activity. The Framework will recognise that building environmental capital at a landscape scale can deliver important benefits for the economy and communities. The Proposed Framework identifies the value of creating ecological networks to enhance wildlife populations and provide a variety of ecosystem services, including places for recreation and sustainable travel. It highlights that improving the health and resilience of the natural environment will help it adapt to climate change.	To factor biodiversity issues into planning processes	Scotland	Scottish Government	n/a	2009 - present	http://www.scotland.gov.uk/Publications/2009/07/02105627/0

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Planning Policy Statement 2 – Planning and Nature Conservation	Planning Policy Statements (PPSs) set out the policies of the Department of the Environment on different aspects of land-use planning. Their contents will be taken into account in preparing development plans and may also be material to decisions on individual planning applications and appeals. This PPS sets out the Department's land-use planning policies for the conservation of our natural heritage. It embodies the Government's commitment to sustainable development and to conserving the diversity of our habitats and wildlife.	To ensure that its policies contribute to conservation of the abundance and diversity of the United Kingdom's wildlife and its habitats. To minimise the adverse effects on wildlife, where conflict of interest is unavoidable. To meet its international responsibilities and obligations for nature conservation.	Northern Ireland	Government	N/A	1997 - present	http://www.planningni.gov.uk/index/policy/policy_publications/planning_statements/pps02-nature-conservation.pdf
Marine Planning System, UK	The Marine and Coastal Access Act 2009 provides a framework that will enable our seas to be managed sustainably through a marine planning system based on the participation of stakeholders, communities and decision-makers. The Act introduced Marine Conservation Zones to improve protection and conservation of marine biodiversity, forming part of the UK's ecologically coherent network of Marine Protected Areas. Four regional projects, involving national and regional stakeholders, are identifying sites of Marine Conservation Zones using the best available evidence, and an independent Science Advisory Panel has been appointed.The Government has set the strategic policy framework through the UK Marine Policy Statement, adopted in March 2011. In England, the Marine Policy Statement will inform the development of ten marine plans covering the English inshore and offshore marine planning regions. Marine plans will integrate economic development, social need and ecosystem management and will guide all decision-makers when making any decision that affects or might affect the marine area. The first two marine plans to be prepared will be in the East of England inshore	Sustainable management of the seas	UK	Defra	n/a	2011 -	http://www.defra.gov.uk/environment/marine/protect/planning/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
	and offshore marine plan areas and will be completed by 2013. There are plans in place for the whole of the English marine area by 2022.						
Model Ecosystem Framework project	The project uses information about the ecology of a local area (north-east Scotland), the ecosystem services and human activities it supports, and the relationships between these. The model will be used to test the effects of different scenarios of change in land use. It should allow individual proposals or options for changes in land use to be considered with a fuller understanding of the impacts of any changes across a wide areas and including effects on ecosystem services.	The overall aim of the project is that by demonstrating the feasibility and value of the ecosystem approach, it becomes more widely used by decision makers and therefore leads to better outcomes for the environment	Scotland	commissioned by Scottish Government	n/a	2009 - 2011	http://www.globallandproject.org/049_Aspinall.shtml
Section 106 Agreements	Planning obligations (or 's106 agreements') are private agreements negotiated, usually in the context of planning applications, between local planning authorities and persons with an interest in a piece of land, and intended to make acceptable development which would otherwise be unacceptable in planning terms. Obligations can also be secured through unilateral undertakings by developers. Have been used in some instances to secure improvements to local green infrastructure, and identified as potential mechanism for biodiversity offsets.	Improve the acceptability of development by offering incentives to local people affected by the development.	England & Wales	Communities and Local Government.	Depends on size of development	1990 - present	http://www.communities.gov.uk/publications/planningandbuilding/circularplanningobligations
Community Infrastructure Levy	The Community Infrastructure Levy is a levy that local authorities in England and Wales can choose to charge on new developments in their area. The money can be used to support development by funding infrastructure that the council, local community and neighbourhoods want - for example new or safer road schemes, park improvements or a new health centre. The system is very simple. It applies to most new buildings and charges are	Improving local infrastructure that might not otherwise be funded, e.g. public amenities.	England & Wales	Communities and Local Government.	Depends on size of development	2010 - present	http://www.communities.gov.uk/publications/planningandbuilding/communityinfrastructurelevymay11

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
	based on the size and type of the new development.						
Biodiversity in Local Decision Making							
Green Infrastructure Partnership	The Government announced in the 2011 Natural Environment White Paper that it will establish a Green Infrastructure Partnership to support the development of green infrastructure in England. This partnership between government, local authorities and civil society organisations will consider how green infrastructure can be enhanced to strengthen ecological networks and improve communities' health, quality of life and resilience to climate change.	To improve the provision of green infrastructure in England	England	Defra, local authorities, civil society organisations		2011-	http://www.defra.gov.uk/environment/natural/green-infrastructure/
Local Nature Partnerships	2011 Natural Environment White Paper announced a commitment to encourage and support Local Nature Partnerships in England where local areas wish to establish them. LNPs will work at a strategic scale to improve the range of benefits and services from a healthy natural environment. They will aim to improve the multiple benefits rom good management of the land. They may comprise people from local authorities, businesses, statutory authorities, civil society organisations, land managers and local environmental record centres, as well as people from communities themselves.Local Nature Partnerships will influence local decisions and promote an ecosystems approach at a local level. They will develop a shared	To bring a diverse range of individuals, businesses and organisations together at a local level to create a vision and plan of action of how the natural environment can be taken into account in decision making.	England	Defra, local authorities, civil society organisations	£1 million one off fund in 2011/12 to support development of LNPs	2011 -	http://www.defra.gov.uk/environment/natural/whitepaper/local-nature-partnerships/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
	vision for their area and a set of priorities that improve social and economic benefits.						
International Initiatives							
UK support for international natural capital accounting	Natural Environment White Paper 2011 announced that UK will strengthen international efforts to value natural capital, including it in the agreed international standards for producing national accounts, and will contribute to the update of the UN's System of Integrated Environmental and Economic Accounting. UK will also support the World Bank's Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES), which will look at the feasibility of including changes in the value of ecosystem services in measures of economic performance.	To integrate natural capital into accounting, to capture nature's value in how we measure economic progress	International			2011-	
World Bank's Global Partnership for Wealth Accounting and the Valuation of Ecosystem Services (WAVES)	UK is supporting the World Bank's Global Partnership for Wealth Accounting and the Valuation of EcosystemServices (WAVES), which will enable between eight and ten developing countries to build the value of natural resources into their own national accounts.	To enable developing countries to take account of the value of natiural resources in their national accounts	International				http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:22811928~pagePK:210058~piPK:210062~theSitePK:244381,00.html

Annex 5 Promoting Sustainable Consumption and Production - Summary of Selected UK Initiatives

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Networks, Partnerships and Forums							
Waste and Resources Action Programme (WRAP)	WRAP is the Government's source of technical advice and practical expertise on improving resource efficiency in England, and advises businesses and government on the efficient and sustainable use of natural resources.	To help the UK Governments to meet their national and international commitments and build the green economy; and to support resource efficiency in the UK so that householders, businesses and the public sector save money and make better use of resources.	UK	WRAP, Defra	£100 million in 2010/11	2000 - present	http://www.wrap.org.uk/downloads/Evaluation_methodology_2008-11_FINAL.508e7616.8517.pdf
Product Research Forum	The Product Research Forum is co-ordinated by the Waste and Resources Action Programme (WRAP) and presents an opportunity for government and industry members to collaborate in order to understand and reduce the environmental impacts of grocery and home improvement products. It will agree key environmental metrics, establish a methodology and gather data on reducing product-related environmental impacts.	To reduce the environmental impact of grocery and home improvement products.	UK	Waste and Resources Action Programme (WRAP)			http://www.wrap.org.uk/retail_supply_chain/design/product_research.html
Sustainable Consumption and Production Network (SCPNet)	Acts as a single point of reference on SCP for the regional development agencies, regional assemblies, Government offices for the regions, regional observatories and the regional offices of the Environment Agency on a sub-national level.	To deliver the evidence base to enable regions to tackle the challenge of sustainable consumption and production	England	Environment Agency, 4NW and the Regional Development Agencies			www.scpnet.org.uk/
Research							

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Sustainable Consumption and Production research	The concept of Sustainable Consumption and Production (SCP) covers all the lifecycle environmental impacts of goods and services, from impacts associated with resource extraction through to final disposal. The SCP challenge is therefore extremely broad, but the central theme is simple: more efficient use of resources in production and consumption, in order to reduce or avoid the associated lifecycle impacts. Defra is developing a shared SCP evidence base, designed to be valued and used inside and outside government.	To inform UK SCP policy the evidence generation programme encompassing a diverse range of R&D projects is in place. This evidence is designed to inform effective policy decisions.	UK	Defra		Ongoing	http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=Detail&Completed=0&FOSID=37
Product roadmaps – improving produce and producers' sustainability	Government and industry are working together on ten pilot roadmaps. These roadmaps aim to improve sustainability across the life cycles of a range of important products, including clothing, milk and plasterboard.	To: establish the impacts that occur across the life cycle of each product; identify existing actions being taken to address those impacts; and develop and implement a voluntary action plan to address any gaps.	UK	Defra		2008 - present	http://www.defra.gov.uk/environment/economy/products-consumers/
Funds / Grants							

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
WRAP grants and loans	WRAP has a range of support available which, at times includes the provision of funding. Support measures that are currently available include: UK WIDE - eQuip - Leasing made easy - a leasing scheme that helps companies secure financial assistance for recycling plant and machinery. ENGLAND - Anaerobic Digestion Loan Fund (ADLF) is a £10million fund designed to support the development of new AD capacity in England. - The Mixed Plastics Loan Fund (MPLF) - a limited fund of up to £2 million to address the reprocessing capacity gap that currently exists for mixed plastics. - Waste Prevention Loan Fund (WPLF) - to enable the introduction of new business models and resource efficient processes - Small Scale Capital Grant Funding and the Large Scale Capital Grant for West Midlands recycling firms SCOTLAND - De minimis support for Anaerobic Digestion/IVC infrastructure - De minimis support for food waste collections from the commercial waste stream - Capital funding for MRF developments in Scotland WALES - Funding for Welsh SME recyclers and manufacturers in Non-Convergence Areas: Commercial Collection Facilities grant scheme; Increasing Recycled Content In Welsh Manufacturing grant scheme - Funding for Welsh SME recyclers, re-processors, and manufacturers in Convergence Areas: ARID project - Commercial Collection Facilities grant scheme; ARID project - Increasing Recycled Content In Welsh Manufacturing grant scheme; ARID project - Large Scale Infrastructure and Reprocessing Facilities in Wales grant scheme	Support to reduce waste, develop more sustainable products and use resources in an efficient way	UK	WRAP		Ongoing	http://www.wrap.org.uk/wrap_corporate/funding/index.html

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Policy measures							
Government buying standards	Government Buying Standards (formerly known as Buy Sustainable Quick Wins) are designed to make it easier for government buyers to buy sustainably. They include: - Official specifications that all government buyers must follow when procuring a range of products; - Information about sustainable procurement and how to apply it when buying; - Direct links to websites with lists of products that meet the standards. All central government departments and their related organisations must ensure that they meet these minimum mandatory specifications when buying products and services. The standards have been developed so that products which meet the criteria save more money over their whole life than products that do not.	To raise levels of sustainable public purchasing across the public sector; to steer the purchasing power of the public sector	UK	Defra		Ongoing	http://sd.defra.gov.uk/advice/public/buying/
Household Reward and Recognition Scheme	Scheme encourages councils to reward people who recycle or re-use their waste by introducing or trailing new schemes that reward or recognise people or communities for adopting such positive behaviours. Rewards could include financial rewards, e.g. vouchers, donations to charities, cash or discounts on goods and services. Recognition could, for instance, include personalised feedback about how much a household has recycled, or a letter about how donating an item for reuse has helped the local community. Similarly schemes are already running, such as the London Green Points scheme launched in Bexley in October 2011 or the Recyclebank scheme that operates in Windsor & Maidenhead, Halton and Lambeth are good examples of how people can be rewarded for doing the right thing.	To explore ways to reward or recognise people for adopting positive behaviours towards managing their waste.	UK	Defra	£500,000	2011 - present	http://www.defra.gov.uk/environment/waste/consumer/reward-scheme/

Annex 6 Business Engagement and Biodiversity - A Summary of Selected UK Initiatives

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Business Partnerships and Forums							
Local Biodiversity Action Plan Partnerships	LBAPs are partnerships formed to deliver biodiversity action at the local level. Partnerships often work with businesses, helping companies to assess their impacts on biodiversity, identifying ways in which companies can become involved in biodiversity activities, and inputting into company biodiversity action plans for their sites. Companies are increasingly being expected to show green credentials, and LBAPs can help them identify what they need to do. For instance, the The NES LBAP has produced a booklet entitled Business and Biodiversity in North East Scotland (2002) which highlights best practice examples in the area, and is currently producing a range of Advice Notes outlining more ideas on how businesses can get involved in action for wildlife.	LBAPs aim to deliver biodiversity action at the local level, typically involving local partnerships coming together to formulate and deliver local biodiversity action plans	UK	Local authorities, with NGOs and businesses	n/a	On-going	http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/localbiodiversity.aspx
Business Environment Partnership (Green Business Partnership)	The Business Environment Partnership (BEP) works with Small to Medium sized Enterprises (SMEs) in Scotland on developing and implementing environment management systems and biodiversity audits and action plans	To make the Scottish economy more competitive by allowing companies to realise: - cost savings through waste management, energy efficiency, reduced effluent production, reduced water and raw material consumption, etc. - reduced risks through compliance with environmental legislation - improved competitive advantage through the development of new products and services; and by enabling companies to operate in supply chains that demand specific	Scotland	Scottish Executive, Scottish Enterprise, SEPA, Local authorities, Business Gateway, FSB	£49,000 in 2004-05, £48,750 in 2005-06 £48,750 in 2006-07	Ongoing	http://www.greenbusinesspartnership.org.uk/index.php?page=home

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
		environmental credentials					
Arena Network	ARENA Network is the environmental campaign of Business in the Community, established in 1995. Co-ordinates all business environmental initiatives in Northern Ireland and provides an environmental support service to local business. It works at both a strategic and local level to advise business and key decision makers across Northern Ireland and provides advice and guidance on the development of environmental policies, monitoring templates, supply chain management and grants/loans. The network has a biodiversity officer.	To coordinate all business environmental initiatives in Northern Ireland and to provide an environmental support service for local business	Norhern Ireland	BITC (Business In the Community)		1995 - present	http://www.bitc.org.uk/northern_ireland/what_we_do/planet/
Wales Biodiversity Partnership - Business and Biodiversity Task & Finish Group	WBP is addressing business engagement with biodiversity through a task & finish group. This will be taken on by the partnership workstream of the Natural Environment Framework. The Partnership brings together key players from the public, private and voluntary sectors to promote, monitor and deliver biodiversity actions in Wales.	To increase business understanding of and engagement with biodiversity projects.	Wales	26 partner organisations	N/A	1998 - present	http://www.biodiversitywales.org.uk/sg_meetings-130.aspx#TaskGroupsEng

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Business and Biodiversity Sub-Group of the Scottish Biodiversity Forum (SBF)	The Scottish Biodiversity Forum (SBF), formerly the Scottish Biodiversity Group (SBG), was formed in 1996. The SBF is chaired by the Scottish Executive and is responsible to Scottish Ministers for biodiversity work in Scotland to meet the UK's and international commitments outlined in the CBD. Further guidance to business to support engagement and action on biodiversity is imminent.	To aid 'the development of the biodiversity process throughout the business sector' by increasing awareness, identifying the contribution businesses can make, and identifying opportunities where businesses can benefit from improved biodiversity'.	Scotland	Scottish Executive and businesses		On-going	http://www.businessandbiodiversity.org/scotland.html
UK support for international TEEB for Business coalition	UK Government will support a new international coalition of businesses and business organisations to follow up on the TEEB for Business report. The TEEB for Business coalition will catalyse and co-ordinate action by helping participating businesses from the UK and elsewhere to understand and address their environmental impacts.	To help businesses from the UK and elsewhere to understand and address their environmental impacts.	International	Defra	n/a	2011-	http://www.teebweb.org/ForBusiness/tabid/1021/Default.aspx
Information and guidance							
Government guidance on business environmental reporting	The Government announced in the 2011 Natural Environment White Paper that it will publish new guidance for businesses by 2012 on how to measure and report their corporate environmental impacts. This will complement existing government guidance on how to report on greenhouse gas emissions and will follow the same step-by-step approach to ensure consistency and encourage those not already reporting. It will cover key areas such as water use and waste minimisation as well as impacts on natural resources and biodiversity. The guidance will aim to be consistent with international guidance and conventions where these exist.	Aims to help businesses to understand, report on and reduce their impacts on biodiversity	UK	Defra	n/a	2011-	http://www.defra.gov.uk/environment/economy/business-efficiency/reporting/
Business and Biodiversity Initiative - Business and Biodiversity	Resource centre to provide business with information on the role of biodiversity in business and to help identify measures that can be taken to help conserve and manage biodiversity	To aid increase awareness, identify the contribution businesses can make, and identify opportunities where businesses can benefit from improved biodiversity'.	UK	Defra, NE, EarthWatch Institute		2001 - present	http://www.businessandbiodiversity.org/index.html

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Resource Centre							
Sector specific initiatives							
Biodiversity indicators for construction projects	A set of three complementary biodiversity indicators were developed that allow the impact of construction projects on biodiversity to be measured: 1. Impact on Biodiversity: Product 2. Impact on Biodiversity: Construction Process 3. Area of Habitat The indicators have been adapted for inclusion in the DTI/Constructing excellence KPI pack, published in June 2003	To help the construction industry to tackle protecting sensitive sites and minimising damage to ecology,	Scotland	BRE, CIRIA, DTI		2003	http://projects.bre.co.uk/biodiversity/W005_edited.pdf
Sustainable Framework for Scottish Sea Fisheries	Through partnership working through stakeholder groups a sustainable approach to fisheries in Scotland based round the new concept of "Maximum Sustainable Yield" for deep water fishing has been developed. This approach seeks to match the amount of fishing effort, equipment and areas of activity with the long-term delivery of benefits for biodiversity and the health of the natural environment. This has been accompanied by moves to increase local management of inshore fisheries, encouraging local fishing practices to suit local fisheries and environmental concerns.	To develop a Scottish sea fishing industry that is sustainable and profitable and supports strong local communities, managed effectively as an integral part of coherent policies for the marine environment	Scotland	SeaFAR, Scottish Executive, Scottish Fisheries Council, SNH		2005 - On-going	http://www.scotland.gov.uk/Publications/2005/07/07105456/54577

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
Peat Task Force	Government announced in Natural Environment White Paper 2011 that it will establish a Task Force bringing together representatives from across the supply chain with a clear remit to advise on how best to overcome the barriers to reducing peat use, exploring all the available measures to achieve this goal. Tagrets have been established to phase out peat use by 2030; building on the advice of the Task Force, government will review progress towards targets before the end of 2015 and consider the potential for alternative policy measures if necessary.	To reduce peat use to zero by 2030	UK	Defra, working in partnership with devolved administrations	n/a	2011 to 2015	
Green Economy Initiatives							
Green Economy Council	Government has established a Green Economy Council with leading businesses, which will consider natural capital in its terms of reference.	To identify how government and industry can work together to support the transition to a green, low carbon economy and minimise the costs for business while maximising the opportunities.	UK	BIS, DECC, Defra	n/a	2011 -	http://www.bis.gov.uk/news/topstories/2011/Feb/green-economy-council-formed
Ecosystem Markets Task Force	On 23 November 2011 the Government launched a business-led Ecosystem Markets Task Force to review the opportunities for UK business from expanding green goods, services, products, investment vehicles and markets which value and protect nature's services. It will report back to government in 2013 through the Green Economy Council. The study will look at the drivers and barriers to greener markets' growth in the short to medium term, including expected developments in international and European environmental policy. It will highlight areas of comparative advantage for UK business. It will look at the potential for the financial sector to market new products which invest in natural capital and services to provide a return for investors and nature alike. It will also look at	To review the opportunities for UK business from expanding green goods, services, products, investment vehicles and markets which value and protect nature's services	UK	Chaired by Ian Cheshire (Group Chief Executive Officer, Kingfisher plc), with members from a range of businesses	n/a	2011-2013	http://www.defra.gov.uk/ecosystem-markets/

Name of initiative / activity / policy	Description	Objectives	Coverage	Lead and support partners	Resources allocated	Timescale	Reference / weblink
	whether markets have the required information to function properly and grow, for example to compare and verify the standard of products provided.						

Institute for European Environmental Policy

GHK

Incentive Measures and Biodiversity – A Rapid Review and Guidance Development

Volume 3: Guidance to identify and address incentives which are harmful to biodiversity

Defra

23 April 2012

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Incentive Measures and Biodiversity – A Rapid Review and Guidance Development

Volume 3 – Guidance to identify and address incentives which are harmful to biodiversity

Defra

A report submitted by Institute for European Environmental Policy
in association with

the GHK

Date: 23 April 2012

Job Number 30258947

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Contents

1 Introduction

As a signatory of the Convention on Biological Diversity (CBD), the UK is committed to develop positive incentive measures that promote the conservation of biodiversity, and to take steps to identify, reform or phase out subsidies and other incentives that have harmful effects on biodiversity.

A recent CBD Decision (X/44) on Incentive Measures[1] encourages Parties to the Convention to adopt a range of policy measures and regulations designed to promote positive incentives and phase out perverse incentives, as well as to account for the value of biodiversity and ecosystem services in decision making. The UK and other Parties are invited to report to the CBD on progress and experience in this area.

GHK Consulting Ltd (GHK), in collaboration with the Institute for European Environmental Policy (IEEP), was commissioned by Defra to review current and planned policy in the UK that addresses Decision X/44 on Incentive Measures for Biodiversity of the Convention on Biological Diversity and to develop guidance and recommendations for future policy in this area.

The work involved two main elements:

1. **A rapid review of incentives for biodiversity in the UK**. Based on a document and web review and a series of interviews with staff in Defra and the devolved administrations, this task summarised and reviewed progress in the UK in relation to six key themes addressed by Decision X/44:

   - Developing positive incentive measures for biodiversity;
   - Addressing perverse incentives that impact on biodiversity;
   - Assessing the value of biodiversity and ecosystem services;
   - Taking account of the value of biodiversity and ecosystem services in decision making;
   - Promoting sustainable consumption and production ;
   - Business engagement on biodiversity;
   - Promoting understanding of incentive measures internationally.

   For each theme, the review summarises key activities taking place at UK level and within the different countries of the UK (England, Northern Ireland, Scotland and Wales). It highlights progress and achievements, discusses some of the main barriers and challenges encountered and how they have been addressed, and identifies the lessons that can be learnt from experience in the UK to date.

   The review was submitted by Defra to the CBD in January 2012 as the basis for the UK's input to the progress review on activities related to Decision X/44

2. **The development of guidance for the identification and reform of incentives harmful to biodiversity**. Adapting existing international guidance for the identification and reform of environmentally harmful subsidies, guidance was developed to assist the assessment and reform of incentives harmful to biodiversity. The guidance is intended to be relevant both in the UK and internationally. The application of the guidance is illustrated with reference to three UK case studies examining the CAP Single Farm Payment, water abstraction licensing and incentives for renewable energy.

This final report presents the outputs and conclusions from the assignment. It is structured in three volumes:

[1] CBD (2010) The Conference of the Parties Decision X/44: Incentive Measures

- Volume 1 summarises the overall findings from the study and presents recommendations for the future;
- Volume 2 presents the findings of a rapid review of biodiversity incentives in the UK ; and
- Volume 3 presents guidance for the identification and reform of incentives harmful to biodiversity.

This document forms Volume 3 of the final report and presents the tool that has been developed to identify Biodiversity Harmful Incentives (BHIs) and options for their reform.

This Volume is structured as follows:

- Section 3 provides an introduction to the concept of incentives that are harmful for biodiversity, and environmentally harmful subsidies more widely;
- Section 4 offers an overview of this assessment tool;
- Section 5 provides guidance on how to carry out Phase 0 of the analysis, i.e. screening of impacts on biodiversity and relevant sectors and economic activities
- Section 6 provides guidance on how to carry out step 1 of the analysis, i.e. screening of subsidies potentially harmful to biodiversity;
- Section 7 focuses on step 2, assessing the potential for subsidy reform;
- Section 8 describes step 3, assessing subsidy reform scenarios.
- Section 9 focuses on step 4, exploring opportunities for action.

The guidance is illustrated primarily through three case studies which explore the reform of incentives harmful to biodiversity in the UK. These case studies cover:

- Wind energy developments;
- The water abstraction regime; and,
- Eligibility criteria for CAP direct payments.

The case studies are presented in Section 10. In addition, case examples from other countries are presented throughout this guidance document where they help clarify and operationallise the guidance.

Section 11 highlights key conclusions and recommendations on the use of this guidance tool and, more broadly, on the reform of incentives harmful to biodiversity.

2 The aim of this guidance document

This guidance document, prepared by the Institute for European Environmental Policy (IEEP) and GHK Consulting Ltd (GHK), was commissioned by Defra to review current and planned policy in the UK that addresses Decision X/44 on Incentive Measures for Biodiversity of the Convention on Biological Diversity (CBD).

Decision X/44 in particular acknowledges that, inter alia, '(...) perverse incentives harmful for biodiversity are frequently not cost-efficient and/or not effective in meeting social objectives while in some cases use scarce public funds'. It therefore stresses the importance of identifying, eliminating, phasing out, or reforming existing harmful incentives for sectors that can potentially affect biodiversity, with a view to minimizing or avoiding their negative impacts (CBD, 2010).

In view of this recommendation, this report aims to develop and provide guidance on an assessment tool to identify existing perverse incentives that are harmful for biodiversity and to better understand how these should be eliminated, phased out or reformed.

In this guidance tool, the terms 'incentives' and 'subsides' are used interchangeably, building on the wider literature and well recognised terminology related to environmentally harmful subsidies (EHS).

The tool and guidance are meant to be broadly applicable to a wide set of subsidies and sectors relevant to the different policy objectives, frameworks and structures in the four UK countries. The aim is to provide a framework that is broadly applicable to a wide range of subsidies and incentives, but also amenable to further developments and tailoring should it be used for more sector-specific assessments.

The approach builds on three tools developed by the Organisation for Economic Co-operation and Development (OECD) to assess EHS: the 'Checklist', the 'Quick scan' and the 'Integrated assessment'. It also builds on a recent study undertaken for DG Environment on the identification and assessment of EHS (Valsecchi et al. 2009), which provided, inter alia, a framework for the analysis of EHS streamlining the 3 OECD tools and guidance on how to identify and reform EHS.

It is clear that there are close links between BHI and EHS. For instance, identifying BHI could be considered an initial step in taking forward the wider EHS agenda, given that negative impacts on biodiversity are often a consequence of wider environmental impacts and are therefore a good indicator for identifying EHS. BHI and EHS are therefore two complementary concepts, and the agenda for their reform should, where possible, be considered in tandem.

This report also takes into account the recommendations on subsidy reform developed under the recent study 'The Economics of Ecosystems and Biodiversity' (TEEB, 2011 see Chapter 6, Lehmann et al 2011). These approaches have been simplified and tailored to address subsidies which may be harmful to biodiversity, hereafter referred to as biodiversity harmful incentives (BHI). Although the focus and examples provided in this document relate in particular to the UK experience and policy objectives, this guidance is also meant to be a useful tool for other countries that may wish to reform their national subsidies harmful to biodiversity.

3 Introduction to incentives that are harmful for biodiversity and other environmentally harmful subsidies (EHS)

The Convention on Biological Diversity (CBD), adopted in 1992 creates an obligation for Parties (under Article 11) to "as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of biodiversity".

The Conference of the Parties to the CBD has been considering incentive measures and biodiversity for several years. The Strategic Plan for Biodiversity 2011 – 2020 , prepared by the Working Group on the Review of Implementation (of the CBD), is intended to "promote effective implementation of the Convention through a strategic approach…that will inspire broad-based action by all Parties and stakeholders". Target 3 of the Strategic Plan relates to the elimination, reform or phasing-out of subsidies harmful to biodiversity and development and application of positive incentives by 2020.

Decision X/44 on Incentive Measures addresses a range of policy measures and regulations to encourage Parties to identify and remove perverse incentives and promote positive incentive measures for the conservation and sustainable use of biodiversity. Decision X/44 aims to make a significant contribution to the CBD Strategic Plan for the period 2011-2020, of which Strategic Goal A is to address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. In particular, Target 3 of the Plan is that:

'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.'

Although the focus of this guidance document is on incentives harmful to biodiversity, it is important to recognise that such incentives fall into the broader, well recognised category of 'environmentally harmful subsidies' (EHS). Across the EU there has been a long-standing commitment to removing such subsidies. The EU Sustainable Development Strategy, reviewed in 2006, called on the EU to draft a roadmap for each relevant sector for the reform and gradual elimination of EHS. More recently, the need to phase out EHS has been reiterated in the Europe 2020 Strategy and the 'Roadmap for a resource efficient Europe' calls for the development of an inventory of environmentally harmful subsidies (EHS) by 2012, plans and timetables for EHS reform by 2012/13 and a full phasing out of by 2020 (COM(2011) 571 final[2]). There have also been calls for the reform of EHS at the international level, with countries in the G-20 and APEC forums committing to phasing out fossil-fuel subsidies over the medium term.

[2] http://ec.europa.eu/environment/resource_efficiency/pdf/com2011_571.pdf

Box 1: The definition of subsidies and/or perverse incentives

To date, there is no universally accepted definition of a subsidy (OECD, 2006a). The definition that is most widely used in the policy context is that of the OECD (2005), which defines subsidies as:

'A result of a government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs'

This definition allows several government support measures to be considered as subsidies. The above definition does not include implicit subsidies that result from non-internalisation of externalities or lack of full cost pricing. Pieters (1997) proposed a slightly broader definition of a subsidy that addresses this by defining subsidies as '*deviations from full costing'*, although these may sometimes be difficult to measure.

While a broad definition, including both full cost pricing for resources and internalisation, is operationally difficult, it is important to recognise that such implicit subsidies exist and can be quite significant in all sectors. For more information on the definition of environmentally harmful subsidies, their types and examples of these, see Annex 1.

Within the CBD context (CBD decision X/44) the terminology of "incentives harmful to biodiversity" is used. The avoids some confusion that arises when people use subsidies to mean different things as it allows the wider set of economic subsidy types noted above to be included.

As mentioned above, in this tool, the terms 'incentives' and 'subsides' are used interchangeably, building on the wide literature and well recognised terminology related to environmentally harmful subsidies (EHS).

3.1 What progress has been made towards phasing out or reforming biodiversity harmful incentives and environmentally harmful subsidies more broadly?

Volume 2 of this report details current and planned policy in the UK that addresses Decision X/44, including what steps have been taken to address perverse incentives that impact on biodiversity. The review identified that the UK's work to address perverse incentives that adversely affect biodiversity includes initiatives:

- At the national level – on issues such as water pricing and energy incentives; and
- At the EU level – where the UK continues to advocate further reform of major subsidy programmes such as the Common Agricultural and Common Fisheries Policy.

For instance, the reform of the water abstraction licensing system has been identified as a major priority in England and Wales, with the government working to reform the system, while making short term changes designed to address its adverse impacts (reform of the abstraction regime is the focus of one of the case studies in this Volume, see Section 10). Moreover, the UK government has committed to a full review of how it 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 and yields better environmental results.

At the EU level, two major subsidy programmes, the Common Agricultural Policy and Common Fisheries Policy, have both had profound impacts on biodiversity, and the UK has been active in pressing for successive reforms. The UK has played a central role in debates about reform of the CAP, and has been a pioneer of agri-environment policies, since the introduction of the Environmentally Sensitive Areas scheme in 1987. Defra has also advocated radical reform of the Common Fisheries Policy, arguing that the current policy is broken and has not delivered its key objective of an economically viable fishing industry which minimises impacts on marine ecosystems. In July 2011, the UK welcomed proposals from the European Commission as a vital first step, and promised to work with

the EU and other Member States to deliver the radical reforms that the marine environment and fishermen need and the public expects.

It is clear therefore that there has been substantial progress in the UK towards addressing BHIs in several different sectors. However, the review also finds that such reform can be a long term process, and significant barriers and challenges remain (for more details, see Volume 2 of this report).

More widely speaking, progress on the ground in terms of phasing-out EHS more generally has been slow. For instance, agricultural subsidies in OECD countries averaged US$261 billion/year in 2006-8 while global fisheries subsidies are estimated at US$15-35 billion/year. Energy subsidies are around US$500 billion/year worldwide and reached US$310 billion in the 20 largest non-OECD countries in 2007 (Lehmann et al 2011). Given the current context of severe financial instability and the need for financial reform and for curbing public expenditures in EU Member States (MS), the reform or phasing out of subsidies that are damaging for biodiversity and the wider environment, and which have in several cases lost their initial purpose/rationale, represent a key measure that can be a win-win at both an economic and environmental level.

3.2 How do subsidies and incentives lead to potentially harmful effects on biodiversity?

Subsidies can affect biodiversity in many different ways, directly and indirectly, at different geographic scales, over different time periods. Direct impacts can be from forest conversion to biofuels crops or direct road building in biodiversity rich areas. Indirect effects include climate change which then impacts on biodiversity, or indirect land use change (ILUC) related to biofuels targets and subsidies. Impacts can be immediate (e.g. land conversion, road build, oil spills), arise over time (e.g. pollution loading leading to critical ecological thresholds being passed in due course, eutrophication events), and/or spread over many years (e.g. fisheries capacity support, fossil fuel subsidies) and felt acutely only by subsequent generations. Impacts can occur locally (e.g. subsidies for road building), regionally (e.g. subsidy for hydrological power generation using dams on rivers), nationally (e.g. peatland conversion leading to loss of habitats, ecosystems or species of national importance), internationally (e.g. resource extraction impacts, or water subsidies in water stressed cross border river basins), and globally (e.g. climate change).

Overall impacts may be less clearly negative, for instance where the incentive creates both positive and negative impacts (e.g. a hydro power plant mitigating the impacts of climate change) or due to the existence of policy filters (e.g. cross compliance requirements in the case of agricultural subsidies). On the other hand, some subsidies may appear at first sight benign but may in fact have negative effects, depending on the design or how beneficiaries respond to them (e.g. subsidies for modernisation and decommissioning of fishing fleets).

The range and complexity of the impacts underlines the importance of assessing carefully the effects of new subsidies and the need for any assessment of reform options to take a sufficiently wide look at the benefits of reform.

A brief overview of potential biodiversity impacts caused by subsidies from various key economic sectors is provided below (building on TEEB, 2011). This overview draws on international evidence about the effects of subsidies on biodiversity, while also making reference to UK examples.

Agriculture

Agricultural subsidies are amongst the largest and need special attention because of the sector's critical importance for food security and rural development. Incentives to produce can lead to increased damage, typically by stimulating intensification and/or expansion. Some examples of biodiversity impacts of the Common Agriculture Policy (CAP) related subsidies in the UK are provided in Box 2 below.

The most significant environmental impacts that have been observed over time can include:

- loss of non-target species, including pollinators, due to direct and indirect effects of pesticides;
- reduced habitat diversity due to consolidation of holdings, removal of patches of non-farmed habitats and boundary features, and greater regional specialisation;
- loss of biodiversity-rich extensive farmlands (e.g. semi-natural grasslands) due to increased fertiliser use or increased grazing;
- hydrological changes to habitats as a result of drainage or irrigation (e.g. leading to wetland loss and reductions in groundwater levels from over-abstraction);
- eutrophication of freshwater and marine ecosystems from fertilizers and nutrient rich run-off;
- eutrophication of terrestrial ecosystems from deposition of airborne nutrients, particularly ammonia, from intensive livestock systems;
- soil degradation and erosion; and
- conversion of more natural ecosystems into farming areas (land use change).

Subsidy removal or reform can help reduce harmful intensification or land expansion, hence reducing pressures on biodiversity and ecosystems. It should also be taken into account, however, that in some cases subsidy removal can result in a contraction of agricultural land that can have negative biodiversity impacts in extensive farming regions where traditional practices play a key role in creating site-specific biodiversity, soil properties and landscape amenities (OECD 2003d; EEA 2004; UNEP 2004). High nature value (HNV) farmlands, for instance, include semi-natural areas and features like hedges, walls, trees and buffer zones created as an integral part of farm management. In such regions, high agro-biodiversity depends on continuing these practices. This does not imply general support for production-inducing subsidies, but recognizes that subsidy reduction or removal is not enough, in isolation, to meet the challenge of maintaining biodiversity-rich extensive farming systems, and that subsidy reform should keep positive and negative biodiversity effects into account.

Box 2: The impact on UK biodiversity of the EU Common Agricultural Policy (CAP)

In the past, production focussed elements of the CAP stimulated important structural shifts in farming, investment and technological development which led to widespread agricultural intensification in the UK, with well-documented impacts on biodiversity, including declines in farmland birds and the destruction of important habitats, such as meadows and heathland, since the 1970s. For example, in England and Wales 97% of species rich meadows were lost between the 1930s and 1980s.

A series of reforms since the 1990s to integrate environmental concerns within the CAP have been insufficient to reverse biodiversity declines. For example, less than 10 % of habitats associated with agriculture identified under Annex 1 of the Habitats Directive were in favourable condition in the UK in 2009. Statistics show that in 2010 breeding farmland bird populations in the UK were at their lowest level ever recorded at half of what they were in 1970. Although most of these declines occurred between the late seventies and the early nineties, a 9.4 per cent overall decline had been recorded from 2004 to 2009. Many remaining species-rich agricultural habitats are rare or much reduced. A high proportion of rare and vulnerable species of EU importance are associated with these semi-natural habitats, which depend on agriculture for their continued survival. Many of these habitats continue to come under pressure from ongoing concentration and specialisation of farming systems as a result of market pressures. Their continuation depends on the availability of CAP payments designed to support environmentally beneficial land management practices, such as the

agri-environment schemes currently operating in England, Wales, Scotland and Northern Ireland.

Fisheries

There is universal acceptance in relevant literature that some types of fisheries subsidies can lead to increased fishing effort and thus have negative impacts on the level of fish stocks (UNEP 2004a, von Moltke 2010). Under pure open access, standard economic analysis shows that over-exploitation of the resource can occur even without subsidies. However, it is generally agreed that introduction of some subsidies would make a bad situation worse by further increasing exploitation (OECD 2000a; WTO 2000; Munro and Sumaila 2002; UNEP 2004a). This would be true for any subsidy that:

- increases the producer price of the resource (i.e. the price for fish received by fishermen);
- reduces the operating costs per unit (i.e. per fishing vessel); or
- reduces the purchase price of vessel capital (Munro and Sumaila, 2002).

In general, capacity-enhancing subsidies should generally be seen as environmentally harmful. These include (see further UNEP 2004a):

- subsidies for fleet expansion and modernisation (grants, low-interest loans, loan guarantees) as these reduce the purchase price of vessel capital;
- payments to countries for the exploitation of fish stocks in their EEZ by foreign fishing fleets. These constitute subsidies to the relevant fishing industry if not fully recovered from the relevant companies;
- tax preferences for intermediate inputs (e.g. fuel) which reduce operating costs per vessel. Empirical studies confirm that such tax preferences encourage the purchase of vessels with larger engines that, in turn, increase fishing ranges and enable larger catches.

In the UK, potential significant biodiversity impacts have been associated in particular with subsidies for vessel construction and vessel modernisation. Biodiversity impacts are related to fish over-exploitation due to overcapacity of the fleet, and habitat destruction from bottom trawling.

It should be noted that removing subsidies will make the task of effective management easier, but in itself will not be effective in achieving conservation goals if the underlying management regime is not also fixed at the same time.

Water

The negative impact of subsidised prices for water resources is increasingly recognised at UK and EU level. Under the EU Water Framework Directive (EC 2000), the UK (as well as all the other EU Member States) is required to take into account the principle of full cost recovery in water pricing policies to promote more efficient use of resources.

Water services provision is subsidised by charging rates that do not cover operating and management costs (below-cost pricing), possibly combined with preferential treatment for some user groups (e.g. lower rates for irrigation water). In many countries, water charges have historically been very low. Below-cost pricing, together with low collection rates, can result in utilities with limited financial resources which can lead to inadequate operation and maintenance. Furthermore, below-cost pricing leads to water over-use and wastage. Associated impacts include falling water tables, reduced availability for other users/uses, additional investment needs for water provision (e.g. wells for farmers and households) and in some cases, damage to the aquifer itself (salt water intrusion, increased pollution). Reforming water subsidies is increasingly urgent in the light of expected increased water stress caused by climate change (IPCC 2008).

In the UK, water on average costs less than £1 a day[3]. The challenges in the UK stem largely from the structure of the pricing system. Most users pay an annual rate regardless of how much water is used; water metering is not yet systematically in place in the UK. Water charging therefore in most cases is not linked to water volume. A recent independent review found that the current charging system is neither efficient nor sustainable (see Box 3).

Box 3: A brief introduction to the water charging system in the UK

The current charging system which is based on a mix of metered and the rateable value (RV) of the property being served. Currently just over a third of households have water meters and are charged by volume. The rest pay their water bills on the rateable value (RV) of the property they live in.

The RV system is out of date and inefficient, nor does it provide customers with an incentive to save water as at the point of use the water is essentially free. Moreover, the bills of low income customers who are unmetered are rising faster than metered bills, as the sizeable cross subsidies (currently about £600m overall) in the rateable value system are eroded.

An independent review in 2009 called for the removal of the rateable water charges, which do not incentivise water efficiency, and instead recommended that the future charging system is based on metering in order to take into account the volume of water used.

In the ***agriculture sector***, subsidies for irrigation have generally under-priced the use of water. As a result, the use of water for irrigation purposes tends to be quite high. Irrigation subsidies are often justified on social grounds (i.e. the need to support low income farmers). However, subsidies usually benefit all farmers indiscriminately and tend to exacerbate the waste of often limited water resources and encourage cultivation of water-intensive crops.

Water scarcity can be aggravated by the cultivation of water-intensive crops, especially where climate conditions and rainfall patterns should dictate otherwise, and the outright waste of water.

Box 4: A brief overview of the use of water for irrigation in the UK

In the UK, licences for water abstraction for irrigation are regulated under the water abstraction regime, where abstractors are charged annually for an abstraction licence, which are typically issued based on an annual licensed volume rather than the amount of water actually abstracted.

The exception to this however is spray irrigation, where abstractors have the option to enter into a two-part tariff agreement where they pay a basic charge of 50 per cent of the authorised volume and supplementary charge of 50 per cent for the volume actually abstracted.

Although irrigation is the most significant use of water in the agriculture sector, it only accounts for 1% of total abstraction. Nonetheless, this tends to be heavily concentrated in the relatively dry Anglian region in summer with potential detrimental effects on the local habitats and biodiversity.

Energy

The effects of energy subsidies on biodiversity vary depending on the type of energy source subsidised. Subsidies to fossil fuels are of particular concern. Fossil fuel subsidies lead to increased noxious and GHG emissions while extraction of some fuels creates a huge ecological footprint. They act as a disincentive to use alternative technologies or

[3] Defra (2009): The Independent Review of Charging for Household Water and Sewerage Services See: http://www.defra.gov.uk/publications/files/walker-review-final-report.pdf

introduce efficiency measures and can thus lead to technological 'lock-in' (whereby we are 'locked into' the use of inefficient technologies given the incentives and technological and systems inter-dependencies).

Energy subsidies for producers usually come in the form of direct payments and tax breaks or as support for research and development. The reform of fuel subsidies can significantly reduce GHG emissions (from both developing and developed countries) and air pollution and therefore have indirect positive effects on biodiversity (OECD 2012).

Box 5: Fossil fuel subsidies in the UK

In the UK, the fossil fuel industry is largely subsidised through the Export Credit Guarantee Department (ECGD), who provides insurance and bank-loan guarantees to British firms exporting technologies and services overseas (for instance by providing government assistance to UK companies involved in oil drilling abroad). It has been estimated that subsidies in this form have amounted to £750 billion of support given to fossil-fuel power stations since 1996. Tax breaks are also provided to the fossil fuel industry, including, for instance, incentives for deep-water oil drilling off the coast of Scotland.

Subsidies are also used to encourage the development and use of renewable energy sources to fight global warming and achieve long-term energy security. However, these may have other negative impacts on biodiversity. For instance, hydroelectric dams can result in the loss of wildlife habitat and reduce biodiversity (McAllister 2001); the components used in solar cells are often hazardous to the environment (e.g. manufacture of solar cells requires the use of arsenic and cadmium) and have to be disposed of relatively frequently; solar thermal plants require cooling water which can have negative impacts where there water is in short supply; and wind farms and utility-scale solar power plants can have significant biodiversity impacts, especially if inappropriately located (UNEP 2005; Drewitt and Langston 2008). Subsidies to biofuels contributed to the rapid global expansion in biofuel production and use, with the aim of reducing the reliance on fossil fuels and curb GHG emissions. Recent analyses, however, revealed that large-scale biofuel expansion promoted by subsidies, targets and mandates will likely increase net GHG through direct and indirect land-use change (Gibbs 2008; Searchinger et al. 2008; Fargione et al. 2008).

However, renewable energy developments have the potential for fundamentally positive indirect impacts on biodiversity, by mitigating the impacts of climate change which have been shown to have detrimental impacts on species, habitats and entire ecosystems (TEEB 2011). Renewable energies (and energy efficiency) are two critically important aspects of meeting growing world energy demand and avoiding catastrophic climate change with associated risk of going beyond a range of critical ecological thresholds. The net biodiversity (and wider environmental) impacts therefore need to be carefully assessed and considered in decision-making on renewable energy development.

Box 6: Subsidies for renewable energy in the UK

Incentives for renewable energy development in the UK have been introduced through the form of the Renewables Obligation (RO) and various feed-in-tariffs (FITs). The RO requires British electricity suppliers to provide a proportion of their sales from renewable sources or to pay a penalty fee.

The costs of the subsidies tend to be recovered by companies increasing the price of energy bills of consumers. It was estimated for instance that in 2007, subsidies for renewables added £7 over a year to average household electricity bill. By 2008/09 this had increased to £13.50.

In 2010, Ofgem (the Office of the Gas and Electricity Market, UK) released a report which estimated that the subsidies for renewables in the UK during the 2008-09 period had totalled more than £1 billion. Since then steps have been taken to reduce the amount of subsidies provided to some renewables, specifically biomass, energy from waste and micro-generation. FITs have also been cut (e.g. for solar photovoltaic installations). Most recently, plans have been announced to cut

government subsidies to support wind power.

Transport

The transport sector is a major contributor to global greenhouse gas (GHG) emissions, local air pollution and noise emissions but still benefits from large subsidies.

Subsidies that allow fuel prices to be kept below production cost, for instance, increase vehicle use and travel, increasing transport-related emissions which have important direct and indirect impacts on ecosystems and biodiversity.

Other subsidies, such as direct grants for building road infrastructure can lead to land use change which can threaten biodiversity, for instance where encroachment destroys habitats and affects the viability of ecosystems and species populations. Road building creates physical barriers to wildlife movement and fragments previously continuous blocks of habitat into smaller areas that may be less able to support complex communities of plants and animals. Removing ecological 'corridors' may isolate members of a species genetically and geographically (Fahrig 2003; Crooks and Sanjayan 2006; Kettunen et al. 2007 for a European perspective). Because populations tend to decrease in smaller fragments of habitat, this will increasingly threaten species requiring large home ranges.

However, it should be noted that certain subsidies to some types of transport may be beneficial to the environment and, indirectly, to biodiversity (e.g. those to railways and public transport can reduce car use as well as emissions and local air pollution). It is therefore important to ascertain the real net impacts of transport subsidies when considering their reform.

4 Overview: a tool to assess subsidies harmful to biodiversity

4.1 What is the tool?

The methodology outlined in this document aims to provide a set of pragmatic/practical guidelines (a 'tool') for the analysis of subsidies that are harmful to biodiversity, and give methodological recommendations to policy makers in the UK (and beyond) on how to assess such subsidies with a view to reforming or phasing them out.

The tool outlined in this guidance document is characterised by:

- a four-phase approach, which builds on the OECD checklist (OECD, 2005) and the integrated assessment framework (OECD, 2007a), an integrated EHS tool developed by IEEP (Valsecchi et al, 2009) and the work on subsidies by the CBD Secretariat, IEEP and others within The Economics of Ecosystems and Biodiversity (TEEB, 2011);
- development of each phase into a step-by-step operational approach;
- provision of guidance within each step;
- the ability to employ the approach at different levels of detail depending on resources available.

4.2 Who is the tool for?

This document is intended to provide guidance to Defra and other UK government departments and devolved administrations interested in assessing and reforming subsidies that are damaging to biodiversity. Although this tool has been targeted and tested on UK subsidies, it is also meant to provide useful guidance to other policy makers, countries, institutions and stakeholders with an interest in the reform of subsidies harmful to biodiversity and the wider environment. The tool therefore seeks to provide a clear and accessible means to identify and assess perverse incentives, and enhance the understanding and accessibility of the reform process to policy makers.

It should be noted that the involvement of supportive stakeholders in civil society (e.g. progressive elements of industry, progressive business associations, trade unions, NGOs) and across governmental ministries and departments is crucial for a successful reform process. On the latter, a 'whole-of-government' approach is recommended. Indeed, as emphasised by the OECD (2007a), single governmental ministries or departments do not necessarily have the capacity, the convening power or the access to resources to effectively achieve subsidy reform by themselves. Therefore, co-operation and horizontal analysis between government ministries or departments is required, namely those whose mandates or policies come into contact with the subsidised sector(s) in question. Beginning the reform process with the intention of taking a whole-of-government approach, and of considering policy coherence and the links between institutional actors, is advised in order for the analysis to follow a sustainable development path.

Furthermore, ideally a successful process of subsidy analysis and reform should be characterised by openness, transparency and participation by a wide range of stakeholders (OECD, 2008). In general, the stakeholder groups which should be called into the process include relevant agencies, politicians and civil servants, as well as business, trade unions, academia and non-governmental organisations (NGOs). The composition and representation of these stakeholder groups should be decided in advance.

Overall, it should be noted that the availability of financial and human resources will significantly influence the level and depth of the subsidy assessment. The three case studies presented in this guidance document for instance were developed with only limited

time and resources available, and therefore are to be considered a simple preliminary analysis. Ideally, more in depth assessment should be undertaken to fully ascertain the feasibility and implications of subsidy reform.

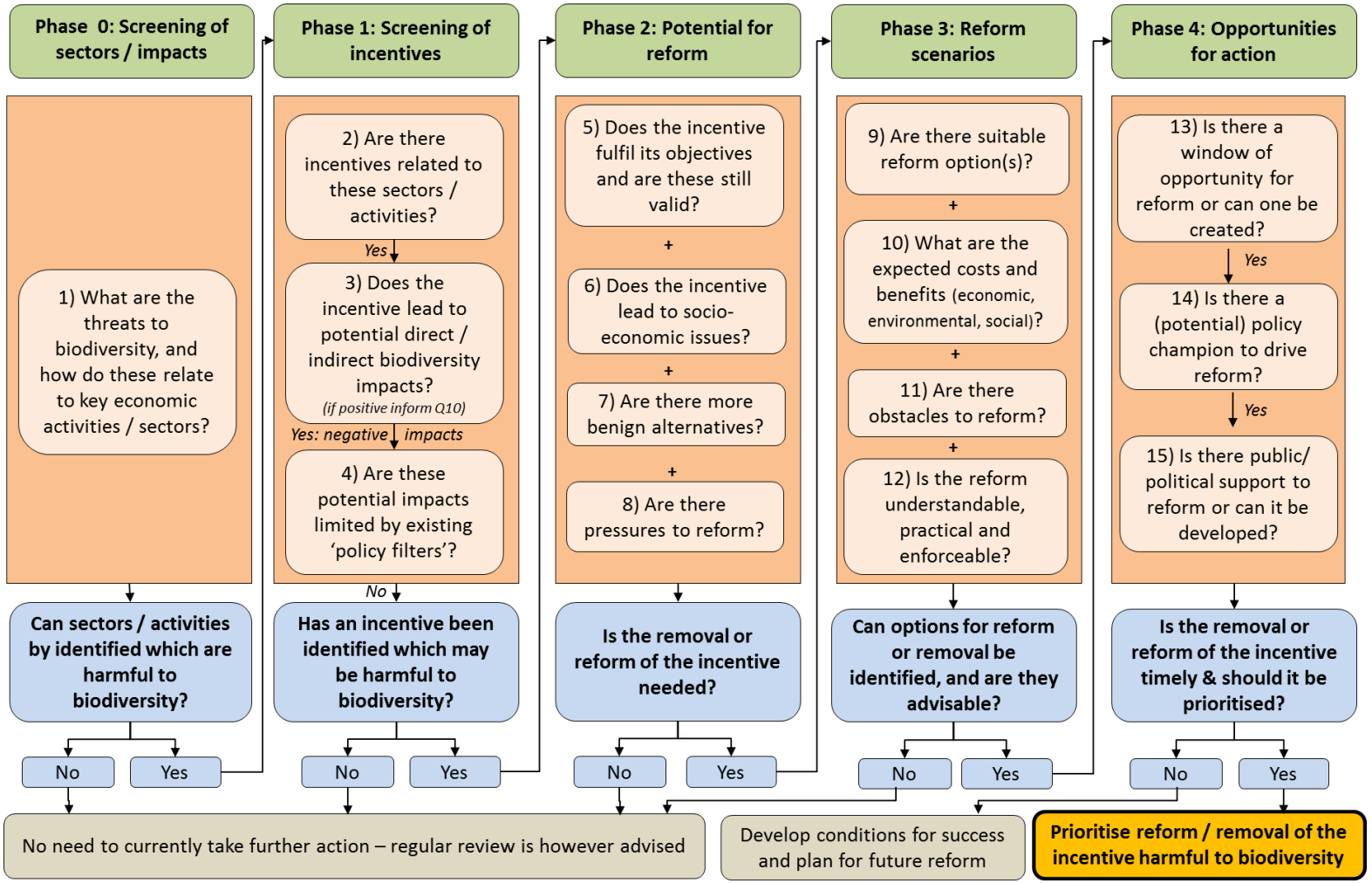
In general, it is important to know what resources are available for an initial prioritisation analysis and for a more in depth assessment and to be realistic about what can be achieved based on these.

4.3 Overview: how to use the tool?

The first step for using the tool (Phase 0), involves identifying what threats are posed to biodiversity, and how these are linked to key economic activities and sectors. This will then allow the analyst to identify potential subsidies or incentives within these sectors which are promoting various activities which may be causing harm. The next four phases of the 'Biodiversity Harmful Incentives Reform Tool' then aim to identify whether these subsidies need to be reformed or phased out, and what options may be available to do so:

1. **Screening of subsidies**: This screening phase serves to identify those incentives that have clear potential to harm biodiversity and are politically more viable for reform.
2. **Assessment of the need for reform**: The objective of this phase is to assess whether the subsidy reform/removal is likely to bring significant environmental benefits. If so, the assessment should be carried forward, looking at the trade-offs with social and economic impacts explored in the next phase.
3. **Analysis of reform options:** Here, concrete policy reform options for BHIs are developed. This phase should help to prepare the political decision making for the reform/removal of biodiversity harmful subsidies, and should help to identify whether reform is advisable and/or likely to be successful.
4. **Identification of opportunities for action:** The objective of this phase is to identify whether there are practical windows of opportunities, champions who could make the reform happen and due public and political support to enable progress. This would help in the timing and prioritisation of reform actions.

Flowchart: the subsidy reform tool



4.4 Using a traffic light system to operationalise the tool

A traffic light system can help visualise the overall outcome of each phase and the associated steps and questions.

For phase 0 (*Screening of sectors and impacts*), a red light means "stop and look at the issue".

For phase 1 (*Screening of subsidies*), a red light means the incentives are causing (potential) harm to biodiversity and the policy maker should assess in detail the needs for reform.

For phase 2 (*Assessment of the need for reform*), a red light means that there is a serious issue with the incentive and that policy maker should stop and explore reform options.

For phases 3 and 4, the green traffic lights are indicators of the need and potential to move forward with reform. Hence in contrast to previous phases (0,1 &2), where the focus of the traffic lights were on the harmfulness of/issues with the subsidy, in phases 3 and 4 the focus of the traffic lights is on the reform of the incentives. To put at its most simple and intuitive: first "*stop there's a problem that needs our attention*", then "*there's a green light to go for developing priority reform options and engaging reform initiatives*".

For Phase 3 *(Analysis of reform options)* **-** a green light means that there are suitable reform options for incentive removal.

For phase 4 *(Identification of opportunities for (immediate) action)*, a green light means that not only is there real potential for action, but that there are conditions in place to prioritise action and go ahead with reform initiative.

See the table below for summary to help clarify how the traffic lights are operationalised within the tool, reflecting the difference in the use of traffic lights in the phases 0-2 and 3-4. A more detailed guidance is also provided question by question in subsequent sections.

Phases 0,1,2 **Deciding whether there is a problem**		No major cause for concern; no need to further assess the incentives at this point in time
		There are some issues, worth double checking
		Is it necessary to "stop and think" and assess the incentive's impacts on biodiversity and whether the incentive potentially merits reform or removal.
Phases 3,4 **Deciding whether to progress with reform**		Real potential for action: prioritise and go ahead with reform initiative
		Check the best options, their merits and practical possibilities for reform; see whether existing obstacles can be overcome
		'Wait' – e.g. where obstacles are too large for immediate action and support currently not big enough to overcome obstacles. Here, better to actively plan and develop due opportunities for action than either do nothing or attempt a reform that is likely to fail and use up political capital for reform.

5 Phase 0: Screening of sectors and impacts

This phase aims to identify the main threats to biodiversity, and how these are linked to various sectors or economic activities to identify the areas where subsidies / incentives may be in place which are potentially harmful to biodiversity.

5.1 Introduction

This screening phase serves to identify the main threats to biodiversity in the country in question, especially in terms of key economic activities or sectors. This is stage is meant as a scoping exercise to identify the areas where BHIs may be in place. The aim is to have a problem orientated approach – i.e. identifying where there are risks/problems and then assess the role of incentives.

This scoping phase is intended to be short, not time consuming, based on readily available information, and to be largely qualitative.

The individual steps to be addressed are summarised in the box below.

Summary of the step involved:

1) What are the threats to biodiversity, and how do these relate to key economic activities and sectors?

5.2 The step in detail

Step 1: What are the threats to biodiversity, and how do these relate to key economic activities and sectors?

The first step of the analysis is to identify whether there is harm to biodiversity (e.g. eutrophication, fragmentation, or other threats to habitats or species) or potential significant risk, and, if so, whether this can be attributed to a given sector(s) or economic activity (e.g. agriculture, energy production and distribution, transport etc.). Once the threat/pressure/damage is detected, it is possible to explore whether the sector/economic activity causing it is supported by any subsidy – see step 2 in Phase 1.

Key issues to be explored under this step are therefore:

- What are the key threats to biodiversity that we are interested to address?
- What are the economic activities/sectors causing or exacerbating them?

Various sources of evidence can be used for this assessment, such as The Economics of Ecosystems and Biodiversity (TEEB), and national assessments. For instance in the UK, the 2011 National Ecosystem Assessment (UK NEA, 2011) provides detailed analysis of the threats and pressures on different UK ecosystems.

This step should therefore draw, and be based, on existing evidence. However, any absence of evidence should not necessarily be taken as an indication that there is no impact on biodiversity. If no evidence is identified, regular review is therefore recommended of any potential impacts to capture any changes to the knowledge base. Moreover, if the analyst feels it is necessary, there may also be scope for recommending or pursuing further research if it is felt that that the existing evidence may be missing potentially important (e.g. more indirect) impacts on biodiversity.

A brief overview of potential biodiversity impacts caused by subsidies from various key economic sectors is provided above in Section 3.2. This overview draws on international evidence about the effects of subsidies on biodiversity, while also making reference to UK examples, and should therefore provide a good starting point for identifying areas which pose threats to biodiversity and which may rely on subsidies / incentives which could be harmful to biodiversity.

5.3 Using a traffic light system

The table below can be used to show the overall score where the green light indicates a positive outcome (for biodiversity/subsidy suitability) and red a negative one – in other words there is a threat to biodiversity that needs attention and the analyst should explore this further and proceed to the next stage of the tool.

Only one option should be chosen (the others should be deleted as applicable).

	Select one of the three options (delete others)	
1) Is there a threat to biodiversity?		No
		Yes, although relatively small
		Yes, significant threat that needs attention

6 Phase 1: Screening of perverse incentives

This phase aims to identify those incentives that are likely to have *significant* impacts on biodiversity and that therefore need to be prioritised for reform.

6.1 Introduction

This screening phase serves to identify those perverse incentives that have clear impacts on biodiversity harm and are politically more viable for reform.

All potential BHIs have to be considered: not only the explicit and obvious perverse incentives, but also the implicit hidden subsidies (e.g. tax exemptions in the energy sector). All incentives should be assessed in relation to their potential negative environmental impact at regular intervals, in order to make sure that changing framework conditions and political objectives are part of efficient and effective governmental public spending (UBA, 2009).

It is important to bear in mind that the screening phase is intended to be short, not time consuming, based on readily available information, and to be largely qualitative.

The individual steps to be addressed are summarised in the box below.

Summary of the steps involved:

2) Is there an incentive / subsidy?
3) Does the incentive lead to potential significant negative impact on biodiversity?
4) Are these potential biodiversity impacts limited by existing 'policy filters'?

6.2 The steps in detail

Step 2: Is there a subsidy / perverse incentive?

In this step, the analyst will need to establish whether there is a perverse incentive. In practice, whether or not a particular policy (measure/instrument) should be considered a subsidy is not always self-evident. The definition of the counterfactual (the baseline, or the 'world-without-subsidy') is a crucial element in this respect.

The choice of the counterfactual includes a number of elements, including considerations of distributional equity and interpretations of policy principles such as the 'polluter pays' principle. It is impossible to provide 'objective' guidance on this choice. However, transparency can be postulated as a basic requirement. This means that the analyst should explicitly describe the counterfactual situation/scenario that has been used. Clearly, arguments supporting the choices may make them more convincing and increase acceptance. 'Objective' benchmarks, such as EU state aid guidelines and standard tax rates may be helpful in defining counterfactuals. Measures that have been taken to mitigate or compensate certain unwanted effects of the subsidy will probably not be part of the counterfactual. Some examples are provided in Box 7 below.

Box 7: Counterfactual: influence of policy objectives on the selection and definition of perverse incentives considered for removal

In the case of water, the issue is often how to optimally price water as a common pool reserve. Such an optimal price not only depends on the relative abundance of the common pool, but also on societal preferences with respect to preserving the reserve for future generations. This benchmark determines whether actual prices are deemed as being too low or too high and thus gives rise to what has to be defined as a 'subsidy' (the deviation from the 'optimal' price). A number of policy

measures may lead to deviations from this 'optimal price'. Ideally all of them would be analysed.

In the case of energy, the main concern seems to be increasing the efficiency of energy production and use, taking externalities into account. Since important externalities (e.g. SOx, NOx, CO2 and other emissions or (nuclear) waste) are, as yet, seldom fully internalised into energy prices. Sectoral energy policies, aimed at efficient energy policies may involve sizeable government interventions in energy prices. Again, it is the deviations from the optimal price structure that constitute the 'subsidy'. Remedying these deviations will generally include policy packages that affect the relative prices of the various types of energy production and use rather than singular measures that stimulate or penalise one type of energy production or use.

Source: OECD, 2005.

Once a perverse incentive has been identified, some key characteristics of the incentive should be described. This will help clarify the design of the incentive, which is crucial to fully appreciate its impacts, scale and potential for reform. Information on the following issues should be collected:

- **What is the size of the incentive?** Where available provide quantitative figures or estimates, ideally noting not just a snap shot of current levels (e.g. in £/m3 for water, £/kWh for electricity), but also a time profile and, where affecting prices, also the scale of the subsidy relative to non-subsidised alternative(s) (e.g. 20% of cost). Alternatively provide a qualitative description of the dimensions of the subsidy. The larger the size of the incentive the larger the impact on marginal costs and revenues of the subsidised sector and hence on production and consumption patterns.
- **What is the point of impact of the incentive (its 'conditionality')?** Depending on its conditionality on different stages/factors of production or consumption, an incentive has different impact on revenues and costs, and may lead to different responses from producers and consumers, in terms of the modes of production, production or consumption levels. It is therefore important to identify the point of impact (conditionality) of the incentive: Is it a support conditional on the income and profits of the recipient sector? Is it a support conditional on the purchase of a product or the use of a production process (i.e. conditional on output)? Or is it a support conditional on the use of an input or technology (i.e. conditional on input)?
- **What is the duration of the incentive?** Incentives that have been in place for a long time are much more likely to have created a technological 'lock-in' and hinder structural change within the sector. This has an impact on economic efficiency and on the environment. Moreover, technological lock-in can reduce the effectiveness of environmental policies, which often rely on technological solutions for a better resource use. Note the starting point, key moments of reform (including formal reform milestones), and expected lifetime of the incentive; note an end date if there is one.
- **Does the subsidy provide for long term structural impacts?** Examples of incentives with long term impacts include those for capital investments with a long life-span, for example energy producing machinery, power plant (e.g. 40 year life time) and infrastructure (100 year lifetime+). These decisions can have large environmental effects, but whether they are detrimental or beneficial to the environment depends partly on the alternatives that may come to the market after the subsidy has been granted. Such incentives may lock in technologies that are not so 'clean' after all (OECD, 2005).

Box 8: Description of perverse incentives – some examples from the EU and the UK

Examples of incentives harmful to biodiversity -

There are a wide range of types of incentives potentially harmful to biodiversity. Below are a range of different economy types of subsidies and examples for sectors and countries to underline the

diversity of the incentive landscape. The case examples developed within this study are presented in more detail in the latter part of this box.

Direct and potential transfer of funds: Subsidies for vessel scrapping (All MS) and subsidies to improve forestry on peat lands (FI) and investment subsidies for waste incineration plants (Pl - about € 1.1 billion (2007-2013; 66% of Poland's Cohesion Fund budget for environment))

Income or price support: Coupled supports under the CAP Single Payment Scheme (FR, PT, ES) Previous CAP up to 2003 – agriculture products price supports (all MS)

Foregone government revenues: e.g. Reduced VAT rate for agricultural inputs (DE, ES, FR, NL, SI) and Exemption from water pollution taxes/charges (NL)

Provision of infrastructure: e.g, Free access to irrigation networks (EL) and subsidies for households to drill boreholes on private property (CY)

Preferential treatment: Renewables Obligation (UK, BE)

*Lack of full cost pricing***:** e.g. Nitrogen run off, eutrophication and dead zones (most EU Member States)

From the case studies

- *The water abstraction regime*: The current water abstraction system was put in place in the 1960s, and was designed to manage competing human demands for water rather than to protect the environment. It under-prices water in that the prices charged for abstraction do not reflect the full value of water either but rather the cost of managing the licensing system. The system therefore permits excessive levels of abstraction in some catchments. This has adverse effects on biodiversity and is considered to be unsustainable in the long run, particularly given predicted changes in climate.
- *Wind energy development:* Wind energy in the UK is subsidised mainly through the Renewables Obligation. This requires British electricity suppliers to provide a proportion of their sales from renewable sources (including wind energy) or pay a penalty fee. Small wind energy projects (specifically those with a capacity of up to 5MW) are also supported through a Feed in Tariff (FIT), which guarantees payments for electricity generated from small scale renewable electricity systems (linking a return on investment of between 5-8 per cent).
- *Eligibility criteria for CAP Direct Payments*: Under the SPS the eligible hectare has to be used predominantly for agricultural activities, even if non-agricultural activities (for example management for nature conservation) take place, and keeping the land in Good Agricultural and Environmental Condition (GAEC) is understood as an eligible agricultural activity if other agricultural activities have ceased . Particular problems in semi-natural habitats have been caused by differences in interpretation of the current definition of eligible area/parcel; there continue to be grey areas, where the potential ineligibility of certain semi-natural habitats or features has led to farmers erring on the side of caution and removing them in some instances to avoid the risk of payments being withheld or clawed back at a later date.

Step 3: Does the incentive lead to the (potential) significant negative (direct/indirect) impact on biodiversity?

This is a key step of the analysis. In order to understand whether an incentive should be phased out or reformed on environmental/biodiversity grounds, it is crucial to determine the significance of the impacts it exerts on biodiversity (and, arguably, on the wider environment), taking into account effects related to pollution and resource over-use. Under Step 1 the threat to biodiversity was assessed; this step is about assessing whether and to what extent the incentive/subsidy contributes to this threat or impact – i.e. is it influencing activity in the sector in a way that increases the threat or pressure?

The nature and extent of the biodiversity impacts should be described, on the basis of qualitative as well as, if possible, quantitative information available from the literature and/or from experts. Some examples of impacts are provided in the Box below. Issues to explore include:

- **Does the incentive have a direct impact on biodiversity?** This includes impacts on habitats and species (e.g. eutrophication, species disappearance etc.), impacts on

ecosystem services (e.g. issues related to water regulation, carbon capture, fish stock etc.).

- **Does the incentive have also other wider impacts on the environment? Do these wider impacts also have indirect impacts on biodiversity?** For example, if the incentive leads to the inefficient use of specific inputs or materials (e.g. energy, water or raw materials) or to technologies that lock-in the use of particularly harmful inputs, thereby stifling technological development, its removal is likely to provide large benefits for the environment. This should be described in some detail, in order to provide a general yet exhaustive overall view of the key impacts. [Some of the wider impacts will of course also lead to subsequent impacts on biodiversity and hence also be 'indirect impacts'].

To complement the analysis, the following additional questions can be addressed briefly (i.e. with a simple positive/negative answer or a brief description where relevant).

- Is there a large change in biodiversity/ecosystems conditions due to the production/consumption patterns of the economic activity?
- Do the effects extend over a large area?
- Do the effects have implications at local, national, European or global level?
- Is there any trans-frontier impact?
- Are many people affected? (also relevant for the socio-economic section)
- Does it lead to significant or potentially excessive resource use, including valuable or scarce biodiversity features or resources?
- Are environmental/biodiversity standards breached?
- Are high biodiversity value sites, protected areas or features affected?
- Is there a high probability of the above effects occurring?
- Will the effect continue for a long time?
- Will the effect be permanent rather than temporary?
- Will the impact be continuous rather than intermittent?
- If it is intermittent will it be frequent rather than rare?
- Will the impact be irreversible?
- Will it be difficult to avoid, reduce, repair or compensate for the effect?

Box 9: Description of environmental/biodiversity impacts – some examples

General cases

Subsidies encouraging biofuels cultivation can have significant impacts on biodiversity and the environment in general. Most strikingly, there is a potential risk that a biofuels target could actually lead to a net increase in GHG emissions (Gallagher Review of the RTFO, 2008) rather than help reduce emissions as per its stated objectives. This is mainly due to the fact that the subsidies are given independently of the environmental performance of the biofuels supported, without due consideration for the full life cycle; most of the biofuels targets are volume rather than GHG savings based. Without careful design, biofuels subsidies can lead to them both not achieving their objectives, and to them having significant detrimental effects on biodiversity levels, ecosystem services provision and food security. (Valsecchi et al., 2009)

A more often cited example of a highly environmentally harmful subsidy is that of coal subsidies in many EU countries that led to higher levels of coal production and consumption, leading to increased GHGs emissions as well as other environmental impacts such as waste arisings, air pollution, salinated waters, with a range of direct and indirect effects on ecosystems. See more details of the subsidies (and their reforms) in Germany, Poland and the UK in IEEP et al. (2007).

From the case studies

- *Water abstraction regime*: The subsidy has a direct influence on biodiversity by influencing the condition of aquatic habitats on which flora and fauna depend. River flows are a critical factor for

the creation and maintenance of river and floodplain morphology, and associated biodiversity and ecosystem services. Artificially low flow regimes caused by over-abstraction have had a damaging impact on some fish, invertebrates, plant populations as well as river morphology.

- *Wind energy development*: Wind energy developments have the potential to negatively impact on biodiversity, and the wider environment, depending on their location and other characteristics. The construction of the turbine base, and other associated works (e.g. access tracks) can result in the loss of, or damage to, valuable habitats. Longer-distance impacts can also result if, for instance, work alters the ecological features of an area (e.g. alterations to the hydrology of an area, access roads creating barriers to species' corridors). There is also the risk of collision, displacement or disturbance in the case of altered flight paths for both birds and bats.
- *Elibigibility criteria for CAP Direct Payments*: Biodiversity can be negatively affected where features or habitats are removed. In Scotland, for instance, farmers removed semi-natural vegetation on their own initiative, in anticipation of risks of penalisation.

Step 4: Are these potential biodiversity impacts limited by existing 'policy filters'?

Incentives do not operate in isolation, but are often rather provided as part of a wider sectoral policy package, aimed for example at maintaining production or employment levels, or redressing market failures. It is therefore important to consider whether there are other policies or measures in place that might mitigate (or worsen) the impact of the incentive in such policy package.

The following issues should therefore be explored:

- **Are there 'policy' filters that mitigate the environmental effects of a perverse incentive?** The existence of environmental or other policies that are in place (e.g. planning restrictions, emission standards, fixed tradable quota, regulatory standards, production limits, caps on total emissions etc.) which mitigate or remove or avoid the effects of a subsidy on the environment need to be investigated. If these policies are effective, the removal of the incentive may bring no or little benefit to biodiversity. It is therefore essential to consider an entire 'policy package' rather than an individual subsidy, and to compare it with the 'counterfactual' policy package (or baseline situation – see step 1 for discussion on the counterfactual). The mitigating policies (also known as 'policy filters') may have been introduced as complementary instruments, specifically intended to mitigate the subsidy's environmental/biodiversity impact, but this is not necessarily the case. They may either act as a constraint on the level or volume of the biodiversity harmful activity, or as a constraint on the emissions or environmental damage of that activity. In cases where impacts on biodiversity are potentially mitigated by regulation or policy filters, it is however, also necessary to ensure that these regulatory safeguards are effective and efficient in preventing any adverse impacts in practice. Any unintended consequences of these regulatory measures should also be considered. Therefore, this step should explicitly assess whether these filters are working. Regular reviews of the policy filters should also be conducted, wherever possible, to ensure they are continuing to deliver the expected results and/or safeguards such that the potential negative impacts on biodiversity continue to be avoided.

- **What other incentives / subsidies are provided to the sector/economic activity?** A subsidy to a sector is often provided in combination with other subsidies. It is important to assess how such various incentives interact. A classic case is a subsidy to reduce capacity in a potentially environmentally/biodiversity harmful industry (e.g. to fishing). In isolation, and if the subsidy is a 'one-off' action, its impacts on biodiversity may be limited and indeed positive if it reduced pressure on the fish stock. However, if and where subsidies for capacity reduction are provided as an on-going policy, they could lead to increased capital stock and hence pressure on biodiversity, or at best be a waste of money, if and where the industry factors in the subsidy when it invests, facilitating a move to a increased capacity fleet. Furthermore, when combined for example with a subsidy for new vessel construction, or 'modernization', it would lower the cost of fishing,

accelerate further the fishing capacity "upgrade", and lead to increased fishing pressure and likely damage to biodiversity. At first sight the subsidy (removing capacity) may look attractive, but the result, especially if combined with other inter-linked incentives, may be harmful to biodiversity and wasteful as regards public finances. Furthermore, when a subsidy is analysed in its wider context, it can therefore become apparent that removing that particular subsidy would have substantial effects on the biodiversity impacts of that activity only if other subsidies were also reformed.

- **Does the taxation regime counterbalance the impacts of a subsidy?** In some cases incentives are provided as part of a policy package including taxes. Taxes can counterbalance the impact of a subsidy as they impact on the marginal costs or revenues of an activity (e.g. high excise duties on fuels could counterbalance the existence of low fuel VAT rates, or vice versa). As reported in OECD (2005), for example, the same level of fuel excise duties applied at the EU level have different impacts on haulage companies depending on the taxation regime applied in different countries.

Box 10: Possible policy filters – some examples

Fuel tax

Policy filters identified on fuel tax differentiation include: fuel-quality standards; technology requirements; and efficiency standards and emission standards for vehicles.

Reduced VAT for domestic energy

Policy filters on reduced VAT for domestic energy use include: the emission trading system (ETS); policies aimed at reducing residential energy demand; improving energy efficiency; and stimulating the use of renewable energy.

Irrigation subsidies in Spain

Policy filters on irrigation subsidies include: a Water Management Regime (Water Abstraction Plan); the subsidisation of drip irrigation technologies; provision of finance to modernization projects; and the cross-compliance policy of the CAP.

In all these examples the policy filters in place were not adequately mitigating or removing the negative effects of the subsidy on the environment.

Source: Valsecchi et al, 2009

Planning controls

Subsidies for renewable energy and other forms of development potentially harmful to biodiversity are of less concern if the planning system is sufficiently restrictive as to prevent damage to sites of biodiversity value.

In the UK for instance, planning controls are in place which identify, consider and enable the potential impacts on biodiversity arising from the development of wind farms to be addressed. The assessment process includes consideration of potential environmental impacts as a result of any proposed development and also includes provision for mitigation or compensatory measures to be imposed. An assessment is undertaken in the form of either Strategic Environmental Assessment (SEA) and / or an Environmental Impact Assessment (EIA). Both of these assessments consider the potential impacts on biodiversity. The case study on incentives for wind energy developments therefore determined that proper implementation of these planning controls should avoid damage to biodiversity and therefore, in theory, remove the need for action with respect to the subsidy itself.

Regulatory powers – Water abstraction

In the case of the water abstraction regime in the UK, Mechanisms are in place for changing abstraction licenses in order to reduce the volumes licensed for abstraction. There is also a requirement for compensation for any losses caused, and a facility for the Environment Agency to revoke and amend abstraction licences causing serious environmental damage without compensation coming into place in 2012. However, it has proved time consuming and costly for the Environment Agency to exercise their powers, indicating that the current policy filters are inefficient at addressing the environmental impacts arising from over-abstraction

Guidance documents – Eligibility criteria for CAP Direct Payments

Damage can be driven by the uncertainty surrounding whether penalties will arise if areas are claimed on and are subsequently deemed ineligible as a result of enforcement or audit, given the fact that there is often some margin of error in calculating 'ineligible' and 'eligible' areas. Detailed guidance documents on what is eligible and not eligible have been provided in all UK regions. These are updated regularly and are meant to provide a greater degree of certainty. <Insert text using TableText style>

6.3 Summary assessment

A traffic light system can help visualise the overall outcome of the three steps, and identify whether the incentive is harmful to biodiversity and the wider environment.

The table below can be used to show the overall score - generally, green indicating a positive outcome (for biodiversity/subsidy suitability) and red a negative one – in other words "there is a problem/issue and hence worth considering whether the incentive should be the focus of reform attention". Only one option per question should be chosen (the others should be deleted as applicable).

	Select one of the three options (delete others)	
2) Is there a subsidy / perverse incentive?		No
		Yes, although relatively small
		Yes, substantial subsidy
3) Does the incentive lead to a potential significant negative impact on biodiversity?		No or very limited impact *(if a positive impact incorporate when considering reform options)*
		Some potential impacts
		Significant potential impacts
4) Do existing 'policy filters' avoid/mitigate its impacts?		Yes, so the overall impact is limited or very limited
		Some mitigation, but not sufficient to fully offset the subsidy impact(s)
		No or ineffective policy filters
Therefore: Is there an incentive that is harmful for biodiversity?		No
		Yes although limited effect
		Yes

The overall conclusion as to whether there is an incentive that is harmful to biodiversity will depend on the combination of factors. Note that a small subsidy (i.e. orange light under Q2) can lead to a big impact (as seen by subsidies supporting fisheries bottom trawling in the past).

7 Phase 2: Potential need for reform

This phase aims to better understand whether a perverse incentive needs reform (or removal) and how this can be justified. This then creates the basis for committing to identify and assessing reform options (the subsequent Phase 3).

7.1 Introduction

The outcome of this phase will be an understanding of whether subsidy *reform or removal* is likely to bring benefits to the environment and hence merit being considered for BHI reform.

The individual steps to be addressed are summarised in the box below.

Summary of the steps involved:

5) Does the incentive fulfil its objectives and are these objectives still relevant?
6) Does the incentive lead to any social and/or economic issue?
7) Are there more biodiversity benign alternatives hindered by the incentive?
8) Are there calls / pressures for the incentive to be reformed/removed?

7.2 The steps in detail

Step 5: Does the incentive fulfil its objectives (social, economic or environmental) and are they still relevant?

It is important to understand the original objectives of an incentive, whether they are achieved or not and whether they are still valid. Timescale can be an important aspect of an objective – policy makers may be seeking a particular effect for a specific period, e.g. during a time of economic adjustment or transition. However, many subsidies have no time limit. Hence, there are incentives which are given even though the economic or political target has already been achieved or it has been confirmed that the target is actually not achievable. A good example is the tax exemption on agricultural machines (tax exemption from motor vehicle tax) in Germany. This exemption was introduced in 1922 with the goal of motorising the agricultural sector. This goal is long achieved but the instrument still exists.

Issues to explore in this step of the analysis include:

- **What are the objectives of the incentive?** The official objectives may be expressed in terms of environmental, economic or social outcomes or some combination of the three. They may be surmised from the legislative history or statements by officials if not clearly set out by the authorities. In some cases, where no written evidence is available, expert judgement may be required.
- **Who are the intended recipients of the incentive** (i.e. input producer, finished product producer/input consumer, or finished product consumer)**?** This point will help understand whether the incentive reaches the intended recipients or whether the incentive goes to non intended recipients (e.g. the OECD (1998) notes that support conditional on output and input levels tends to accrue primarily to the relatively large, and often more wealthy, input producers).
- **Are the incentive's objectives still justified in relation to the needs?** This refers to the validity of an incentive in relation to the objective being sought – i.e. in some cases an incentive may outlive its objectives (e.g. a subsidy may be introduced to support an economic sector in a period of crisis or high competitiveness, but remain in place even after the period of difficulty is overcome). In such cases reform may be needed.

  Has the incentive been in place for a long time and/or lacks an in-built review process? It is important to investigate the length of time an incentive has been in place,

as a measure that has been in place e.g. for a decade or two may risk to be outdated and/or not respond effectively to current economic/social/environmental conditions, as these may be different to those existing when the incentive was first introduced. It is useful also to check whether the incentive has a sunset clause (e.g. it is due to reform/removal by law) or an adaptive review process, which could de facto justify the need for review or removal.

Box 11: Subsidies objectives and their validity – some examples

General cases

In the case of aviation fuel tax exemption, it can be said that the objective (i.e. the promotion of the industry) is already outlived and there is no justification on economic or social reasons for a zero tax (Valsecchi et al., 2009). In effect, the tax exemption is de facto a subsidy to the fuel, its suppliers, producers and users. Given that aviation related GHG emissions are growing faster than in any other industry and that there is a high CO2 emissions per kilometre travelled, the tax exemption should be considered for reform (Valsecchi et al., 2009).

Denmark's 1989 Forest Act, accidentally led to a 'perverse incentive harmful to the environment'. The Act made it illegal to leave areas of potentially productive forest 'unproductive', which in turn incentivised deforestation in order to maintain the property rights over forested land. Changing this this provision was a key part of the reform of the perverse incentives and increase the forested area in Denmark. (SCBD 2011)

From the case studies

In the case of the water abstraction regime, the current system was designed in 1960 and aimed to manage competing demands for water. The original aims or objectives of the system, as it was designed, were not to protect the environment, although the system has been adapted over time to include mechanisms to protect the environment (the RSA programme). Although the use of water by abstractors is still justifiable, as is the need to manage competing human demands for water, the current system needs reform to more efficiently address the pressures on water resources as they increase due to climate change and increasing water demand due to population growth.

In the case of the eligibility criteria for CAP Direct Payments, the specification and validity of the objectives are less of an issue compared to their interpretation and implementation at the national level. It is the latter, rather than the former, that is causing potential damage to biodiversity and habitats.

Step 6: Does the incentive lead to any social and/or economic issue?

It is particularly important to highlight the economic and social relevance of the incentive and its potential socio-economic trade-offs, conflicts and controversial issues. Unpicking these elements will help in enhancing the success of the assessment and reform processes.

This step should briefly describe, in a qualitative form, the following:

- **What are the unintended economic impacts of the incentive?** (e.g. impacts on the prices of factors of production and intermediate inputs used by non-target industries, impacts on competitiveness of given sectors, threats to Small-Medium Enterprises (SMEs), trade distortions or barriers, etc.).
- **What are the unintended social impacts of the incentive?** (e.g. socially undesirable distributional/equity impacts on low-income consumers, health issues etc.).
- **Who are the winners and who are the losers?**

Furthermore, a criteria matrix can be used to set out the degree of expected economic and social impacts in a qualitative way. For each dimension, the expected impact (positive or negative) could be ranked according to its significance, for example assigning a score for negative impacts (--- high; -- medium; - low) and for positive impacts (+++ high; ++ medium; + low). Expert judgement can help to reach a decision about the likely significance of these impacts.

Indicator	Degree of expected impact
Economy	
▪ Income / employment	
▪ Productive capital	
▪ Competition / innovation	
▪ Market mechanisms	
Social	
▪ Health / security	
▪ Education, identity	
▪ Culture, values	
▪ Legal security, equality	
▪ Solidarity	

Source: Adapted from ARE, 2004

Box 12: Socio-economic issues related to subsidies – some examples

General cases

Reduced VAT for domestic energy creates an incentive for increased greenhouse gas emissions via incentives for increased energy consumption (energy use would be lower with standard VAT rates). In the UK, the lower VAT rate could be seen as a € 2.5 billion/year subsidy for electricity use and almost € 2 billion/year for natural gas use, estimated to cause around 7.5 Mt of CO2 emissions per year (see IEEP et al. (2007)). Looking at the finances and the GHG emissions would lead to a substantial rationale for subsidy reform. However, this subsidy has also a substantial social rationale – as gas and electricity is thought to fulfil 'basic needs' and therefore the removal of the subsidy can be questioned on social grounds. A closer look at the 'social objectives' of the subsidy, including a consideration of who the beneficiaries are, shows that the subsidy is not specifically targeted at low-income households and therefore its efficiency can be questioned. It is a 'blunt' instrument and may not be offering value for money and hence merit assessment as to whether a more targeted subsidy could respond better to social objectives while reducing environmental harm and reducing the burden on the public purse (Valsecchi et al., 2009).

Another similar case can be observed in the instance of reduced VAT for drinking water. This is in place in numerous countries of the EU, including the UK where there is a zero VAT rate. This subsidy is thought to have significant environmental impacts due to higher levels of water consumption. However, as in the previous case, this subsidy is mainly justified on the basis that drinking water is one of the 'basic needs'. Nonetheless, again, the subsidy is not primarily targeted at low income households and hence its efficiency can be also questioned. (Valsecchi et al., 2009).

Several Member states have commuter subsidies in place which often have a rationale to increase the access to job markets for people living in rural areas. The subsidies themselves mainly comprise of tax deductions for travelling expenses from the income taxes. However as this often includes travelling by car, this has the potential to increase fuel use, pollution / GHG emissions, with direct and indirect consequences for biodiversity. The reform of this subsidy is difficult mainly due to trade-offs between social and environmental considerations and opposition from commuters. (Nordic Council, 2011)

From the case studies

In the case of the eligibility criteria for CAP Direct Payments, land managers may be impacted upon if they were to forfeit their SPS payment for a proportion of their land if they claimed for areas that were subsequently deemed to be ineligible. The economic impact will vary on a farm to farm basis. In extreme cases, this has the potential to make the difference between a farm that is profitable or unprofitable and therefore could lead to farms being abandoned – with knock on environmental and social impacts (however, no examples that could be identified where this has in fact been the case).

In the case of the water abstraction regime, the characteristics of the system have led unintended economic impacts and market failures / distortion. For instance, the system creates a situation in which the true cost of water is not adequately reflected such that water abstraction charges are <4% of a customer's water and sewerage bill. Moreover, there is also little trade in licences which creates inefficiencies such that licences aren't allocated where the need is greatest (abstractors who do not need to take their full water allocation do not hand back or sell-on licences as their needs change).

Step 7: Are there more biodiversity benign alternatives hindered by the incentive?

This step aims to assess whether more environmental/biodiversity friendly alternatives are available compared to the activities/services/technologies which are subsidised / incentivised, and whether these are hindered by the existence of the incentive (i.e. by technological lock-in). The main concept behind this step is that if the technologies and products likely to replace the previously subsidised products and modes of production have lower impacts on biodiversity and the wider environment, the incentive's removal is likely to bring significant environmental benefits. It should be noted that this usually will require some judgement from the analyst (Pieters, 2003).

Questions to be addressed include:

- Are there alternative technologies, products, services or modes of productions that could replace those incentivised by the subsidy?
- How do the environmental/biodiversity impacts of these alternatives compare with those of the subsidised ones?
- Is the implementation of these alternatives hampered by the incentive under scrutiny (e.g. does the incentive leads to technology lock-ins)?
- What is the likelihood of these alternatives replacing the ones which were previously incentivised (e.g. are they sufficiently developed, are they easily available, is the market ready for new products/services/technologies, etc.)?

Box 13: More biodiversity benign alternatives - an example

The establishment of the Payment for Ecosystem Services (PES) programme between the Vittel company and farmers in France offers an example of a more benign alternative to the intensive agricultural practices which were the common practice beforehand (see also Box 16 and 19). As a result of this programme, the adoption of more extensive forms of agriculture accompanied by the payments to facilitate this transformation represents a more biodiversity-friendly alternative. (CBD, 2011)

Step 8: Are there calls/pressures for the incentive to be reformed/removed?

Finally, it is important to consider whether there are a range of enabling factors surrounding the incentive. The likelihood of success depends on the reform being practical and enforceable, and also on a range of enabling or hindering factors surrounding the subsidy. Stakeholder influence (e.g. lobby opposing reform) or public calls for reform can also affect the acceptability and public understanding of the need to reform. Note that a call for reform by the public (individuals, NGOs, press) can also be an important indicator of the need for reform (e.g. due to environmental harm or social injustice).

The analyst needs to consider:

- **Are there existing calls for the subsidy removal/reform?** And if so, can the reform be supported and potentially informed by members of civil society (e.g. NGOs, trade unions, industry associations, etc.).

Box 14: Pressures to reform – some examples

General cases

There is a considerable scope for reform of the aviation tax exemption (as already discussed in the Box 7); however there is a strong industry opposition to the reform. In addition, due to numerous bilateral fuel tax agreements, it is essential to have consistent approach through EU and neighbouring countries to avoid fleets refuelling in other countries. (Valsecchi et al., 2009)

From the case studies

In the case of the water abstraction regime there has been considerable pressure for reform, especially following the results of the 2008 Cave Review on competition and innovation in water markets in England and Wales. This led to a commitment being made in the 2011 Water White Paper to change the water abstraction regime by the mid to late 2020s and the commitments made in the corresponding 2011 HM Government Paper on Water for Life.

7.3 Summary assessment

Similarly as for the steps 1-4, a traffic light system can help visualise the overall outcome of the following steps 5-8 described above, and identify whether the subsidy is amenable to reform or removal.

Here the summary assessment is attempting to arrive at an answer to the question “Is there a problem such that the removal or reform of the incentive is needed?”, where a red light is “yes there is a problem and therefore reform action needs to be given further consideration”. In this case, the incentive is amendable to reform / removal because of various factors (e.g. the incentive no longer meets its objectives, there are significant additional economic or social issues arising from the subsidy, there are limited obstacles and sufficient political support).

An orange light indicates that reform / removal of the incentive should be approached with caution (e.g. where there are few alternatives which are better or they are not immediately available, or where there is little existing pressure to reform the incentive).

A green light indicates that there is no problem with the current situation and/or no opportunities for improvement (i.e. the incentive fulfils its objectives, helps offer important social benefits, there are no alternatives and no calls for reform).

Only one option per question should be chosen (the others should be deleted as applicable).

	Select one of the three options (delete others)	
5) Does the incentive fulfil its objectives and are these objectives still valid?		Yes, it fully fulfils objectives that are still valid and hence there are no specific argument suggesting reform.
		Partially
		No –either not fulfilling objectives; or fulfilling objectives that are no longer relevant.
6) Does the incentive lead to any social and/or economic issue?		No negative issues and/or positive impacts
		Some issues
		Significant negative issues that create a case for reform
7) Are there more biodiversity benign alternatives hindered by the incentive?		Alternatives do not exist and/or the subsidy do not hinder other options – in other words there are no reasons to stop and assess the incentive and eventual needs for reform
		Alternatives exists but not immediately available
		Other alternatives exist and are available to replace the subsidised option – in other words there are reasons to stop and consider policy change
8) Are there pressures for the incentive to be reformed/removed – suggesting a problem?		No pressures, suggesting that the subsidy is not perceived as an issue and policy can continue as usual
		Some pressures suggesting a need for reform
		There are significant pressures, suggesting that there may be a problem meriting attention (hence the red light)
Therefore: Is there a problem needing attention and should the incentive remain in place or be reformed/removed?		There is no problem and the subsidy can remain in place at this point in time.
		Reform is advisable, although it can be debatable and/or relatively not urgent
		There is a significant problem and reform options should be assessed with a view of identifying promising reform initiatives.

This phase therefore aims to better understand whether a perverse incentive needs reform (or removal) and present the arguments for committing to identify and assess the feasibility and benefits of different reform options under Phase 3.

8 Phase 3: Reform scenarios

Once it has been identified that reform or removal is needed, this phase should help clarify the reform options available and their implications.

This can help clarify which options should be on the BHI reform road map.

8.1 Introduction

This phase serves the aim of clarifying which options for reform or removal of the perverse incentive are viable, and what their consequences will be for biodiversity, as well as for the economy and society. One or more options could therefore be explored, including:

- Reform of the incentive's policy design:
  - with the sole alteration of the subsidy design (changes can be introduced to the subsidy amount, recipients, timeframe and conditionality); and
  - (also) with adoption of alternative measures/instruments.
- Elimination of the incentive:
  - outright elimination; and
  - phased elimination.

A thorough analysis of reform/removal options should aim to clearly assess and weigh the costs and benefits of each reform scenario, in order to choose the best outcome. This can be seen as a process equivalent to a policy impact assessment. Should resources not be sufficient for a full impact assessment, however, a less detailed and likely more qualitatively-oriented analysis should be undertaken in order to roughly compare different options and ensure that the chosen reform or removal option does not result in higher, rather than lower, impacts on biodiversity. Flanking measures should also be considered in order to mitigate possible detrimental effects on society (e.g. in terms of distributional impacts) or the economy (e.g. reduced competitiveness).

The individual steps to be addressed are summarised in the box below.

Summary of the steps involved:

9) Is there a suitable reform option (s) and what could it entail?
10) What could its expected costs and benefits be?
11) Are there obstacles to the incentive being reformed/removed?
12) Is the reform understandable, practical and enforceable?

8.2 The steps in detail

Step 9: Is there a suitable reform option (s) and what could it entail?

It is important to understand whether incentives are the best and most cost-effective instrument to tackle the issue at stake, whether there are preferable alternatives (e.g. regulatory instruments, quotas, taxes etc.), or whether it would be preferable to phase out the incentive completely (e.g. if its objectives are no more valid).

This step therefore should explore the following questions:

- What alternatives exist for meeting the incentive's objectives (if still valid)?
- Should the incentive's objective no longer be valid, could it be removed?

Note that this step helps set the stage for the analysis of the impacts of policy reform under step 11, i.e. it helps identifying those reform options that will have to be explored in more

detail. The number of policy options identified in this step, and the level of detail of each of them depends also on the resources available for the analysis. A thorough analysis will require the identification of a set of realistic policy options for detailed impact assessment. A simpler approach could aim instead to identify only one or two options, which can help providing (some) evidence on reform feasibility.

Box 16: Reform options – some examples

General case

The establishment of the Payments of Ecosystem Services between the Vittel company and farmers in France offers an interesting example for removing biodiversity harmful incentives. Increased intensification of the agricultural practices carried out in the area of Vittel's artesian spring was threatening to make the company's catchment no longer able to comply with the regulation of mineral water quality. As a result, Vittel has established a payment scheme which incentivised the use of less intensive farming practices, essentially leading to extensive dairy cattle ranching, which ensures the sufficient water quality for Vittel while at the same time gives farmers alternatives for their livelihoods. The comprehensive set of provisions of the incentive package included, long term contracts, subsidies to facilitate transition to more biodiversity-friendly practices or abolition of debt linked with land acquisition. (CBD, 2011)

From the case studies

In the case of the water abstraction regime in the UK, regulatory changes have already been introduced through the Water Act 2003 to improve the sustainability and efficiency of the current system, although some are yet to be introduced. More extensive changes are foreseen following commitments made in the 2011 Water White Paper, which committed to changing the water abstraction regime to one that is more resilient to the challenges of climate change and population growth and that better protects the environment. The Paper anticipates a new regime to be in place in the mid to late 2020s, with the consultation for reform to run over the next 2 to 3 years. It is hoped that the new system will better reflect the value of water, its relative scarcity and the value of ecosystem services to ensure that water ecosystems are protected. Licenses will be designed to vary the volume available for abstraction according to overall water availability. There is also no intention to fund compensation for any losses following a change to the license - this is legally justified since changes will be designed to protect the environment.

In the case of the eligibility criteria for CAP Direct Payments, greater clarity would need to be provided in the CAP regulation and technical guidance on eligibiltiy criteria at the EU level. Institutional capacity at all levels would also need to be improved to avoid misinterpretations that lead to environmentally damaging implementation in the future

Step 10: What could the expected costs and benefits of the reform options be?

Reform options may not simply have the effect of eliminating (or reducing) the cause of biodiversity damage. They can also lead to a range of additional environmental, social and economic costs, benefits and trade-offs that should be explored in order to compare options and select those with higher net benefits. Key issues to explore, for each reform option, are:

- **What are the environmental impacts and, more specifically, the related direct and indirect effects on biodiversity, associated with each scenario?** For further details on how to assess environmental impacts, see also guidance on step 3.
- **What are the economic impacts associated with each scenario?** These include effects on public accounts (e.g. in terms of fiscal revenues, GDP, etc) and on the economy (e.g. for the sector(s) affected by the subsidy, for winners and losers within the sector (including new entrants/future industry), for consumers/citizens, for competitiveness and innovation, etc.). In this regard, some consideration should be given to the trade impacts of subsidy reform. In particular, whether the incentive's removal/reform will have spill-over effects, (e.g. favour production overseas, relocation of polluting industry abroad and/or substitution of imported resources and products for domestic ones).

- **What are the social impacts associated with each scenario?** In particular, the analysis should focus on effects on income distribution, jobs, skills, availability of goods/services, health, etc., and on ethical impacts such as regard fairness of income, appropriateness of support and implications for future generations.

  Are flanking measures necessary? If potential economic, social and/or political impacts are identified, flanking measures should be made available. Mitigation or compensation mechanisms should be identified to diminish negative effects and maximise the overall positive impacts of policies. These can take the form of either dynamic support (i.e. measures that support the change in the present and sustain/enhance it in the future) or static support (i.e. compensation for 'losers'). The first should be favoured over the latter. See some examples of flanking measures in the box below.

Box 17: Compensatory measures

If it is decided that a support measure should be reformed or removed, compensation can be offered to those who would lose from the support reduction through mechanisms such as:

- temporary compensatory payments: compensatory payments, which are decoupled from output levels, can be paid on a temporary basis to ease the transition of the workers towards new employment opportunities, such as through job retraining schemes, or to restructure the industry so that it can compete successfully without the support;
- other adjustments: adjustments can be made to the existing social security, fiscal or other systems — depending on national policies and priorities — to counter any potentially inequitable effects of support removal. However, since these adjustments tend to be permanent rather than temporary, they are often not suitable for compensation that is intended to ease the economic hardship of previously supported workers over a transitional period.

Where required, these compensatory mechanisms can sometimes be funded through a partial recycling of the funds previously used to maintain the support.

Source: OECD, 1998

Methodological notes:

Quantitative estimates should be used whenever possible (even if only a rough order of magnitude quantitative estimates). Tools that assess financial and economic parameters in comparing costs and benefits (e.g. cost-benefit analysis, cost-effectiveness analysis) facilitate comparison between different alternatives. When such kind of analysis is not possible, qualitative tools such as multi-criteria analysis could be used, i.e. tools that allow joint consideration of criteria based on different measurement units (e.g. analytic hierarchy process, preference rankings, weighted sum etc.). Simpler qualitative description can also be helpful, should resources and/or data availability do not allow for more detailed analysis.

The analyst should address, where possible, not only the expected direct effects of each reform scenario, but also second-order effects (addressed according to their order of relevance). Also, consideration needs to be paid not only to the effects due to take place in the country where the subsidy is provided, but also to the ones expected in other countries, depending on the scale of the subsidy effects – for instance:

- whilst for water issues the relevant geographic scope might be neighbouring countries, in air pollution issues a much wider geographic range might be the reference;
- whilst for some goods (e.g. water services) the relevant market will constrain the assessment of economic impacts to a region, for others (e.g. energy products) the analysis will need to address a broader geographical scope.

When making these assessments, short-term, medium-term and long-term perspectives as well as effects on future generations should be taken into account when relevant. A broad time approach can be especially relevant when some benefits of the reform take a long time to arise, which is often the case as far as biodiversity impacts are concerned.

Box 18: Costs and benefits of reform options – some examples

General

The case of **coal subsidies** removal in the United Kingdom showed the difficulties of subsidy reform when accompanied by an economic recession. The reform itself started with privatisation in the late 1970s, followed by the subsidies removal in the mid-1980s. The negative impact the reform had on the coal-mining jobs and communities was further deepened by the economic recessions in the 1980s and early 1990s. To counteract the negative impact on coal-related jobs compensatory measures were introduced. In particular, where government aid focused on creating an enabling environment for alternative economic activities in mining areas there was some increased in support for the reform as well as fostering economic growth / avoiding further decline. As a result, around 60% of the jobs lost in the 1980s were replaced by non-coal jobs within the same area and the pace of development of non-coal jobs continued to accelerate. (Nordic Council, 2011; IEEP et al., 2007).

An example of a successful subsidy reform with a significant impact on biodiversity is the removal of subsidies for **wetland drainage** in Austria. The subsidies for the wetland drainage for agricultural purposes were removed, accompanied by additional incentives to promote conservation, including compensation to land-owners, restriction of hunter access or promoting sustainable harvest of area's reed. A combination of economic incentives, information dissemination and compensation led to a successful subsidy reform, which resulted in net gains for biodiversity and the ecosystems that benefit people. (CBD, 2011)

From the case studies

Given the limited resources, the case studies were only able to superficially consider the costs and benefits of reform.

In the case of the water abstraction regime, it was clear that reform might result in various potential cost, including for instance, to businesses and farmers if they would be required to change their productive processes were abstraction to be reduced or eliminated. The removal of the requirement for abstractors to be paid compensation for any losses if abstraction licences are amended or revoked could also have some economic impacts on businesses (after 2012, compensation will no longer be payable for licences without expiry dates where the abstraction may be causing environmental damage). However, compensation itself would also have potential consequences, in that that generating the required amount needed to pay abstractors compensation could increase the cost of water abstraction (e.g. an estimated £352 million for alterations to public water supply abstractions to ensure compliance with the Habitats Directive). More generally, if public water supply is reduced due to stricter requirements for abstraction, then these losses would need to be replaced by new supplies or reductions in water demand which could impact on prices for customers where the costs of measures taken to offset any loss in water supply has to be recuperated (e.g. from water users / consumers).

The case study on the eligibility of CAP Direct Payments was unable to identify any economic or social costs or benefits of note.

Step 11: Are there obstacles to the reform/removal of the incentive?

It is important to consider the feasibility of reform to ensure priority is given to those subsidies for which removal/reform is realistic. The likelihood of success depends on the reform being practical and enforceable, and to what extent there are factors hindering its reform.

Should a country/regional administration be willing to reform a subsidy, it will need to assess whether it falls under their formal national/regional competence or not. For example, there are international air transportation treaties that hinder a comprehensive introduction of unilateral kerosene taxation by a single country, or European frameworks such as CAP that determine the rules and conditions of subsidisation at the EU level.

Elements to address include:

- **How politically important/sensitive is the initiative?** Consider both the national and EU levels. Depending on this, the policy maker should involve actors and stakeholders at different levels in the reform process.
- **Have there been attempts to reform a subsidy in the past and if yes, why have they failed or only partly succeeded?** e.g. what were the barriers and the obstacles at that time, which one(s) could still be an issue if reform/removal was going to be proposed again, or has the underlying situation changed?

The existence of obstacles to reform can be critically important to help in identifying reform options as any reform option is a package of measures.

Box 19: Obstacles to reform – some examples

General cases

There is a considerable scope for reform of the aviation tax exemption (as already discussed in the Box 7); however there are significant obstacles to be overcome if the reform is to be realised. Foremost, there is a disincentive for reform both at the national, but also at the EU level, resulting from a potential competitive disadvantage vis-à-vis other countries in attracting travel and its economic benefits. Germany is one of leading producers of bioethanol and has a long tradition of political support for biofuels. The tax exemptions for biofuel productions, which de facto function as a subsidy for biofuels producers and was estimated to amount to around €619 million in 2004, has undergone successive reforms to gradually increase the tax despite the industry opposition. The significant budgetary implications of this subsidy facilitated political support for the reform. However, in 2007 a quota system was introduced which aimed to decrease the impacts of tax introduction and hence de facto re-introduced another, indirect, form of subsidy. (The Nordic Council, 2011)

From the case studies

In the case of the water abstraction regime, it was clear that there were some obstacles to reforming the system. For instance, current efforts to voluntary reform / amend some abstraction licences are proving ineffective. Moreover, in the past, uncertainty over the impact of abstraction on the environment has been a barrier to altering abstractions. In terms of future reform, the removal of the requirement to pay compensation for loss of abstraction rights is proving to be a particularly contentious issue. Additionally, some abstractors are unlikely to want to give up what they perceive to be their property rights, especially as these may have been in place for decades. However, the sensitivity relates to the established rights of a relatively small number of water users rather than wider political interests.

In the case of eligibility criteria for CAP Direct Payments, there appear to be fewer obstacles, in that the issues are discussed regularly and many of these have been resolved over time. Much rests however on interpretation of EU regulation and guidelines and so there are always like to be areas of uncertainty unless rules can be interpreted less stringently.

Step 12: Is the reform understandable, practical and enforceable?

This step aims to help identify whether the reform can be understandable for policy-makers and the public and if it is practical (i.e. feasible) and enforceable. The following issues should be investigated:

- *Communication*: A very relevant factor for reform success is communication. It is important to make the reform 'understandable' for both policy makers and the public. The assessment should investigate how easy to communicate a reform or removal of the given incentive will be, which public/stakeholders' objections it is likely to receive (e.g. is it perceived as unfair to some social groups, like low income people?) and how easy/difficult it will be to address those. It is important that, in the implementation phase, policy makers take into account the observations made under this step, to make sure the reform is communicated as clearly and transparently as possible.
- *Feasibility:* A general understanding of how feasible and practical reform or removal of the perverse incentive could be should be provided. This should include insights on the timeframe needed for reform (e.g. is it viable in the short term, or will it require a longer timeline? Is it conditional on external factor, e.g. the financial recovery of a given

economic sector?) and its complexity (e.g. is it a simple case of removal, or is it a staggered process, or does it require a complex set of accompanying measures etc.?). Issues of capacity building and coordination across agents (stakeholders, different government department, different levels of governance – national, regional, local, EU etc.) should also be stressed.

- *Enforceability:* Issues related to the enforceability of possible reform options should be highlighted, including monitoring, fines and liabilities, need for regular policy revision processes etc.

Box 20: Understandability, practicability and enforceability – some examples

General

The case of introduction of Payments for Ecosystem Services (PES) by Vittel in France for farmers to help safeguard water quality and hence the Vittel product, shows the importance of communication in removing the biodiversity harmful incentives. Given the initial resistance of farmers to change, a multidisciplinary research team, underpinned by several partnerships, was set up in order to identify the optimal agricultural practices needed to be adopted and estimate the level and nature of payments needed to help encourage a transition to these practices. This has proved to be crucial for the communication and mediation purposes of the change of agricultural practices in the area. It has also allowed the Vittel company to establish a dialogue with farmers based on trust and enabled the set of incentives and practices that were mutually acceptable to be identified. It was a long process that only succeeded given the tenacity of Vittel given their understanding of the risks to their product.(ten Brink et al 2011 in TEEB 2011 and CBD, 2011)

From the case studies

In the case of the water abstraction regime in the UK, it is clear that much will depend on the final details of the system reform in terms of whether the reform is understandable and practical. With regards to enforcement however, the reform options should enforceable given that the enabling framework already exists, given the powers invested in the Environment Agency under the Water Resources Act 1991 and those inferred by the Environment Act 1995.

8.3 Summary assessment

A traffic light system can help visualise the overall outcome of the last three steps, and identify whether the subsidy is amenable to reform or removal and whether the reform/removal of the incentive should be considered or taken forward.

At this stage, the summary assessment is attempting to arrive at an answer to the question “Are there amenable options for reforming or removing the incentive?”; where there is a green light then “yes, proceed with reform initiative” and where a red light then “no – the reform options do not merit being pursued”. In the latter case if the incentive is clearly harmful to biodiversity alternative reform options or policy filters should be assessed and phase 3 repeated.

A red / orange light indicates that reform / removal of the incentive should not be attempted or should be approached with caution or where there are significant obstacles or where there is no existing pressure to reform the incentive (e.g. where there is no suitable reform option, where the costs are too high compared to the benefits, where the option is neither practical or enforceable).

A green light indicates that appropriate, cost-effective, practical and enforceable reform options / scenarios are available, and therefore that the incentive is amendable to reform / removal.

Only one option per question should be chosen (the others should be deleted as applicable).

	Select one of the three options (delete others)

9) Is there a suitable reform option(s)?		Yes
		Partially
		No
10) What could its expected costs and benefits be?		Benefits outweigh costs
		Costs and benefits are of the same magnitude
		Costs outweigh benefits
11) Are there obstacles to or pressures for the incentive's reform/removal?		No/limited obstacles, suggesting that reform is possible
		Some obstacles to reform, suggesting that reform may be encouraged but with caution
		Obstacles to reform are significant (stop and explore whether these can be addressed – if so the light can change)
12) Is the reform practical and enforceable?		Yes
		Partially
		No
Therefore: is the reform option advisable?		Yes, proceed with the reform initiative
		Partially (e.g. additional measures needed)
		No

Overall a range of green lights would suggest that there is a good case for incentive reform and that opportunities to launch and implement the reform should be sought (Phase 4).

9 Phase 4: Opportunity for action

This phase aims to help understand the underlining policy/political readiness to reform, in order to assess the timeliness of reform and whether reform of the incentive should be prioritised and pursued, ideally in the short term. This then clarifies which incentives should be raised for due political attention.

9.1 Introduction

This part of the analysis aims to investigate whether the reform is timely, whether it has sufficient political and public support and whether it can be potentially led by a policy 'champion' and/or be developed in the context of a wider economic and policy context that offers the right framework and opportunity for reform. These are all important elements that can affect the likelihood of success of a reform process. An incentive that, in the course of the whole assessment process, proves to be truly damaging to biodiversity and in need of reform, and that in addition has the sufficient external support to reform, should be arguably considered for reform, looking at prioritising those subsidies that are most amenable to reform or phasing out and providing a timescale for the reform process.

The individual steps to be addressed in this phase are summarised in the box below.

Summary of the steps involved:

13) Is there a window of opportunity for reform?
14) Is there a potential policy champion for reform?
15) Is there public / political support to reform?

9.2 The steps in detail

Step 13: Is there a window of opportunity for reform?

In order to ascertain the timeliness and likelihood of success of a reform programme, it is crucial to understand whether specific windows of opportunities for action exist, either at national, local or EU level. For example, the recent financial and economic crisis presents an opportunity for governments to revise their budgets and increase revenues. In this context, the removal of incentives harmful to biodiversity and the wider environment has the potential to create revenues while reducing environmental impacts. In some cases, it would also create opportunities to increase social equity and, potentially, offer additional by-products such as job creation and technological innovation. Furthermore, it can help achieve given biodiversity objectives and other environmental targets, both at national level (e.g. improving water management as in the UK Water White Paper), EU level (e.g. reforming environmentally harmful subsidies as recalled in the EU Resource Efficiency Roadmap), or international level (e.g. halting biodiversity loss by 2020 (Aichi Accord targets, CBD Strategic Plan 2011-2020, see ten Brink et al (2011) in TEEB (2011)). Such opportunities should be briefly listed in this step of the analysis, and should be taken into account when communicating the reasons for reform to stakeholders and the wider public.

Box 21: Windows of opportunity for reform– some examples

Some opportunities for reform occur regularly such as when the Cohesion Policy, Common Agricultural Policy (CAP), Common Fisheries Policy (CFP) and associated European Fisheries Fund (EFF) are reformed as part of the wider budget reform / reform of the multiannual financial framework (MFF). Others can be created – eg reporting on subsidies. Yet others are more ad hoc, for example accidents - oil spills in the Gulf of New Mexico, mining disasters, major pollution events or accidents (e.g. Seveso) – and crisis, such as the financial crisis. The financial crisis has led to a the introduction of a carbon tax in Ireland and planned water charges, addressing externalities and

resource costs, and de facto reforming implicit subsidies.

There are significant distributional issues with relation to transport taxes which offer an opportunity for BHI reform. In the EU-15 households account for just over 50% of energy taxes paid, while their final energy consumption account for just above 26% of total energy consumption (IEEP et al., 2007). Heavy goods vehicles put a significant stress on roads and hence carry associated costs on road infrastructure maintenance. This in effect implies that the heavy goods vehicles are de facto receiving an implicit subsidy due to lack of full cost recovery. Without the subsidies there would likely be less road haulage, resulting in lower climate and pollution impacts. Road pricing offers a potential way to recover some of the costs, as has been showed in the cases of heavy goods vehicles charges in Austria, Germany and Switzerland introduced over the years 2001-2005. The strong external pressures on the environment and economy, which the lack of pricing of the heavy-goods vehicles implies, has been a key driver in the introduction of the road pricing and generally offers an opportunity for driving the reform. (Nordic Council, 2011)

The reform of fisheries subsidies in Norway shows the importance of economic context for the EHS reform. The falling oil prices in 1980s, which significantly decreased governmental revenues, encouraged political support for reform by convincing stakeholders of the need of fiscal restrain. This has created an enabling environment for the gradual fisheries reform - resulting in a decrease in the level of subsidies by around 85% from $US 150 million to $US 30 million throughout the years 1981-1994.

Similarly, the severe financial crisis in New Zealand in 1984 created also favourable conditions for phasing out agricultural and fisheries subsidies. Faced by a severe fiscal constraint, the government had decided to remove all agricultural and fisheries subsidies as a part of economy-wide reform. The reform had a positive effect on biodiversity, both in agricultural and fisheries sector. (CBD, 2011)

From the case studies

In both the case studies examined for reform (the water abstraction regime and the eligibility criteria for CAP Direct Payments) there are windows of opportunity for change. In the case of the water abstraction regime, this is being driven the commitment in the 2011 Water White Paper to change the water abstraction regime by the mid to late 2020s, whilst the current negotiations for CAP Reform for 2014-2020 also provide the opportunity for improving the eligibility criteria.

Step 14: Is there a potential policy champion for reform?

For reform to be successful, strong leadership and a broad coalition of support is needed. A strong political advocate, or 'champion' (e.g. a dedicated civil servant) of reform will aid the communication of a clear message and support the development of measures to limit or compensate for any negative effects of reform (IEEP et al., 2007).

For example, this can be a given governmental department or politician willing to push for a certain reform (e.g. because deemed particularly damaging or expensive, or as part of a wider political manifesto), or a group of stakeholders concerned by the impacts of a particular incentive (e.g. consumer associations), or a specific local/regional administration particularly hit by a subsidy (e.g. a region particularly hit by water scarcity may be keen to reform irrigation subsidies). Should such champions exists, they should be clearly identified in the assessment. Lessons from other countries who have successfully removed a given perverse incentive should also be taken into account.

Box 22: Policy Champions – some examples

The above mentioned Irish fiscal reform has benefitted from the work of Prof Frank Convery and the London congestion charge by the then Major of London Ken Livingstone. Without the personal commitment and political risk taking, many reforms would not have happened

Step 15: Is there public/ political support to reform?

It is important to understand and, when possible, increase public and political support for the reform in order to increase its likelihood of success. In order to do so, it is worth highlighting:

- *Broad inclusion:* It is important to identify who should be involved in the reform process, as inclusion and engagement of all stakeholders is a key element for success. To ensure

high level political support for the assessment process, the full participation of relevant agencies, transparency and public participation is required. Input into reform should be broadened from politicians and civil servants to stakeholders and civil society.

- *Identification of losers and winners*: It is as important to identify the losers from the reform as to point out the winners, since the latter might provide the political support necessary to face the losers.
- *Assessment of co-benefits from the reform:* Highlighting the co-benefits of the reform helps to gather support to implement it, helping to overcome objections to reform from sectoral lobbies.

Box 23: Political and Public Support for reforms – some examples

Generally speaking, for a successful reform of EHS/BHI the experience from various countries suggest that making the public aware of the distribution of the subsidies' benefits is crucial for minimising the resistance from vested interests. Transparency is critical. As noted in TEEB 2011 chapter 6, transparency is a key precondition for well-informed public debate on current subsidy programmes and can also make reform more appealing. Identifying who benefits from subsidies and highlighting their relative bargaining power can provide a powerful motivating force for change (OECD, 2003). By helping to debunk the myths surrounding subsidies and their reform, such assessments can also be useful to overcome resistance by vested interests.

This has proven invaluable for both fisheries and agriculture reform. As regards Enhancing transparency of farm subsidies in the European Union, TEEB 2011 noted that the 2006 financial regulations (EC, 2006a, 2006b) require 'adequate ex-post disclosure' of the recipients of all EU funds, with agricultural spending transparency to begin in the 2008 budget. The regulation has spurred watchdog initiatives such as the online services http://farmsubsidy.org, http://caphealthcheck.eu and www.fishsubsidy.org. These seek to monitor compliance by Member States and assess the quality of the released data. However, compliance with the regulation is still uneven.

Communication can also be critically important. For example clarifying explicitly which parts of the population (e.g. which decile) actually benefit from measures targeted at the poor can demonstrate clearly (where the case) that the incentives do not always effectively get to the intended recipients and hence reduce resistance and increase support for reform.

From the case studies

In the case of the water abstraction regime, there is clear and consistent support for change from across government departments and HM Government and from environmental organisations. There is however the potential for there to be some some opposition from certain industries / abstractors. In the case of eligibility criteria for CAP Direct Payments, support is evident from the farming sector and environmental NGOs.

9.3 Summary assessment

A traffic light system can help visualise the overall outcome of the steps, and identify whether the subsidy is readily amenable to reform or removal.

Here the summary assessment is attempting to arrive at an answer to the question "Is the reform timely and does it merit prioritisation / short term action ?", where a green light is "yes" and a red light is "no".

A green light indicates reform is timely and should be prioritised and operationalised as the context is suitable for reform to be successful and there are the necessary windows of opportunity available for reform. Reform or removal of the incentive should therefore be pursued.

A red / orange light indicates that reform / removal of the incentive should not currently be attempted, or that is should be approached with caution, for instance because there is no current opportunity (or window) for reform or there is a lack of political / public support in the

current environment. This does not imply no action, but rather a focus on developing the conditions for success and planning for a reform initiative as soon as feasible. Overcoming the obstacles and creating windows of opportunity, finding champions to promote the incentive reform and communicating the benefits to help engender public and political support may facilitate the progress.

Only one option per question should be chosen (the others should be deleted as applicable).

	Select one of the three options (delete others)	
13) Is there a window of opportunity for reform?		Yes
		Partially
		No
14) Is there a potential policy champion to reform?		Yes
		Partially
		No
15) Is there public/ political support for reform?		Yes
		Partially
		No
Therefore: is the reform timely and does it merit prioritisation? Is it worth initiating the reform process?		Yes
		Partially / not a priority yet
		No

If all the conditions are in place (or potentially so), then the reform initiative should be launched at the suitable window of opportunity, with supporting evidence base (e.g. communication as to rationale for reform) to encourage support/facilitate success and avoid potential losses of political capital or indeed gain political capital from a timely subsidy reform which may reduce harm to biodiversity and liberate funds for other government priorities.

10 Applying the tool: case examples

In order to test the methodology proposed in this guidance, three case studies based on UK existing subsidies potentially damaging for biodiversity have been developed. **It should be noted that these are not meant to be a thorough investigation, nor to provide recommendations regarding reform prioritisation and reform options**. The choice of the case studies was made on a longer list of potential case studies. These three specific examples were selected by Defra, as they were considered particularly useful to illustrate how to use this assessment tool, and not because they were necessarily considered a priority for reform.

The case studies instead are therefore meant to provide an example of how the different steps of the tool here described should be addressed. Case boxes building on these case studies have also been included throughout the guidance document to provide additional clarity. The resources available for these case studies only allowed for a brief assessment. A very brief summary table is provided for each case study which highlights the headline outcome for each step of the guidance tool. The basis for these findings is then provided in more detail in a second table where the steps are considered in more depth, within the limits of this scoping study.

It is advisable that a more detailed assessment is made in future actual subsidies assessments.

10.1 CASE STUDY 1: The Water Abstraction Regime in England and Wales

Table A1.1 Summary Table - the Water Abstraction Regime in England and Wales

Key questions (steps)	**Traffic Light**	
Phase 0: Identification of threats to biodiversity and potentially harmful incentives		
1) Is there a threat to biodiversity?		Yes, significant threat that needs attention
Phase 1: Screening of incentive		
2) Is there a perverse incentive / subsidy?		Yes, substantial subsidy / incentive

Key questions (steps)	Traffic Light	
3) Does the incentive lead to potential significant negative impact on biodiversity?		Significant potential impacts
4) Are these potential biodiversity impacts limited by existing 'policy filters'?		Some mitigation, but not sufficient to fully offset the incentive's impact(s)
Therefore: Is there an incentive that is harmful for biodiversity?		Yes
Phase 2: Potential for reform		
5) Does the incentive fulfill its objectives?		Partially – current objectives not sufficient to address current and future challenges
6) Does the incentive leads to any social and/or economic issue?		Some issues
7) Are there more biodiversity benign alternatives hindered by the incentive ?		Yes, alternatives exists but not immediately available
8) Are there pressures for the incentive's reform/removal?		Significant pressures, suggesting that reform is urgently required
Therefore: should the incentive remain in place or be reformed/removed?		Reform should be considered in more detail
Phase 3: Reform scenarios		
9) Is there a suitable reform option(s) and what could it entail?		Yes

Key questions (steps)	Traffic Light	
10) What could its expected costs and benefits be?		Costs and benefits are of the same magnitude
11) Are there obstacles to the incentive's reform/removal?		Some obstacles to reform, suggesting that reform may be encouraged but with caution
12) Is the reform understandable, practical and enforceable?		Partially
Therefore: is the reform option advisable?		Yes – although caution is needed to ensure the details are practical and do not lead to excessive social or economic costs.
Phase 4: Opportunities for action		
13) Is there a window of opportunity for reform?		Yes
14) Is there a potential policy champion for reform?		Yes
15) Is there public/ political support to reform?		Partially
Therefore: is reform timely and should it be prioritised? Is it worth initiating the reform process?		Yes

Table A1.2 Detailed table – The Water Abstraction Regime in England and Wales

Key questions (steps)	Sub-questions	Answer	Traffic Light
Phase 0: Identification of threats to biodiversity and potentially harmful incentives			
1) Is there a threat to biodiversity?	What are the key threats to biodiversity that should be addressed?	Hydrological variability within rivers and streams is one of the factors influencing aquatic wildlife. Unnaturally low flows and altered flow regimes caused by over abstraction of water volumes can have damaging impacts on river systems, and their associated fish, invertebrates and plants. It has been estimated that 12% of water bodies are unsustainability abstracted with risks of damaging water ecosystems and not meeting good ecological status required under the Water Framework Directive. [4] Roughly 22 billion m3 of water are abstracted in the UK each year, 52% from rivers and lakes, 11% from groundwater and about 37% from tidal waters	
	What are the economic activities\ sectors causing or exacerbating these threats?	Of the 13 billion m3/year extracted from non tidal sources in England and Wales, about half is used for public water supply. A further third is used for electricity power generation (especially for cooling). Industrial uses account for roughly 10% and aquaculture and amenity about 9%. Spray irrigation accounts for less than 1% of total abstraction (but is concentrated in the relatively dry Anglian region).	
Phase 1: Screening of incentives			
2) Is there a subsidy / perverse incentive?	What is the nature and size of the subsidy / incentive?	Licences are needed to abstract and impound water from rivers, reservoirs, canals, underground sources and, in some cases, from tidal waters. There are approximately 21,500 abstraction licences in England and Wales. Water abstraction is regulated under the Water Resource Act of 1991, and more recently, the Water Act 2003. The Environment Agency is responsible for granting licences to abstract or impound waters at a rate greater than 20m3/d. In most cases such an activity is unlawful without such a license, although	

[4] http://archive.defra.gov.uk/environment/quality/water/documents/wwp-ia-abstraction-1365.pdf

Key questions (steps)	Sub-questions	Answer	Traffic Light
		there are some exceptions to this. Abstraction of volumes less than 20m3/d are not controlled by licensing. Abstraction licences are accompanied by 3 types of charges: • Application charge: the price for applying for a licence which is payable at the point of application • Advertising administration charge: where applications for a licence have to be advertised • Annual subsistence charge: with some exceptions, licences are subject to an annual subsistence charge which is made up of the Standard Charge and, where necessary, the Environment Improvement Unit Charge (EIUC). The Standard Charge is the means by which the cost of managing and regulating the water is recovered, and is meant to be proportional to the impact of that licence on the water resource. It is based on the authorized annual quantity of water specified in the license which can be abstracted, rather than the volume of water which is abstracted. Account is also taken of where the water is abstracted, seasonality, as well as the purpose of the abstraction. EUICs are added to the Standard Charge for the recovery of compensation costs associated with amendment or revocation of licences to fund the Restoring Sustainable Abstraction programme. The licence will specify what quantity can be abstracted, the point from which the abstraction must take place and the use to which that water can be put. Additional conditions may be applied which are intended to prevent abstraction practices that might cause environmental degradation or impact on other licence holders. In England and Wales, 17% of licences include such restrictive conditions. The current water abstraction system was put in place in the 1960s, and was designed to manage competing human demands for water rather than to protect the environment. It under-prices water in that the prices charged for abstraction do not reflect the full value of water either but rather the cost of managing the licensing system. The system therefore permits excessive levels of abstraction in some catchments. This has adverse effects on biodiversity and is considered to be unsustainable in the long run, particularly given	

Key questions (steps)	Sub-questions	Answer	Traffic Light
		predicted changes in climate. A recent report[5] highlighted that various characteristics of the system mean that abstractors do not receive the right signals or incentives about sustainable decision-making, nor is it responsive or flexible enough to create market or regulatory signals which would encourage actions to more sustainably manage abstraction levels. For instance: • Many licences have a fixed water allocation such that the volume of water permitted for abstraction is not linked to the actual volume of water available. Moreover, most licences have been issued without a time limit, making it difficult to review them. All new licences (since 2001) have an expiry date. Approximately 21% of licences in England and Wales now have time limits3. The remaining 79% do not have time limits. • Licences issued more recently have more restrictions, but there is still no mechanism to ensure that users respond to relative scarcity or abundance. Charges for licences are not linked to the volumes abstracted so do not reflect the availability of water or the value that users place on it. Once an allocation is made, there is no financial incentive to use it efficiently, or to consider its scarcity and other environmental impacts. • There is currently little trading or sharing of abstraction licences because of various real and perceived barriers (e.g. poor information, a lengthy administrative process, uncertainties about the outcomes), the consequence being that abstractors who do not need to take their full water allocation do not hand back or sell-on licences as their needs change. • Payments for licenses are paid into a fund of which a part (the Environment Improvement Unit Charge - EIUC) is used to compensate other license holders if they suffer a loss when changes are made to their license to address over-abstraction. This incentivises license holders to wait and seek the maximum compensation payment rather than adapt quickly and at least cost. Overall, it is clear that the subsidy is not one that was intended as such when the current abstraction and pricing regime was established, as at the time environmental impacts and	

[5] OFWAT & EA (2011) The *case for change* – reforming *water abstraction* management in England. Available from: http://publications.environment-agency.gov.uk/PDF/GEHO1111BVEQ-E-E.pdf

Key questions (steps)	Sub-questions	Answer	Traffic Light
		values were not as well understood. However, it is now recognisable as a subsidy with clear detrimental impacts on water ecosystems.	
	What is the point of impact of the incentive (conditionality)?	The subsidy is on the price per unit cost of water which does not reflect the relative scarcity, abundance of the water available, or the environmental pressures on the water resource (i.e the unit cost of water abstracted is artificially low). .	
	What is the duration of the incentive?	Specific licences vary in terms of their duration. Licenses can be granted for up to 24 years. Most licenses have a 12 year duration. All new licences (since 2001) have an expiry date. Approximately 21% of licences in England and Wales now have time limits. The remaining 79% do not, i.e. were granted as of 'right' so that abstractors are able to hold their licence in perpetuity. Licences currently held "in perpetuity" are likely to become time limited before 2027 which means that the vast majority of licenses will be valid for 12 years with a review of the long term sustainability of those abstractions being undertaken in 6 yearly cycles.[6]	
	Does the incentive provide for long term structural impacts?	Yes – in the sense that if the abstraction of water from rivers and groundwater is unsustainable, these can result in long term or irreversible impacts on ecosystems. Licences for abstraction and impounding can also be linked to construction projects (dams, reservoirs, power stations, etc) which can have long term structural impacts on the environment given the longevity of the infrastructure that is built. These effects are especially likely in the case of impounding licences which are required before the construction of any structure such as a weir or dam, and for the continued operation of that structure.	
3) Does the incentive lead to potential significant negative impact on biodiversity?	Does the incentive have a direct or indirect impact on biodiversity?	The subsidy has a direct influence on biodiversity by influencing the condition of aquatic habitats on which flora and fauna depend. For instance, licences have been issued in the past which have risks of causing a harmful effect on the environment due to too much water being taken from rivers and water bodies, which can be harmful to some nature conservation sites and the ecological health of some catchments. River flows are a critical	

[6] See: http://www.rtpi.org.uk/download/6411/Water-Abstraction-and-Impounding-Licences.pdf

Key questions (steps)	Sub-questions	Answer	Traffic Light
		factor for the creation and maintenance of river and floodplain morphology, and associated biodiversity and ecosystem services. As water flows are reduced, the health of the water environment deteriorates because there is less water to dilute pollution and support fish and their migration, and other wildlife. Maintaining water levels are also crucial for sustaining wetlands. Evidence has shown that artificially low flow regimes caused by over-abstraction have had a damaging impact on some fish, invertebrates, plant populations as well as river morphology. To meet the Habitats Directive requirements at Natura 2000 sites, the EA estimates water abstraction must be reduced by ~250 million litres a day (Ml/day)	
	Does the incentive have also other wider impacts on the environment?	Yes, in terms of water pollution and degradation of water bodies (e.g. water retention, soil quality and soil erosion, nutrient content).	
	YES/NO (or brief) answers	▪ Is there a large change in biodiversity/ecosystems conditions due to the production/consumption patterns of the economic activity? *Yes- only a quarter of rivers and lakes in the UK are fully functioning ecosystems, in part due to over abstraction (and water pollution more generally).* ▪ Do the effects extend over a large area? *Yes – affected water catchments extend over a significant area* ▪ Do the effects have implications at local, national, European *or* global level? *Local, national* ▪ Is there any trans-frontier impact? *No* ▪ Are many people affected? *Yes, in so far as people rely on a sustainable water source* ▪ Does it lead to significant or potentially excessive resource use, including valuable or scarce biodiversity features or resources? *Yes* ▪ Are environmental/biodiversity standards breached? *Yes –it can affect the condition of SSSIs and N2K sites* ▪ Are protected sites, areas, features affected? *Yes* ▪ Is there a high probability of the above effects occurring? *It depends on the characteristics / conditions of the licence that has been granted (e.g. the area the licence covered and the affected habitats, volume of water abstracted)* ▪ Will the effect continue for a long time? *Yes*	

Key questions (steps)	Sub-questions	Answer	Traffic Light
		▪ Will the effect be permanent rather than temporary? *There is a likelihood that the effects could be permanent, or at least very hard to reverse , although some water ecosystems may be quite resilient* ▪ Will the impact be continuous rather than intermittent? *Intermittent in the sense that significant impacts may only occur at lower flows when ecosystems are vulnerable and only be substantial if continued over some time.* ▪ If it is intermittent will it be frequent rather than rare? *Frequent* ▪ Will the impact be irreversible? *Potentially. In some cases over-abstraction has been shown to cause almost irreversible ecosystem damage.*[7] ▪ Will it be difficult to avoid, or reduce or repair or compensate for the effect? *In some cases, yes*	
4) Are these potential biodiversity impacts limited by existing 'policy filters'?	Are there 'policy' filters that mitigate the environmental effects of an incentive?	Mechanisms are in place for changing abstraction licenses in order to reduce the volumes licensed for abstraction. There is also a requirement for compensation for any losses caused, and a facility for the Environment Agency to revoke and amend abstraction licences causing serious environmental damage after 2012 when it comes in force. The Environment Agency has also set up the Restoring Sustainable Abstraction Programme, which aims to identify, investigate and address sites which may be at risk from over abstraction and which may be causing environmental harm. Investigations may lead to changing abstraction licenses. License holders are encouraged to voluntarily change the license, a process which is straightforward and quick. If the license holder objects, they may be eligible for compensation. The time and cost associated with these changes has a significant impact on abstractors and regulators. The programme has seen some license holders voluntarily change their conditions (e.g. Portsmouth Water), although to date there have been few cases where this has happened. However, the regulatory process for amending or revoking an abstraction licence is very slow and challenging, and very few abstraction licences have been amended. It has not been possible to identify any cases where licences have been revoked, although some licences have been varied under this process. Moreover, in order to revoke a licence, the EA would have to pay the abstractor compensation. However, from July 2012 onwards it will be possible to amend or remove a	

[7] http://www.parliament.uk/documents/post/postpn259.pdf

Key questions (steps)	Sub-questions	Answer	Traffic Light
		licence without compensation if the licence is causing serious damage to the environment. It appears therefore the policy filters that do exist are inefficient in addressing the environmental impacts arising from over-abstraction, and it is unclear to what extent they are sufficiently addressing the full range of effects on the environment.	
	What other incentives/ subsidies are provided to the sector/economic activity?	Subsidies affecting the activities / sectors which rely on abstracted water as an input will also have an impact on the level of water abstracted (e.g. CAP subsidies to farmers)	
	Does the taxation regime counterbalance the impacts of the incentive / subsidy?	None that could be identified within the limitations of this study – more in depth research would be necessary	
Phase 2: Potential for reform			
5) Does the incentive fulfill its objectives?	What are the objectives of the incentive?	The current system was designed in 1960 and aimed to manage competing demands for water. The aims or objectives of the system, as it was originally designed, was not to protect the environment. Although the system has evolved to protect the environment, the charging system is not aimed at protecting the environment.	
	Who are the intended recipients of the incentive?	Abstractors (farmers, land owners, power suppliers, water companies, industrial users etc.), i.e. those who require the use of water from rivers, groundwater or other water bodies.	
	Are the incentive's objectives still justified in relation to the needs?	No. Although the use of water by abstractors is still justifiable, as is the need to manage competing human demands for water, the current system and the fact that it continues to under-price the water resource is no longer justified nor fit for purpose. The system is no longer adequate for current or future use, especially given the challenges posed by future climate change and growing demand which will place increasing pressure on ecosystems which are already being negatively affected.	

<table>
<tr><th>Key questions (steps)</th><th>Sub-questions</th><th>Answer</th><th>Traffic Light</th></tr>
<tr><td></td><td>Has the incentive been in place for a long time and/or lacks an in-built review process?</td><td>The system has been in place since 1960. It lacks an in-built review process, but the legal framework changed in 2003 with the introduction of the Water Act which introduced new legal requirements and amended the previous system. Some of these suggested regulatory changes have already been put in place, whilst others are still to be introduced.

Most recently, the 2011 Water White Paper announced a commitment to change the water abstraction regime by the mid to late 2020s.

The government is therefore currently working on reforming the system as a whole, but is also looking to make short term changes designed to increase the efficiency of the current framework until long term changes are possible.</td><td></td></tr>
<tr><td rowspan="4">6) Does the incentive lead to any social and/or economic issue?</td><td>What are the unintended economic impacts of the incentive?</td><td>Characteristics of the system lead to several unintended economic impacts and market failures / distortion. For instance, the system creates a situation in which the true cost of water is not adequately reflected (e.g. at present water abstraction charges are <4% of a customer’s water and sewerage bill). Moreover, there is little incentive for abstractors to respond to the abundance / scarcity of water availability (charges are not linked to water volumes abstracted and therefore fail to reflect water availability or the value that users place on it). There is also little trade in licences which creates inefficiencies such that licences aren’t allocated where the need is greatest (abstractors who do not need to take their full water allocation do not hand back or sell-on licences as their needs change).</td><td rowspan="4">  </td></tr>
<tr><td>What are the unintended social impacts of the incentive?</td><td>There are unlikely to be a significant social impacts (e.g. in terms of inequality, employment, health etc.). However, abstraction infrastructure (e.g. pipelines) may impact on coastal amenities for leisure and recreation including sailing.</td></tr>
<tr><td>Who are the winners and who are the losers?</td><td>Winners are water users – including farmers, industrial companies, water companies. Losers are the water environment and those who value it.</td></tr>
<tr><td>Criteria matrix

Key:

negative impacts (--- high; --</td><td><table><tr><th>Indicator</th><th>Degree of expected impact</th></tr></table></td></tr>
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<table>
<tr><th>Key questions (steps)</th><th>Sub-questions</th><th>Answer</th><th>Traffic Light</th></tr>
<tr><td></td><td>medium; - low); positive impacts (+++ high; ++ medium; + low).</td><td>
<table>
<tr><td>Economy</td><td></td></tr>
<tr><td>• Income / employment</td><td>None</td></tr>
<tr><td>• Productive capital</td><td>-</td></tr>
<tr><td>• Competition /innovation</td><td>--</td></tr>
<tr><td>• Market mechanisms</td><td>---</td></tr>
<tr><td>• Public sector enterprise</td><td>None</td></tr>
<tr><td>Social</td><td></td></tr>
<tr><td>• Health /security</td><td>N/A</td></tr>
<tr><td>• Education, identity</td><td>N/A</td></tr>
<tr><td>• Culture, values</td><td>-</td></tr>
<tr><td>• Legal security, equality</td><td>N/A</td></tr>
<tr><td>• Solidarity</td><td>N/A</td></tr>
</table>
</td><td></td></tr>
<tr><td rowspan="2">7) Are there more biodiversity benign alternatives hindered by the incentive?</td><td>Are there alternative technologies, products, services, systems or modes of productions that could replace those supported by the incentive?</td><td>Yes, in terms of a more benign system which encourages more sustainable water abstraction through the right signals and opportunities for review. This would encourage more water efficient measures, water saving technologies, change to less water intensive cropping patterns etc There are however, limits as to how far this is possible given that many processes require a large amount of water and in some cases there is no alternative aside from stopping the process.</td><td rowspan="2">  </td></tr>
<tr><td>How do the</td><td>If the system were to be reformed with a greater focus on the need for sustainable</td></tr>
</table>

Key questions (steps)	Sub-questions	Answer	Traffic Light
	environmental/biodiversity impacts of these alternatives compare with those of the incentivised / subsidised ones?	abstraction and which ensured that the environmental impacts of abstraction are taken into account (systematically and over time), then the adverse impacts on biodiversity and ecosystems could be significantly reduced.	
	Is the implementation of these alternatives hampered by the incentive under scrutiny?	Yes, in that the system has been in place for several decades and the opportunities for review are therefore limited and particularly challenging. Low pricing of water discourages uptake of more sustainable water management practices.	
	What is the likelihood of these alternatives replacing the previously incentivised / subsidised ones?	Very high, but only over a longer time horizon (i.e. mid to late 2020s).	
8) Are there pressures for the incentive's reform/removal?	Are there existing calls for the incentive to be removed / reformed?	Yes – see above (2008 Cave Review on competition and innovation in water markets in England and Wales; 2011 Water White Paper; 2011 HM Government Paper on Water for Life)	
Phase 3: Reform scenarios			
9) Is there a suitable reform option(s) and what could it entail?	What alternatives exist for meeting the incentive's objectives (if still valid)?	A reformed system which is more responsive, flexible and sustainable. Regulatory changes have already been introduced to move towards this goal (through the Water Act 2003), although some are yet to be introduced. More extensive changes are foreseen following commitments made in the 2011 Water White Paper. It announced a commitment to change the water abstraction regime to one that is more resilient to the challenges of climate change and population growth and that better protects the environment. The White Paper recognised that too much water is being abstracted in some catchments and that	

Key questions (steps)	Sub-questions	Answer	Traffic Light
		abstraction charges do not send the right price signals. The Paper anticipates a new regime to be in place in the mid to late 2020s, with the consultation for reform to run over the next 2 to 3 years. It is hoped that the new system will better reflect the value of water, its relative scarcity and the value of ecosystem services to ensure that water ecosystems are protected. Licenses will be designed to vary the volume available for abstraction according to overall water availability. There is also no intention to fund compensation for any losses following a change to the license - this will not be legally justified since changes will be designed to protect the environment.	
	Should the incentive's objective no longer be valid, could the subsidy be removed?	Although the system would have to remain in place, i.e. a system which aims to manage and regulate water supply, the implicit subsidy that is built into the system's design could and should be removed with appropriate changes to design of the water abstraction regime, so that the system correctly values water resources and sends the correct signals / incentives to abstractors to sustainably manage their water use.	
10) What could its expected costs and benefits be?	What are the environmental impacts and, more specifically, the related direct and indirect effects on biodiversity, associated with each scenario?	See (7) - a greater focus on the need for sustainable abstraction and ensuring that the environmental impacts of abstraction are taken into account (systematically and over time), could significantly reduce the adverse impacts on biodiversity and ecosystems.	
	What are the economic impacts associated with each scenario?	There is potential cost to businesses and farmers if they need to change their productive processes if abstraction has to be reduced or eliminated – cost of finding another source for water or having to change its activities. The scale of this impact is difficult to estimate and would depend on various factors e.g. type of firm, nature of industry, role of water in production processes, nature of consumer market etc. The removal of the requirement for abstractors to be paid compensation for any losses if abstraction licences are amended or revoked could also have some economic impacts on businesses (after 2012, compensation will no longer be payable for licences without expiry	

Key questions (steps)	Sub-questions	Answer	Traffic Light
		dates where the abstraction may be causing environmental damage). The EA has estimated that on average £1.5 million will be payable for each Ml/day revoked, resulting in an estimated £352 million payable for alterations to public water supply abstractions under the Habitats Directive. [8] However, compensation would also have other consequences, in that generating the required amount needed for compensation could increase the cost of water abstraction. If public water supply is reduced, then there are also potential consequences to consider in that these losses would need to be replaced by new supplies or reductions in water demand. This could have economic impacts through the fact that, for instance, prices for customers in terms of public water supply are set to fund supply and demand management options and would therefore be affected by measures taken to offset any loss in water supply. Potential increases to water charges have implications for all water users, including industrial and agricultural abstractors and users of public water supplies.	
	What are the social impacts associated with each scenario?	There is a risk that measures which lead to an increase in water prices could have regressive impacts on low income consumers. However, there are also likely to socio-economic gains related to environmental improvements.	
	Are flanking measures necessary?	Not that can be identified within the scope of this study	
11) Are there obstacles to the incentive's reform/removal?	How politically important/sensitive is the initiative?	Fairly sensitive – abstractors are unlikely to want to give up what they perceive to be their property rights, especially as these may have been in place for decades. The removal of the requirement to pay compensation for loss of abstraction rights is a particularly contentious issue. However, the sensitivity relates to the established rights of a relatively small number of water users rather than wider political interests.	

[8] http://www.parliament.uk/documents/post/postpn259.pdf

Key questions (steps)	Sub-questions	Answer	Traffic Light
	Have there been attempts to reform the incentive in the past and why have they failed?	Yes – current efforts to voluntary reform / amend some abstraction licences are proving inefficient and their effects are unclear. In the past, uncertainty over the impact of abstraction on the environment has been a barrier to altering abstractions. The Habitats Directive changed this approach by switching the burden of scientific proof from the need to show 'impact' to the need to show 'no significant impact'[9]	
12) Is the reform understandable, practical and enforceable?	Is it understandable to the public/ media/ policy makers (communication)?	The detailed and technical aspects are less likely to be easy to communicate, but the broader messages should be easy to understand.	
	Is it practical to implement (feasibility)?	Will depend on the final details of the system reform. There is likely to be some opposition which will make implementation more challenging.	
	Is it enforceable?	Yes – the enabling framework already exists (the Environment Agency and its powers under the Water Resources Act 1991 and the powers inferred by the Environment Act 1995). There, however, may be issues around available resources for enforcement.	
Phase 4: Opportunities for action			
13) Is there a window of opportunity for reform? (repeated		Yes – currently, driven by the commitment in the 2011 Water White Paper to change the water abstraction regime by the mid to late 2020s.	
14) Is there a potential policy champion for reform?		Yes – e.g. the Environment Agency, Defra, environmental organisations (WWF, RSPB)	
15) Is there public/ political support to reform?	Is this already in place and if not can it be catalyzed in the reform time period? From which sources is there	Yes – already in place. Support from across government departments and HM Government and from environmental organisations. There may be some opposition from industry / abstractors but this has yet to be strongly voiced.	

[9] http://www.parliament.uk/documents/post/postpn259.pdf

Key questions (steps)	Sub-questions	Answer	Traffic Light
	(potential) support?		

10.2 CASE STUDY 2: Eligibility Criteria for CAP Direct Payments

Table A1.3 Summary Table

Key questions (steps)	Traffic Light	
Phase 0: Identification of threats to biodiversity and potentially harmful incentives		
16) Is there a threat to biodiversity?		Yes, significant threat
Phase 1: Screening of incentive		
17) Is there a perverse incentive / subsidy?		Yes, although relatively small
18) Does the incentive lead to potential significant negative impact on biodiversity?		Some potential impacts

Key questions (steps)	Traffic Light	
19) Are these potential biodiversity impacts limited by existing 'policy filters'?		Some mitigation, but not sufficient to fully offset the subsidy impact(s)
Therefore: Is there an incentive that is harmful for biodiversity?		Yes although limited effect
Phase 2: Potential for reform		
20) Does the incentive fulfill its objectives?		Partially - It is the interpretation and implementation that is the issue
21) Does the incentive leads to any social and/or economic issue?		Some issues
22) Are there more biodiversity benign alternatives hindered by the incentive ?		Yes, other alternatives exists and are available to replace the subsidised option
23) Are there pressures for the incentive's reform/removal?		Some pressures suggesting a need for reform
Therefore: should the incentive remain in place or be reformed/removed?		Reform should be considered in more detail
Phase 3: Reform scenarios		
24) Is there a suitable reform option(s) and what could it entail?		Yes
25) What could its expected costs and benefits be?		Benefits outweigh costs

Key questions (steps)	Traffic Light	
26) Are there obstacles to the incentive's reform/removal?		Some obstacles to reform, suggesting that reform may be encouraged but with caution
27) Is the reform understandable, practical and enforceable?		Yes
Therefore: is the reform option advisable?		Yes, although obstacles may have to be further assessed and measures taken to address them
Phase 4: Opportunities for action		
28) Is there a window of opportunity for reform?		Yes
29) Is there a potential policy champion for reform?		Unclear
30) Is there public/ political support to reform?		Yes
Therefore: is reform timely and should it be prioritised? Is it worth initiating the reform process?		Yes, reform is relatively easy to implement and would resolve potentially signficant local issues with regards to definition and implementation

Table A1.4 Detailed responses

Key questions (steps)	Sub-questions	Answers	Traffic Light
Phase 0: Screening of impacts / sectors			

Key questions (steps)	Sub-questions	Answers	Traffic Light
16) Is there a threat to biodiversity?	What are the key threats to biodiversity that should be addressed?	There are many threats to biodiversity in the UK. These include continuing declines in many habitats and species, including protected sites, fragmentation of habitats etc and are well documented in the literature. See for example, the 2010 progress report relating to progress with implementation of the UK Biodiversity Strategy and Biodiversity 2020: A Strategy for England's Wildlife and ecosystem services, amongst others.	
	What are the economic activities\ sectors causing or exacerbating these threats?	A whole range of pressures, many associated with different economic activities affect biodiversity. Of relevance to this case study is the farming sector, which continues to exert significant pressure on biodiversity in the UK. For the purposes of this case study we consider the impact of excluding farmers from receipt of CAP Pillar 1 Direct Payments (Single Payment Scheme) can have on biodiversity	
Phase 1: Screening of subsidy			
17) Is there a subsidy / perverse incentive?	What is the nature and size of the subsidy / incentive?	Under the SPS the eligible hectare has to be used predominantly for agricultural activities, even if non-agricultural activities (for example management for nature conservation) take place, and keeping the land in Good Agricultural and Environmental Condition (GAEC) is understood as an eligible agricultural activity if other agricultural activities have ceased[10]. Particular problems in semi-natural habitats have been caused by differences in interpretation of the current definition of eligible area/parcel, including the technical advice provided by the Commission regarding the eligibility of hedges, ditches and other semi-natural features such as trees. The issues that arise in the UK under the SPS revolve around the question as to whether habitats, such as areas of heather or landscape features such as hedges, shrubs, trees, ponds, etc can be counted as eligible. CAP Pillar 1 payments provide per hectare payments to farmers as income support. Values varies between England, Scotland, Northern Ireland and Wales, due to the different parameters under which the value of Single Farm Payments are established annually – in Scotland, Wales and Northern Ireland, per hectare payments are still largely based on historic receipts. In England, where payments are no longer related to historic production,	

[10] Article 34(2)(a) and 2(c) of Regulation 73/2009 and Article 2(a) of Regulation 795/2004.

Key questions (steps)	Sub-questions	Answers	Traffic Light
		payments are as follows for 2011 claim year: Non SDA: €289.94/ha SDA: €233.95/ha Moorland SDA: €40.82/ha	
	What is the point of impact of the incentive (conditionality)?	The impact relates to the criteria setting out what land is eligible for the Single Payment Scheme and the fact that there continue to be grey areas, where the potential ineligibility of certain semi-natural habitats or features has led to farmers erring on the side of caution and removing them in some instances to avoid the risk of payments being withheld or clawed back at a later date.	
	What is the duration of the incentive?	The SPS is paid on an annual basis for all eligible hectares, subject to receipt of a claim from the farmer. However, the system of income support payments to farmers is ongoing, subject to reviews/reforms, usually every 7 years (recently more frequently). The current system is currently undergoing review, with new support schemes to be introduced from 2014.	
	Does the incentive provide for long term structural impacts?	The incentive relates to the inclusion/exclusion of eligibility of certain habitats for the SPS. Structural impacts that might be relevant include the removal or cutting back of landscape features (such as hedgerows), the removal of scrub or other semi-natural habitats.	
18) Does the incentive lead to potential significant negative impact on biodiversity?	Does the incentive have a direct or indirect impact on biodiversity?	Direct and Indirect – sometimes it is the fear of penalties as a result of enforcement where there are grey areas as to what exactly is eligible and ineligible that causes the removal of the features/habitat rather than the rules themselves. For example, the audit findings on 'ineligible' landscape features or trees[11] led to cases of farmers being penalised and land being excluded from direct payments in Northern Ireland.	

[11] Article 21 (1) of Regulation 73/2009 specifies that when 'a farmer does not comply with the eligibility conditions... *the payment or part of payment granted ... shall be subject to the reductions and exclusions*'. Article 21 (2) states that reductions will correspond to '*severity, extent, permanence and repetition of the non-compliance found and may go as far as total exclusion from one or several aid schemes for one or more calendar years'*.

Key questions (steps)	Sub-questions	Answers	Traffic Light
		In Northern Ireland, after the findings of the EC audit, farmers pursued the rules on vegetation (heather to be no higher than 50 cm) and landscape features (width of hedges) in a more stringent way because they were required to do so by the imposition of a stricter national standard, and in Scotland, farmers removed semi-natural vegetation on their own initiative, in anticipation of risks of penalisation.	
	Does the incentive have also other wider impacts on the environment?	Yes, if semi-natural habitats are damaged, scrub or other vegetation removed, then this could release carbon to the atmosphere, plus could increase risk of water erosion and hence water quality.	
	YES/NO (or brief) answers	▪ Is there a large change in biodiversity/ecosystems conditions due to the production/consumption patterns of the economic activity? *The concerns about lack of eligibility lead to the damage to biodiversity* ▪ Do the effects extend over a large area? *Variable. Mostly anecdotal examples of damage and by no means happening in all cases* ▪ Do the effects have implications at local, national, European or global level? *Local mainly – although some habitats affected are important nationally* ▪ Is there any trans-frontier impact? *No* ▪ Are many people affected? *Potentially – evidence unavailable to say how many farmers take action as a result of ineligibility concerns* ▪ Does it lead to significant or potentially excessive resource use, including valuable or scarce biodiversity features or resources? *N/A* ▪ Are environmental/biodiversity standards breached? *In some cases, yes (i.e. burning of scrub in Scotland resulted in damage to birds nests, protected under Birds Directive. Also conflicts arise with the pursuit of biodiversity objectives, e.g. BAP targets as well as with the priorities of agri-environment schemes (also funded under the CAP).* ▪ Are protected sites, areas, features affected? *Yes, potentially* ▪ Is there a high probability of the above effects occurring? *Yes, if issue is not resolved* ▪ Will the effect continue for a long time? *Yes* ▪ Will the effect be permanent rather than temporary? *Temporary if rules are changed, features could be replaced, habitats allowed to be reinstated – but would be over long time span.* ▪ Will the impact be continuous rather than intermittent? *Continuous* ▪ If it is intermittent will it be frequent rather than rare? *N/A*	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		▪ Will the impact be irreversible? *No, but see above re permanence* ▪ Will it be difficult to avoid, or reduce or repair or compensate for the effect? *Sorting out the eligibility rules would avoid the problem altogether.*	
19) Are these potential biodiversity impacts limited by existing 'policy filters'?	Are there 'policy' filters that mitigate the environmental effects of an incentive?	As mentioned above, the damage can be driven not necessarily by 'ineligibility' of certain features/habitats per se, but as a result of a fear of penalties if areas are claimed on and subsequently deemed ineligible as a result of enforcement or audit, given the fact that there is often some margin of error in calculating 'ineligible' and 'eligible' areas, maps do not always tally, EU Auditors may be working to different/stricter interpretations of the rules to national enforcement agencies etc. Detailed guidance documents that spell out precisely what is eligible and not eligible can help here. These are provided in all UK regions and updated regularly. The 2012 updated handbook in England, for example, makes the rules regarding the eligibility of scrub much simpler to interpret and implement by removing the '50% rule' and making any areas of scrub that are able to be grazed to be eligible for the SPS.	
	What other incentives/ subsidies are provided to the sector/economic activity?	A whole range of other payments/support is provided to the agricultural sector, including incentives for environmental management, and grants to improve competitiveness under Pillar 2 (Rural Development Policy). In addition, certain market support measures continue, for the time being, including milk quota and support for sugar.	
	Does the taxation regime counterbalance the impacts of the incentive / subsidy?	No	
Phase 2: Potential for reform			
20) Does the incentive fulfill its objectives?	What are the objectives of the incentive?	The purpose of the eligibility criteria is to ensure that only areas of land that are used for agricultural activity or kept in Good Agricultural and Environmental Condition receive payments under the CAP. Eligibility is set out under Article 34 of Council Regulation 73/2009 as follows:	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		Activation of payment entitlements per eligible hectare: 1. Support under the single payment scheme shall be granted to farmers upon activation of a payment entitlement per eligible hectare. Activated payment entitlements shall give a right to the payment of the amounts fixed therein. 2. For the purposes of this Title, 'eligible hectare' shall mean: (a) any agricultural area of the holding, and any area planted with short rotation coppice (CN code ex 0602 90 41) that is used for an agricultural activity or, where the area is used as well for non-agricultural activities, predominantly used for agricultural activities; and (b) any area which gave a right to payments under the single payment scheme or the single area payment scheme in 2008 and which: (i) no longer complies with the definition of 'eligible' as a result of the implementation of Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (1), Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (2) and Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (3); or (ii) for the duration of the relevant commitment of the individual farmer, is afforested pursuant to Article 31 of Council Regulation (EC) No 1257/1999 of 17 May 1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF) (4) or to Article 43 of Regulation (EC) No 1698/2005 or under a national scheme the conditions of which comply with Article 43(1), (2) and (3) of that Regulation; or (iii) for the duration of the relevant commitment of the individual farmer, is set aside pursuant to Articles 22, 23 and 24 of Regulation (EC) No 1257/1999 or to Article 39 of Regulation (EC) No 1698/2005.	

<table>
<tr><th>Key questions (steps)</th><th>Sub-questions</th><th>Answers</th><th>Traffic Light</th></tr>
<tr><td></td><td></td><td>The Commission, in accordance with the procedure referred to in Article 141(2), shall lay down detailed rules on the use of eligible hectares for non-agricultural activities.</td><td></td></tr>
<tr><td></td><td>Who are the intended recipients of the incentive?</td><td>Active farmers as defined under Council Regulation 73/2009</td><td></td></tr>
<tr><td></td><td>Are the incentive's objectives still justified in relation to the needs?</td><td>Yes – in relation to eligibility criteria. It is the interpretation and implementation of the eligibility criteria at the national level (and also by EU auditors) that causes the problems.</td><td></td></tr>
<tr><td></td><td>Has the incentive been in place for a long time and/or lacks an in-built review process?</td><td>The SPS, with these eligibility criteria has been in place since 2005 and was last reviewed as part of the CAP Health Check in 2008. It is currently under review, with a revised CAP scheduled to come into operation in January 2014.</td><td></td></tr>
<tr><td>21) Does the incentive lead to any social and/or economic issue?</td><td>What are the unintended economic impacts of the incentive?</td><td>The fear of land managers is that they would forfeit their SPS payment for a proportion of their land if they claimed for areas that were subsequently deemed to be ineligible. The economic impact will vary on a farm to farm basis.</td><td>  </td></tr>
<tr><td></td><td>What are the unintended social impacts of the incentive?</td><td>In extreme cases, this has the potential to make the difference between a farm that is profitable or unprofitable and therefore could lead to farms going out of business – with knock on social impacts. This is theoretical, however – there are no examples that could be identified where this has in fact been the case</td><td></td></tr>
<tr><td></td><td>Who are the winners and who are the losers?</td><td>N/A in this case</td><td></td></tr>
<tr><td></td><td>Criteria matrix
Key:
negative impacts (--- high; -- medium; - low); positive impacts (+++ high; ++ medium;</td><td><table><tr><th>Indicator</th><th>Degree of expected impact
Of issues surrounding eligibility/inelibility of</th></tr></table></td><td></td></tr>
</table>

<table>
<tr><th>Key questions (steps)</th><th>Sub-questions</th><th>Answers</th><th>Traffic Light</th></tr>
<tr><td></td><td>+ low).</td><td>
<table>
<tr><td></td><td>habitatats/features for SPS</td></tr>
<tr><td>Economy</td><td></td></tr>
<tr><td>• Income / employment</td><td>Will vary by farm</td></tr>
<tr><td>• Productive capital</td><td>None</td></tr>
<tr><td>• Competition /innovation</td><td>None</td></tr>
<tr><td>• Market mechanisms</td><td>None</td></tr>
<tr><td>• Public sector enterprise</td><td>None</td></tr>
<tr><td>Social</td><td></td></tr>
<tr><td>• Health /security</td><td>None</td></tr>
<tr><td>• Education, identity</td><td>None</td></tr>
<tr><td>• Culture, values</td><td>None</td></tr>
<tr><td>• Legal security, equality</td><td>None</td></tr>
<tr><td>• Solidarity</td><td>None</td></tr>
</table>
</td><td></td></tr>
<tr><td>22) Are there more biodiversity benign alternatives hindered by the incentive?</td><td>Are there alternative technologies, products, services, systems or modes of productions that could replace those supported by the incentive?</td><td>The issue at stake here is the eligibility criteria for a subsidy that in itself is not harmful to biodiversity directly, but is inefficient and would benefit from reform to be replaced by a policy that is focused directly on the delivery of clearly defined public goods, such as biodiversity.</td><td>  </td></tr>
</table>

Key questions (steps)	Sub-questions	Answers	Traffic Light
	How do the environmental/biodiversity impacts of these alternatives compare with those of the incentivised / subsidised ones?	If the CAP were to be reformed with a greater focus on public goods delivery then the benefits for biodiversity could be significant, particularly if measures were able to be designed appropriately to allow actions to be targeted in ways that deliver the intended outcomes and if sufficient environmental safeguards were put in place.	
	Is the implementation of these alternatives hampered by the incentive under scrutiny?	Yes and no. Yes –if the confusion around eligibility is not sorted out then some of the habitats and features that would be the focus of a more public goods focused CAP may have disappeared No – the CAP reform debate and likelihood of reform is a much bigger strategic, political debate of which this issue on eligibility is one small technical detail.	
	What is the likelihood of these alternatives replacing the previously incentivised / subsidised ones?	The environment is a key objective of the CAP Reform process, with the aim to integrate the delivering of environmental public goods more centrally into the CAP. The extent to which this might happen in practice is the subject of much debate.	
23) Are there pressures for the incentive's reform/removal?	Are there existing calls for the incentive to be removed / reformed?	Yes – from both environmental NGOs and the farming stakeholders.	
Phase 3: Reform scenarios			
24) Is there a suitable reform option(s) and what could it entail?	What alternatives exist for meeting the incentive's objectives (if still valid)?	there would be value in providing greater clarity in the CAP regulation and technical guidance on eligibiltiy criteria at the EU level and institutional capacity at all levels should be improved to avoid misinterpretations that lead to environmentally damaging implementation in the future	
	Should the incentive's objective	Eligibility criteria will remain important as long as the SPS remains to ensure that that public	

Key questions (steps)	Sub-questions	Answers	Traffic Light
	no longer be valid, could the subsidy be removed?	money via the CAP is not misspent	
25) What could its expected costs and benefits be?	What are the environmental impacts and, more specifically, the related direct and indirect effects on biodiversity, associated with each scenario?	Cessation of environmentally damaging activities in order to receive SPS payments No data possible on costs	
	What are the economic impacts associated with each scenario?	Farmers would not be disadvantaged from receiving SPS payments as a result of maintaining environmentally valuable habitats/features	
	What are the social impacts associated with each scenario?	Continuation of farming if this were to be at risk	
	Are flanking measures necessary?	No	
26) Are there obstacles to the incentive's reform/removal?	How politically important/sensitive is the initiative?	Fairly sensitive. Particularly as the issue of eligibility it relates to payments to farmers and potential penalties not just on farmers as a result of national enforcement, but on national governments as a result of EU audit.	
	Have there been attempts to reform the incentive in the past and why have they failed?	These issues are discussed regularly and many issues have been resolved over time. Much rests on interpretation of EU regulation and guidelines and so there are always going to be grey areas unless rules can be interpreted less stringently.	
27) Is the reform understandable, practical and enforceable?	Is it understandable to the public/ media/ policy makers (communication)?	Rather a technical issue to explain all the minutiae of the issues accurately – but bigger picture message not difficult to communicate	
	Is it practical to implement (feasibility)?	Yes	

Key questions (steps)	Sub-questions	Answers	Traffic Light
	Is it enforceable?	Yes	
Phase 4: Opportunities for action			
28) Is there a window of opportunity for reform?		Yes – current negotiations for CAP Reform for 2014-2020	
29) Is there a potential policy champion for reform?		Unclear	
30) Is there public/ political support to reform?	Is this already in place and if not can it be catalyzed in the reform time period? From which sources is there (potential) support?	Yes, from environmental NGOs and farming sector	

10.3 CASE STUDY 3: Incentives for Wind Energy in the UK

Table A1.5 Summary table

Key questions (steps)	Traffic Light	
Phase 0: Identification of threats to biodiversity and potentially harmful incentives		
31) Is there a threat to biodiversity?		Yes, significant threat
Phase 1: Screening of incentive		

Key questions (steps)	Traffic Light	
32) Is there a perverse incentive / subsidy?		Yes, substantial subsidy / incentive
33) Does the incentive lead to potential significant negative impact on biodiversity?		Significant potential impacts
34) Are these potential biodiversity impacts limited by existing 'policy filters'?		Yes, so the overall impact of the policy should be limited or very limited if planning controls are properly implemented
Therefore: Is there an incentive that is harmful for biodiversity?		No
NO NEED TO PROGRESS TO THE NEXT STAGE		

Table A1.6 Detailed table

Key questions (steps)	Sub-questions	Answers	Traffic Light
Phase 0: Identification of threats to biodiversity and potentially harmful incentives			
31) Is there a threat to biodiversity?	What are the key threats to biodiversity that should be addressed?	There are many threats to biodiversity in the UK. These include continuing declines in many habitats and species, including protected sites, fragmentation of habitats etc and are well documented in the literature. See for example, the 2010 progress report relating to progress with implementation of the UK Biodiversity Strategy and Biodiversity 2020: A	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		Strategy for England's Wildlife and ecosystem services, amongst others.	
	What are the economic activities\ sectors causing or exacerbating these threats?	Subsidies are also used to encourage the development and use of renewable energy sources to fight global warming and achieve long-term energy security. However, these may have other negative impacts on biodiversity. For instance, hydroelectric dams can result in the loss of wildlife habitat and reduce biodiversity; the components used in solar cells are often hazardous to the environment (e.g. manufacture of solar cells requires the use of arsenic and cadmium) and have to be disposed of relatively frequently; solar thermal plants require cooling water which can have negative impacts where there water is in short supply; and wind farms and utility-scale solar power plants can have significant biodiversity impacts, especially if inappropriately located.	
Phase 1: Screening of incentives			
32) Is there a subsidy / perverse incentive?	What is the nature and size of the subsidy / incentive?	Wind energy in the UK is subsidised mainly through the Renewables Obligation. This requires British electricity suppliers to provide a proportion of their sales from renewable sources (including wind energy) or pay a penalty fee. Suppliers have to evidence that they are meeting their obligation by presenting Renewable Obligation Certificates (ROCs). These are received for each MWh of electricity purchased. ROCs are banded for different technologies; until recently, onshore wind received 1 ROC per MWh and offshore wind received 1.5 ROC per MWh. In 2009, the Renewables Obligation Banding Review increased the allocation for offshore wind to 2 ROCs to reflect the higher costs of generation. However, a more recent review presented plans to reduce support to onshore and offshore wind. Onshore wind would then be downgraded from 1 ROC per MWh to 0.9 ROC in 2013, while support for offshore wind would be reduced from 2 ROCs to 1.9 ROCs in 2015, with another reduction to follow in 2016 (to 1.8 ROCs). Research has indicated that, in the case of onshore wind, this could reduce deployment by 2017 to 10.4 GW from 12 GW. Wind energy also benefits from capital subsidies in the case of some wind power projects, through financial support under various programmes (e.g. the European Regional Development Fund, Clear Skies Scheme). However the scale of support through these schemes is unclear. The 2011 Renewable Energy Roadmap however does state that £30	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		million of direct Government support will be provided for offshore wind cost reduction over the next 4 years. Small wind energy projects (specifically those with a capacity of up to 5MW) are also supported through a Feed in Tariff (FIT), which guarantees payments for electricity generated from small scale renewable electricity systems (linking a return on investment of between 5-8 per cent). An extra tariff (3 pence / kWh) is paid for every unit that is exported to the national grid.	
	What is the point of impact of the incentive (conditionality)?	Wind energy in the UK is subsidised mainly through the Renewables Obligation. This requires British electricity suppliers to provide a proportion of their sales from renewable sources (including wind energy) or pay a penalty fee. The subsidy is therefore conditional on renewable energy output specifically electricity generated through renewable technology.	
	What is the duration of the incentive?	The Renewable Obligation scheme has been running since 2002, and is expected to continue until 2027. FITs came into force in 2010 and are set for 20 or 25 years.	
	Does the incentive provide for long term structural impacts?	Given the length of time over which the Renewable Obligation is in place, the fact that it supports investment in infrastructure with a long-life span, and its success to date, the subsidy is very likely to have long term structural impacts. Given the small scale of the projects being supported, the FIT is unlikely to result in significant structural change.	
33) Does the incentive lead to potential significant negative impact on biodiversity?	Does the incentive have a direct or indirect impact on biodiversity?	Wind energy developments have the potential to negatively impact on biodiversity, and the wider environment, depending on their location and other characteristics. The construction of the turbine base, and other associated works (e.g. access tracks) can result in the loss of, or damage to, valuable habitats. These impacts can be especially significant where the habitats are difficult to replicate or restore. Longer-distance impacts can also result if, for instance, work alters the ecological features of an area (e.g. alterations to the hydrology of an area, access roads creating barriers to species' corridors). There is also the risk of collision, displacement or disturbance in the case of altered flight paths for both birds and bats.	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		In the case of offshore wind farms, a recent IUCN report synthesised current knowledge on the potential biodiversity impacts. The report highlights possible impacts on biodiversity, such as disturbance effects from noise, electromagnetic fields, changed hydrodynamic conditions and water quality, and altered habitat structure on benthic communities, fish, mammals and birds. The evidence suggests that negative impacts on the subsurface marine environment are strongest are greatest during the construction phase. Nonetheless, there is also potential for long-term disturbance during the operational phase. However, a recent study found that offshore wind farms can actually result in biodiversity benefits, in contributing towards creating a more diverse habitat. The evidence also suggested that wind farms can help an ecosystem to recover from the effects of intensive fishing, pollution, oil and gas extraction and shipping. Nonetheless, the study did acknowledge the potential for negative effects, such as disruption for some bird species from rotating blades.	
	Does the incentive have also other wider impacts on the environment?	Over the longer time, wind farms can also indirectly benefit biodiversity by mitigating the effects of climate change, which can have damaging effects on wildlife, habitats and ecosystems. Measures taken during the development of a wind farm can also lead to environmental improvements through land management, land restoration and habitat creation where these are part of a development scheme.	
	YES/NO (or brief) answers	▪ Is there a large change in biodiversity/ecosystems conditions due to the production/consumption patterns of the economic activity? *No* ▪ Do the effects extend over a large area? *No* ▪ Do the effects have implications at local, national, European *or* global level? *Local, (and to a lesser extent, national), potentially transnational in terms of migratory species* ▪ Is there any trans-frontier impact? *Possibly through potential impacts on migratory pathways of some species)* ▪ Are many people affected? *No* ▪ Does it lead to significant or potentially excessive resource use, including valuable or scarce biodiversity features or resources? *Occasionally* ▪ Are environmental/biodiversity standards breached? *No* ▪ Are protected sites, areas, features affected? *Yes* ▪ Is there a high probability of the above effects occurring? *No*	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		▪ Will the effect continue for a long time? *Yes* ▪ Will the effect be permanent rather than temporary? *Relatively permanent, although more temporary in terms of the projects' construction* ▪ Will the impact be continuous rather than intermittent? *Continuous* ▪ If it is intermittent will it be frequent rather than rare? N/A ▪ Will the impact be irreversible? *Depends on the location and nature of the development (e.g. the habitat being affected, the size of the development)* ▪ Will it be difficult to avoid, or reduce or repair or compensate for the effect? *Depends on the location (e.g. the habitat being affected)*	
34) Are these potential biodiversity impacts limited by existing 'policy filters'?	Are there 'policy' filters that mitigate the environmental effects of a incentive?	In the UK, planning controls are in place which identify, consider and enable the potential impacts on biodiversity arising from the development of wind farms to be addressed. Land use planning and development controls provide a mechanism for which proposed developments, including wind farms, are assessed and determined as appropriate. The assessment process includes consideration of potential environmental impacts as a result of any proposed development and also includes provision for mitigation or compensatory measures to be imposed. An assessment is undertaken in the form of either Strategic Environmental Assessment (SEA) and / or an Environmental Impact Assessment (EIA). Both of these assessments consider the potential impacts on biodiversity. SEAs are undertaken at a policy or programme level, that is, when policy is drafted and proposed an SEA is undertaken to assess the potential impacts of that policy. EIAs are undertaken when an actual development is proposed and the threshold/requirement for an EIA to be undertaken is met. An EIA provides the mechanism for which potential impacts on biodiversity are identified. The specific planning requirements for on and offshore wind development differ depending on the scale of development. Developments that are deemed to be of national significance are considered by the Major Infrastructure Planning Unit (MIPU) and Secretary of State. Smaller scale developments are subject to local planning processes. Both development types are subject to the same environmental assessment scrutiny. At a development level, planning approval is required prior to any development being undertaken. Through the application process and under the Town and Country Planning (Environmental Impact Assessment) Regulations, there is a requirement for an EIA to be	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		prepared for particular types of development, such as wind farms. Applications for developments are required to include proposals for mitigation measures. Both the MIPU and local planning authorities are required to consider the mitigation proposals put forward as part of the application and determine the adequacy of the proposal. Often the mitigation measures and long term management of the site is secured in a legally binding agreement that sets out any planning conditions and responsibilities of the developer. Such measures often include ecological monitoring of the site. The process and considerations described above apply to development proposals that are not within a European designated site for conservation such as an SPA or SAC. For proposals within such sites there is a requirement to determine if the proposal will have an adverse effect on the conservation status of that site. Compensatory measures may be required depending on the outcome of the environmental assessment undertaken for developments within designated areas. Currently the planning system in the UK is undergoing significant change and amendment through the introduction of the 2010 Localism Act. Reform measures seek to support economic growth and give communities greater say and stake in development. The assessment of wind farm developments, and the requirement for them to undergo SEA or EIA assessment (depending on their characteristics) will not be affected by these reforms. Proper implementation of planning controls should avoid damage to biodiversity and therefore, in theory, remove the need for action with respect to the subsidy itself. From the available documentation it is not clear if there is a strong view on the efficacy of planning controls as they relate to environmental protection and management of the impacts wind farms may have on biodiversity. What is documented is how conservation agencies (government and non-government) have collaborated to produce guidance documents and advice at both policy and project level that details what environmental considerations need to be taken into account when developing both on and offshore wind farms. Whilst these are not statutory in nature, they are positioned as good practice and a means of assisting both developers and relevant decision makers to develop on and offshore wind with consideration to biodiversity and environmental impacts. Whether or not the production of these guidance documents represents an identified gap in the planning system to adequately deal with environmental considerations when assessing wind	

Key questions (steps)	Sub-questions	Answers	Traffic Light
		developments it is not clear. Engagement with the planning system through the production of guidance documents and collaboration between various bodies such as the RSPB and Natural England does seem to suggest however that the planning process accommodates consideration and assessment of these issues.	
	What other incentives/ subsidies are provided to the sector/economic activity?	Not examined within the scope of this study	
	Does the taxation regime counterbalance the impacts of the incentive / subsidy?	Not examined within the scope of this study	
NO NEED TO PROGRESS TO THE NEXT STAGE			

11 Conclusions and recommendations on the use of the tool

11.1 A tool to guide the reform of biodiversity harmful incentives

Decision X/44 stresses the importance of identifying, eliminating, phasing out, or reforming existing harmful incentives for sectors that can potentially affect biodiversity, with a view to minimizing or avoiding their negative impacts (CBD, 2010).

In view of this recommendation, IEEP and GHK developed this guidance tool which is designed to assist the UK and other countries to identify existing perverse incentives that are harmful for biodiversity and to better understand how these should be eliminated, phased out or reformed. This tool builds on existing guidance for the identification and reform of environmentally harmful subsidies internationally, and applies it to inform the analysis of incentives harmful to biodiversity.

The first step for using the tool (Phase 0), involves identifying what threats are posed to biodiversity, and how these are linked to key economic activities and sectors. This will then allow the analyst to identify potential subsidies or incentives within these sectors which are promoting various activities which may be causing harm. The next four phases of the 'Biodiversity Harmful Incentives Reform Tool' then aim to identify whether these subsidies need to be reformed or phased out, and what options may be available to do so:

1. **Screening of subsidies**: This screening phase serves to identify those incentives that have clear potential to harm biodiversity and are politically more viable for reform.
2. **Assessment of the need for reform**: The objective of this phase is to assess whether the subsidy reform/removal is likely to bring significant environmental benefits. If so, the assessment should be carried forward, looking at the trade-offs with social and economic impacts explored in the next phase.
3. **Analysis of reform options**: Here, concrete policy reform options for BHIs are developed. This phase should help to prepare the political decision making for the reform/removal of biodiversity harmful subsidies, and should help to identify whether reform is advisable and/or likely to be successful.
4. **Identification of opportunities for action**: The objective of this phase is to identify whether there are practical windows of opportunities, champions who could make the reform happen and due public and political support to enable progress. This would help in the timing and prioritisation of reform actions.

11.2 Case studies applying the tool

Three case studies have been selected by Defra and have been used to illustrate the tool's application and to explore the reform of incentives harmful to biodiversity in the UK. These case studies cover:

- The water abstraction regime;
- Eligibility criteria for CAP direct payments; and,
- Wind energy developments.

The case studies were very different in nature and study provided different insights into BHIs and their reform. The key conclusions and differences are presented in Table 11.1 below.

Table 11.1 Key conclusions and differences across the 3 case studies

	Water abstraction	Eligibility criteria	Wind energy developments
Need for reform	**HIGH** A considerable need for reform was identified, given the length of time the system has been in place without any substantial review to its design or implementation. Moreover, it is becoming clear that the system is both unsustainable and inefficient. This need is also going to increase into the future given the rise of challenges such as climate change.	**MEDIUM** It is clear that the incentive is creating a situation in which farmers may decide to remove potentially biodiverse and environmentally valuable habitats due to the inherent uncertainty in the system. Although a need could be identified, there is some uncertainty however over the extent to which the problem is causing the loss of valuable habitats and the size of the threat to biodiversity in the context of other pressures	**LOW** Although wind farm developments have the potential to have negative impacts on biodiversity and important habitats depending on their location, planning controls are in place which should, if properly implemented, provide sufficient means for these to be identified, assessed, and mitigated. Hence the need for reform to the incentive itself is low.
Ease of reform	**MODERATE** Requires significant effort and a long-term view as it involves completely changing a 50+ year old system. The effort is therefore substantial, however there is a window of opportunity and a significant level of support	**GOOD** Relatively easy given the current window of opportunity, the relatively straightforward options for doing so and the level of support available	**N/A**
Means of reform	**LEGISLATIVE** Reform is a long term process (2020+) and to avoid continued negative impacts would require substantial changes, including reform of the legislative framework	**NON-LEGISLATIVE** Improving clarity and certainty of the guidance for implementing the eligibility criteria – reform could therefore avoid legislative changes.	**N/A** However does require planning controls and the planning system to be robust and effective.
Conclusion	**Reform must be prioritised** given the scale of the problem, despite the potential obstacles and challenges to doing so	**Reform can be pursued** given its relative ease and the fact that local benefits can be considerable	**No need for reform**

11.3 Conclusions regarding reform of biodiversity harmful incentives

11.3.1 Applying the guidance tool

The guidance tool sets out a structured, step by step approach designed to inform the identification and reform of incentives harmful to biodiversity. It is designed to be flexible to address a wide range of situations in the UK and other countries where biodiversity is adversely affected by incentives, and to inform approaches to reforming them. The following subsections consider some of the applications and limitations of the tool and draw overall conclusions about its usefulness.

11.3.2 The scope of biodiversity harmful incentives

Biodiversity is affected, directly or indirectly, by a wide range of economic activities. Pressures on biodiversity occur directly as a result of development, land use and management, and the extraction of natural resources, and indirectly, through a wide range of production and consumption decisions that cause pollution and/or affect the use of land and resources.

Harmful incentives or subsidies are also defined broadly by the guidance tool and include not just direct payments and market supports but a much wider range of examples where resources or activities are under-priced, for example through a failure to take account of their scarcity and/or environmental costs.

As a consequence, biodiversity harmful incentives are likely to be widespread and to occur in a range of sectors such as energy, transport, manufacturing and services, as well as those more obviously linked to biodiversity such as agriculture, forestry, fisheries and construction.

It follows that the potential application of the tool is widespread, but that the priority for reform is likely to vary widely according to the extent of the pressure on biodiversity and the degree to which it is driven by harmful incentives.

11.3.3 Progress to date

In considering the application of the guidance tool in a UK context, it is important to recognise that much has been achieved in recent years in reforming environmentally harmful subsidies and in pricing environmental externalities. The UK has been central to the debate about the reform of the CAP and has played a leading role in developing agri-environment schemes and in increasing their share of expenditure. Vehicle excise duties, the landfill tax and the aggregates tax are further examples of efforts to ensure that prices better reflect environmental costs. Action is also being taken to reform incentives for water abstraction to ensure more appropriate pricing of the use of water resources.

As a result of these and other developments, biodiversity harmful incentives are much less of a problem than they might have been in the past, and clear cut opportunities for reform are more difficult to find, where they not already been identified.

11.3.4 Action at UK and EU level

The scope for incentive reform in the UK is also limited by what is achievable at national level, rather than requiring EU wide action. The Common Fisheries Policy and Common Agricultural Policy remain among the greatest priorities for incentive reform in the UK, but can only be achieved through EU wide negotiations, in which the UK continues to play an active role. The relevance of these policies for biodiversity is widely understood, limiting the value that can be added through a general guidance tool such as this.

11.3.5 Reforming incentives or applying safeguards

Another important factor in addressing the biodiversity harmful incentives agenda is the degree to which reform of incentives should be a priority, or whether attention should focus on safeguards to their application. Biodiversity is potentially affected by a wide range of incentives, but is also protected by a range of different mechanisms. National and EU nature conservation designations, the planning system, EIA regulations, cross compliance rules and water legislation are all examples of mechanisms that can help to safeguard biodiversity from adverse pressures. Even where potentially harmful activities are incentivised, these safeguards can help to prevent adverse impacts on biodiversity.

An example is provided by the case study on wind energy, which is promoted through renewables incentives in order to meet climate change objectives, but which can impact negatively on biodiversity in some circumstances, and particularly on sensitive sites. Planning systems in the UK aim to avoid adverse impacts on biodiversity from renewables and other developments. If fully and consistently enforced, planning legislation and guidance should minimise risks to biodiversity, suggesting that this, rather than changes to renewables incentives, might be the priority.

11.3.6 Biodiversity harmful incentives and environmentally harmful subsidies

Most of the incentives potentially harmful to biodiversity highlighted in the guidance tool also have other environmental impacts. Indeed, many affect biodiversity only indirectly through their effects on climate change, air quality or the water environment. Examples include taxation of aviation fuel and domestic energy, and pricing of water. This suggests that reform of biodiversity harmful incentives should be seen in the context of the wider environmentally harmful subsidies agenda. However, the guidance tool also highlights the need to consider specific evidence of biodiversity pressures (such as through the National Ecosystem Assessment) when determining priorities.

11.3.7 Future priorities for reform

As a result of these different considerations, a general conclusion from the development and testing of the tool is that there might be some priorities for reform of biodiversity harmful incentives. However many such perverse incentives have already been identified in the UK context and measures are already being taken to address them. Nonetheless, the tool can be used to identify these priorities in a structured way, and to guide action for reform. It provides a mechanism for reviewing and understanding financial flows across different sectors and economic activities, in order to identify biodiversity harmful subsidies which may otherwise be difficult to identify.

11.3.8 Potential international applications

The tool is likely to have wider applications in other countries, and has been designed to be flexible to different contexts. Defra may therefore wish to share it with other countries through the CBD incentives agenda.

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Annex 1 What is an environmentally harmful subsidy?

A agreed definition of what constitutes 'environmentally harmful subsidies' is still lacking, and even a simple definition of 'subsidy' is still open to interpretation – see below.

What is a subsidy?

To date, there is no universally accepted definition of a subsidy (OECD, 2006a). The definition that is most widely used in the policy context is that of the OECD (2005), which defines subsidies as:

'A result of a government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs'

This definition allows several government support measures to be considered as subsidies. It includes on-budget subsidies, which appear on national accounts as government expenditure and includes direct cash transfers, low interest loans or reduced rate loans, the government provision of goods and services and subsidies to R&D. It also includes 'off-budget' subsidies which do not appear on national accounts, such as tax exemptions and rebates, preferential market access, limited liabilities, accelerated depreciation allowances, and selective exemptions from government standards.

The above definition does not include implicit subsidies that result from non-internalisation of externalities or lack of full cost pricing. Pieters (1997) proposed a slightly broader definition of a subsidy that addresses this by defining subsidies as '*deviations from full costing'*, although these may sometimes be difficult to measure.

While a broad definition, including both full cost pricing for resources and internalisation, is operationally difficult, it is important to recognise that such implicit subsidies exist and can be quite significant in all sectors. Table 1 below presents a classification of different economy types of subsidies. In the identification of subsidies it is generally useful to identify the economic type to facilitate any subsequent analysis of the importance of the subsidy and the potential benefits of reform.

Table 1 Economic types of EHS

#	Economic type	Specific subsidy type covered[12]	Examples
On-budget subsidies			
1	Direct transfer of funds	(a)Direct transfer of funds	e.g. grants and subsidies to fossil fuels, roads, fishing vessels capacity
		(b)Potential direct transfers of funds, e.g. covering liabilities, guarantees	e.g. (lack of or partial) nuclear energy liability
2	Provision of goods or services (other than general infrastructure)	(c)Government provides goods or services other than general infrastructure	e.g. fish fleet expansion / modernisation
		(d)Government directs other bodies to do any of the above	As above, funded by other bodies
Off-budget subsidies			
3	Income or price support	(e) Income or price support	e.g. price support to agricultural goods, water

[12] Building on different categories used by OECD, WTO, ESA and Pieters (2003)

4	Foregone government revenues	(f) Government revenues due are foregone or not collected, e.g. tax credits	e.g. land donation/use restrictions
		(g) Tax exemptions and rebates	e.g. VAT exemption to aviation fuel
		(i) Accelerated depreciation allowances	
5	Preferential treatment	(h)Preferential market access	e.g. regulated market access for taxis
		(j)Regulatory support mechanisms	e.g. feed-in tariffs, demand quotas
		(k)Selective exemptions from government standards	e.g. GHG emissions from landfill and incineration not in ETS
6	Provision of infrastructure	(m)Implicit subsidies, e.g. resulting from the provision of infrastructure	e.g. road infrastructure provided by the government and not (fully) paid by vehicle users
7	Lack of full cost pricing	(n)Implicit income transfers resulting from a lack of full cost pricing	e.g. Under-pricing leading to incomplete coverage of drinking water costs (abstraction, treatment, distribution etc.), waste disposal, energy supply
		(o)Implicit income transfers resulting from non-internalisation of externalities	e.g. no or partial liability for oil spills, IAS impacts, damage to ecosystems (e.g. nitrate run-off and eutrophication; plastic bags, batteries et al).
		(l)Resource rent for foregone natural resources	e.g. access to fisheries; water under-pricing not covering for water scarcity, no payment for raw materials such as rock, aggregates, sand

Source: Authors, based on IEEP et al, 2007

Within the CBD context (CBD decision X/44) the terminology of "incentives harmful to biodiversity" is used. The avoids some confusion that arises when people use subsidies to mean different things as it allows the wider set of economic subsidy types noted above to be included. Given that the term "environmentally harmful subsidies" is in such common use, and the immediate objective is to encourage focus on identification of subsidies that are harmful to the environment and developing a road map for their reform, within this guidance we continue to use EHS.

One possible definition of environmentally harmful subsidy (EHS), which draws on the OECD's 1998 and 2005 definition of 'subsidy' in the box above, can be:

'A result of a government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs, but in doing so, discriminates against sound environmental practices.'

Adapted from OECD (1998, 2005)

This definition is relatively broad and has the advantage of potentially encompassing a range of subsidies, including off-budget subsidies. However, this definition does not include implicit subsidies that result from non-internalisation of externalities or lack of full cost pricing (e.g. not applying a sufficiently high water price that covers for abstraction costs and/or for water pollution and resource scarcity). However, a *definition* of subsidies as 'deviations from full costing' is difficult to measure, as it is difficult to measure the true costs of externalities.

From another perspective, a subsidy can also be considered harmful to the environment if it leads to a higher level of (polluting) production and consumption than would be the case without the support measure. Following on from this, another definition of EHS is the following:

'All other things being equal, the [environmentally harmful] subsidy increases the levels of output/use of a natural resource and therefore increases the level of waste, pollution and natural exploitation to those connected'

Adapted from OECD (2005)

The above definitions of EHS are considered generic and by no means perfect. They are nonetheless the most widely used and accepted by the scientific community. The OECD for instance notes that what actually qualifies as an EHS varies over time and place. The tool developed in this report is meant to help identifying the linkages between financial support to an activity/sector and its impacts on biodiversity, taking into account the existing definitions of EHS with due flexibility.